

**The Nature Machine**  
*American Vernacular Landscapes*

Present throughout United States environmental history is the notion of the "X machine", where X = some interpretation of the manipulative interaction of human and nature. One of Mart A. Stewart's early nineteenth century primary sources refers to his tidewater rice plantation as a "hydraulic machine."<sup>1</sup> Richard White refers to two hundred years of the Columbia River ecology as an "organic machine."<sup>2</sup> Here, the word "machine" refers to a complex system organized by humans to extract and apply energy in nature. This nature machine is the means by which the interaction of human and nature operates.

Stewart defines the cultural characterization of the relationship of man and nature acting within a complex system as a vernacular landscape. The place and time of a vernacular landscape is "rarely regular and formal...a mixture of formed and unformed."<sup>3</sup> Human conditions and features of the natural environment vary with the given vernacular landscape. The management of slave labor on a Georgia tidewater rice plantation is a very different vernacular landscape than the implementation of a quasi-genocidal policy of bison extermination on the Great Plains. Each vernacular landscape, however, exhibits essential ecological principles, such as unit of labor per unit of land and resource depletion, that are common to the interaction of humans and nature everywhere. These principles, then, manifest in every vernacular landscape, comprise the operating system of the nature machine.

The nature machine is a process of means that engenders a transformation of the vernacular landscape. Donald Worster argues that the "enthusiastic centralizers" of the

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American West practiced the “rule of instrumentalism: reason in the service of productivity, ...maximization, and domination, reason not about ultimate ends but about *means*.” Means can be viewed as the instrumentalist manipulation of human and nature. Analogous to Worster’s description of the Marxist “underlying base of any society,” the mode of production, the “process by which people extract from nature their subsistence and accumulate their wealth,”<sup>4</sup> the underlying base of any vernacular landscape is its mode of transformation. The operation of the nature machine determines the mode of transformation in the vernacular landscape.

The nature machine is visible in one possible narrative of the development of the American West. The narrative is written in land, blood, and water.

The vernacular of land, and the labor land demands, is beautifully treated by Stewart in “*What Nature Suffers to Groe*.” Its mode of transformation is concentration. Committed to tidewater rice cultivation on the Georgia coast, the “rice and sea island planters ... continually had to invest human and natural energy in their plantations.” The investment in place created a “fluid palimpsest of uses and perceptions.” Upon this ceaselessly re-fashioned soil, irrigated by the tide, the braid of master and slave, staple crops and disease, formed a hydraulic machine.<sup>5</sup>

The vernacular of blood records the collision of nascent equestrian bison hunting cultures and the ensuing colossal disfigurement of nature. Its mode of transformation is maximization. The process of almost complete annihilation of the American Bison is described in rich detail by Andrew C. Isenberg in *The Destruction of the Bison*. “The history of Indian and Euroamerican societies in the western plains is embedded in the complex ecology of the region.” Across this vast range, indigenous people, plant and

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animal species, were violently replaced by biologically alien and technologically superior newcomers.<sup>6</sup>

The vernacular of water traces the over-arching theme of American westward expansion. Its mode of transformation is intensification, “extracting more and more...yield from the rivers and their watersheds.” In *Rivers of Empire*, Donald Worster conjures the era of “water modernity,” where “hydraulic societies...sprawling in the American West...express the reigning mind of the marketplace men, the technological wizards, and the ubiquitous state planners.” The interaction of human and nature to establish access and centralized control of water has led to what Lewis Mumford called the “Megamachine.”<sup>7</sup> Worster seeks to demonstrate what Stewart and Iseberg have shown in other vernacular landscapes, that as a consequence of the capitalist hydraulic society, “the domination of nature can lead to the domination of some people over others.”<sup>7</sup>

Labor in the nature machine, the extraction and application of energy, is performed by the work of humans and of nature. The work of humans is typically bounded, quantitative, and with a discernable chronological trajectory, for example, shooting a buffalo or operating a wet-agriculture plantation. The work of nature is continual and timeless on the human scale, whether instantaneous and catastrophic like a dam break, or infinitely patient and gradual, like the Colorado River’s Grand Canyon.

The logic of labor in the nature machine can change with the vernacular landscape. In Stewart, human acts upon human in order to act upon nature. In Isenberg, human acts upon nature in order to act upon human. In Worster, human and nature become the Megamachine acting upon itself.

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If the multi-faceted, multi-dimensional nature machine is the means by which a vernacular landscape is created and transformed, there is less variation in the end to which those means have been directed for the last two or three centuries in America. It was and still is to turn “waste’ into wealth.” To the present, the sustained technocratic capitalist control of man and nature has “had little purpose other than mere accumulation itself.”<sup>8</sup>

Do the vernacular landscapes portrayed in Stewart, Isenberg, and Worster achieve that end?

Calling for “enormous labor, a stable organization, and good management” to be successful, the late antebellum Georgia tidewater rice plantation studied by Stewart was for the most part a profitable enterprise. The hydraulic machine was created and maintained by “a massive application of human energy.” Planters and their slaves selected and channeled tidewater resources into their production process. The planters’ solutions to environmental challenges deployed “intelligent adaptations” that “successfully channeled the energy of both slaves and the river” but required intense labor. “The manipulation of the environment and ... of the slaves were inextricably connected” by the hydraulic machine. “The domination of nature and the domination of one group of humans by another evolved mutually.” The strengthened level of manipulation enabled by steam technology deepened the “rational system and managerial ethos” the plantation masters “sought to impose of the land and on the lives of their slaves.” The simplification implicit in the planters’ domination of nature and other humans made both agricultural and social systems more fragile. Whatever wealth was possible by this end achieved in this vernacular landscape was vaporized by the Civil

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War. The “masterful illusion” of the low country planters disintegrated when “Emancipation removed...the source of human energy” upon which their “massive manipulations of the tidewater environment” depended.<sup>9</sup>

The palimpsest of the antebellum Georgia tidelands was unique. More often, the “distinguishing characteristic of American agriculture ... was the substitution of land for labor.” Americans try constantly, remarked Worster, “to evade the discipline of nature by moving on to new...lands.” By the middle of the nineteenth century, the new lands were west of the 100<sup>th</sup> meridian.<sup>10</sup>

“Manifest destiny” was conceived east of the 100<sup>th</sup> meridian, and enacted west of the 100<sup>th</sup> meridian. The central goal, carried west by a wave of European ideas and biota (including people, bees, horses, and smallpox) was settlement founded on agriculture. This work could not begin in the new lands until they had been cleared. Isenberg offers the powerful thesis that the cultural collision on the Great Plains was between two relatively recent arrivals. At the leading edge of the European biotic invasion had been the horse. By the eighteenth century, the indigenous people in favorable positions around the periphery of the Great American Desert—more accurately a vast steppe gently sloping eastward from the Rocky Mountain escarpment into the savanna that bounded the great Missouri-Mississippi River system—had become nomadic equestrian bison hunters. The great herds of American Bison supplied almost the total subsistence requirement of the sophisticated nomads. The Indian, horse, and bison upon the grasslands formed a mobile symbiotic system that virtually filled the plains. Against that swirling cloud finally pressed the ever-rising Euroamerican wind from the east.<sup>11</sup>

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At this point, the current tenants of the plains vernacular landscape, abutting the advancing permeable Euroamerican picket of trappers and traders, had achieved the proto-American end, a form of wealth through trade in their nomadic equestrian cultural context. The symbiotic system was strengthened. “This emerging trade network encouraged the nomads to specialize as hunters.” Since

Euroamericans were latecomers to trade in the grasslands, ...by the mid-eighteenth century, extensive intertribal exchanges were already centered on the leading edge of the European biotic invasion, the horse. In order to acquire horses and supplement their reliance on the bison, the nomads developed a widespread intertribal trade network in horses and foodstuffs.... When European fur traders came to the plains...they found the nomads already...dependent on hunting and trading.<sup>12</sup>

But Euroamericans had found that as a general rule, the Indian could not be enslaved or recruited for labor. Pushed well down the road to oblivion by European diseases, a final shove was needed to pave the way for the ultimate transformation of the landscape into the vernacular of the farmer, miner, rancher, railroader: the white man of the Gilded Age. Simple obliteration of the Plains Indian, even if feasible—it probably was—seemed impractical on moral grounds. Isenberg suggests that “Indian humanitarianism emerged from the United States’ experience in the Civil War.” Quoting the *New York Times* in 1870, direct violence to eliminate the equestrian bison hunting nomads risked “our standing before the world as a Christian nation.” Fortunately for

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the advance of American civilization, another lesson of the Civil War could be applied. A strategy “reminiscent of his destruction of Confederate resources” was “suggested more than once” by the commander of the Department of the Missouri, General William Tecumseh Sherman, to eradicate the bison, which would “force the plains nomads to reservations.” This concept was coupled to the “notion that domestic cattle made a higher use of the range than bison” to draw the conclusion that “the bison’s displacement by domestic cattle was a victory for civilization.” With the acceptance of this syllogism commenced the utter annihilation of the American Bison in its wild habitat.<sup>13</sup>

If the end sought was now the ethnic cleansing of the Great Plains, this second profound transformation of this vernacular landscape was relatively successful. Whatever remaining wealth could be extracted from the buffalo was gone. The plains ecology, forever altered, became the dominion of Euroamerican conquest. The plains would now become part of the larger vernacular landscape of the modern American West. “The definitive characteristic of the Great Plains,” Isenberg observes, “is...aridity.”<sup>14</sup>

In its American incarnation, the nature machine conserves the essential principle of conquest, reified by blood. Worster skillfully crafts the vernacular landscape of the arid West. “*Rio colorado*: the words ... speak of independence, danger, and mystery, of the earth’s blood spilling into the sea.” Stewart, too, had sensed the spirit of the land that drew life from water. “The land becomes...more alive as it approaches the sea,” he concluded. “Water and land ... are a palpable living force.”<sup>15</sup>

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All the unfulfilled ends that had gone before in the American experience would now be brought to bear on the capitalized living stream of water modernity. The end now sought, and the wealth it would bring, usurped all the earlier visions.

Bringing such a superhuman force under control would be a very different and more demanding achievement than putting down Indians or plowing the prairies. It would take vast sums of capital instead of cavalry bullets, technological prowess instead of homesteader muscle, and complex social organization instead of family determination. The mastery of the awesome Colorado would be another form of winning the West, and in that winning an old West would be irretrievably lost.<sup>16</sup>

Intensification on the vernacular landscape of the arid West demanded the development of centralized control. Creation of wealth in this environment summoned the services of a new hydraulic machine. In some ways, it was like the old hydraulic machine. At the first order, the “elaboration of irrigated agriculture ... required a rural proletariat.” Labor to build, then to plant and harvest the highly modified landscape drove a social transformation that opened “a glaring gap between the claim of wide distribution [of wealth] and the bleak reality of a permanent underclass who did the brute work in western reclamation.” At the second order, the “collusion between scientifically oriented managers and holders of large private wealth” powered an economic transformation based on technology and hierarchical administration. The hydraulic machine evolved into a hydraulic society. “For scale of engineering, for wealth

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produced, the American West had become by the 1980s the greatest hydraulic society ever built in history.”<sup>17</sup>

The social and economic duality of the West is sustained in the contradiction inherent in its modern American power structure. On one hand, as Worster puts it, “the region is saddled with a bureaucratic despotism” of the federal government “surrounded by a pack of sycophants.” On the other hand, that government power has been captured by “narrow interest groups” that subvert the democratic will of the people. Worster’s answer is that both must be true, for both are found in the “composite [that] is ‘capitalist state.’” The vernacular landscape of Worster’s *Rivers of Empire*, endowed with the force of life, cannot have it both ways—“cannot maximize wealth and empire and maximize democracy and freedom too.” Leaping this dangerous cataract as one might in a dream, Worster looks to “the unredeemed desert West” for “a new sequence of history, an incipient America...in which...they...irrigate their spirit more than their ego.... In the midst of the bleakest scarcity they would find abundance.” Perhaps this vernacular landscape, like America itself, will always find its ends met and unmet.<sup>18</sup>

Delivered by means of the nature machine across these vernacular landscapes of the American continent, the *ends* of human and nature have arrived at this time and place, our now. Earlier models based on social (Stewart) and environmental (Isenberg) imperialism have died. A vigorous capitalist model (Worster) of ecological pragmatism abides in the ominous shadow of global climate change. As the landscapes of the United States have evolved and grown from one to the next, so to survive, the modern American mode of transformation, intensification, must touch the new vernacular landscape of

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twenty-first century planet Earth, and just as certainly as the rivers and plains were crossed, move on.

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<sup>1</sup> Mart A. Stewart, “*What Nature Suffers to Groe,*” (Athens: University of Georgia Press, 1996; University of Georgia Press, 2002), 112.

<sup>2</sup> Richard White, *The Organic Machine, The Remaking of the Colombia River,* (New York: Hill and Wang, 1995).

<sup>3</sup> Stewart, 50.

<sup>4</sup> Donald Worster, *Rivers of Empire,* (New York: Oxford University Press, 1985; Oxford University Press, 1992), 147, my italics, 25.

<sup>5</sup> Stewart, 185, xiii.

<sup>6</sup> Andrew C. Isenberg, *The Destruction of the Bison,* (New York: Cambridge University Press, 2000; Cambridge University Press, 2001), 194..

<sup>7</sup> Worster, 64, 48, 51, 50.

<sup>8</sup> Worster, 256.

<sup>9</sup> Stewart, 147, 148, 174, 192.

<sup>10</sup> Stewart, 185. Worster, 333.

<sup>11</sup> Isenberg, 7-9, 39.

<sup>12</sup> Isenberg, 45. Isenberg’s trade thesis is supported by my primary source research. Theodore R. Davis, “The Buffalo Range,” (New York: *Harper’s New Monthly Magazine,* no. CCXXIV, vol. XXXVIII, January, 1869).

<sup>13</sup> Isenberg, 147, 128, 155.

<sup>14</sup> Isenberg, 16.

<sup>15</sup> Worster, 194. Stewart, 252.

<sup>16</sup> Worster, 194.

<sup>17</sup> Worster, 295, 202, 276.

<sup>18</sup> Worster, 280-281, 334-335.