The Cattle Boom in Southern Arizona: Towards a Critical Political Ecology

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Nathan Sayre

Pioneering across the continent, the livestock industry traveled in easy stages, since Colonial beginnings in the seventeenth century, three thousand miles westward till it reached the Pacific. Always just in advance of the oncoming settlers with their implements of agriculture, it has been the expression of a life of freedom and adventure. Even the imagination of the stay-at-home capitalists of the Old World was caught by this picturesque industry, and in the heyday of our trans-Mississippi development scores of Scotch and English "pastoral companies" were formed to operate in America. On the vast unclaimed open prairies west of the Mississippi the business developed spectacularly and made fortunes for many of its followers. These successes, however, were due largely to the bounteouness of nature. Methods were crude; system and management were preceded by chance and fortitude. The cost of the herd or flock was small and expenses of operation almost negligible, except for the death toll that Nature exacted.

—Forrest M. Larmer, Financing the Livestock Industry (1926: 1)

No period is more important to the political ecology of ranching in southern Arizona than the cattle boom of 1873–1893. Yet its very occurrence is unknown to many critics of ranching today, and even among environmental historians and other scholars its causes and dynamics have been poorly understood. In some measure, this is a consequence of incomplete information: before about 1934, for example, the figures for the number of cattle in Arizona are estimates with indeterminable margins of error. Additionally, the best scholarship on the cattle boom was done before 1970, when the environmental consequences of grazing were scarcely an issue, let alone well understood. More recent scholarship has addressed this shortcoming but it has failed to incorporate the other insights from earlier works. Finally, the cattle boom has usually been treated as a phenomenon originating in Texas and spreading north and west across the Great Plains of Oklahoma, Kansas, Nebraska, the Dakotas, Montana, Wyoming, Colorado, and New Mexico. Its effects on southern Arizona have scarcely been remarked.

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Richard White (1991: 236) has characterized the post–Civil War West as "an economy that instead of advancing in carefully calibrated stages from subsistence to commercial production had rushed headlong into the world markets." Eastern and European capital flooded into the region in the form of railroads, telegraphs, mines, mills, and plows as well as cattle, but it was as cattle that capital would have the most extensive impact on landscapes in Arizona and the West more generally. This was a product of both the scale and rate of capital immigration. International investors simply did not notice, or much care, when the effects of their money overwhelmed the vegetation growth, soils, water, and climate that sustained local and regional ecosystems. The historical conditions that made the cattle boom possible—particularly a surplus of capital in Great Britain and the "open range" land policy of the federal government—also distinguish it structurally from twentieth-century ranching.

AN ANTHROPOLOGICAL DEFINITION OF RANCHING

Perhaps the single greatest obstacle to effective analysis of the cattle boom stems from an inadequate specification of what "ranching" is. Ranching in the American West has typically been understood as a simple hybrid of livestock production and capitalism, essentially continuous with its pre-capitalist antecedents. Walter Prescott Webb (1931: 228, 240), for example, defined ranching as "the practice of raising cattle on a large scale," which the Industrial Revolution converted "from an adventure into a business which is today carried on with as much system as farming or manufacturing." Donald Worster (1992: 37, 40) echoes this conceptualization, locating the origins of ranching in the 1860s and stressing that "the ranch was unmistakably a modern capitalist institution."2 J. J. Wagoner’s History of the Cattle Industry in

1. The exception to my opening remarks, White does attend to the scholarship on the boom from the 1950s and '60s (1991: ch. 10, especially pp. 261–63), and he extends analysis of the boom to the Great Basin region (1991: 225f.). He does not examine the boom in Arizona, however, nor does he develop the theoretical interrelations of pastoralism, ranching, and the environment, as I attempt here.

2. Worster explicitly juxtaposes ranching to its pastoralist antecedents and emphasizes capitalism as the differentiating factor, and he nods at the importance of land tenure. Nevertheless, he does not attempt to address the transformation theoretically, instead reiterating that the open range was an ecological catastrophe which eventually resulted in the Taylor Grazing Act of 1934. He proceeds to treat ranching as continuous with its roots in the boom.
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Southern Arizona dispenses with the issue by remarking that “stock ranching has always been a frontier industry and has served a place of primary importance in the advancement of western civilization” (1952: 37). The huge body of work on cowboys and ranching—including memoirs, hagiographic biographies, and scholarship in American studies and cultural geography—has reinforced this supposed continuity by focusing on the realm of “cowboy culture” (Dary 1981)—the costumes, tools, techniques, and lexicon of horseback cattle raising. Terry Jordan, for example, in a chapter entitled “The Nature of Cattle Ranching” which opens his magisterial North American Cattle-Ranching Frontiers, displays greater concern for defining frontier than ranching. “The traditional raising of range cattle by EuroAmericans was at base simply another business, another form of western capitalistic free enterprise, involving the specialized, market-oriented production of livestock, initially on large, unimproved land units at a small expenditure of labor and capital” (1993: 7). Jordan meticulously traces cultural continuities across continents and centuries, identifying various “systems” (Texas, California, Midwest) of ranching and their interactions. But all of these systems, and their antecedents to the east and south, are equally “ranching,” and as a result Jordan neglects to consider discontinuities between subsistence and capitalist production of livestock. For him, as for so many others, ranching denotes a collection of cultural traits that have accompanied livestock raising from its origins in the Old World (cf. Slatta 1990), rather than a historically specific economic process of capitalist (re)production. In all of these accounts, the spread of cattle across the American West in the post-Civil War period was one and the same with the spread of ranching.

This conventional notion of ranching reveals its limitations in attempting to understand and explain the cattle boom, especially in regard to its ecological consequences. Jordan, for example, is compelled to advance a cultural-ecological determinist interpretation of the boom’s collapse, according to which the Texas system’s “maladaptation” to colder, drier climes and its rapid advance across the Great Plains spelled

3. Frieda Knobloch’s (1996: 79–112) otherwise astute analysis of ranching and range science suffers from the opposite mistake: she assimilates ranching to pastoralism and ignores the issue of capital entirely.

4. In some places, Jordan insists that ranching is an Old World phenomenon. “Ranching was not a product of the American frontier . . . or of the semiarid West. . . . Nor did it arise in Latin America” (1993: 14). Yet he seems at other times to avoid calling Old World livestock husbandry “ranching,” using instead the phrases “range cattle raising” or “the open-range herding of beef cattle” (ibid.).
its doom (1993: 236–37). As true as this may be, it utterly fails to ac-
count for the boom itself or its severe ecological consequences. The
Texas system may have served as a cultural vehicle for the boom, but
the tremendous growth in cattle numbers was exogenous to the sys-
tem, and it is improbable that any “system” of cattle raising could have
handled so many animals without ecological collapse. The more rele-
vant factors—such as land tenure arrangements and “the speculation-
fueled, hypercommercialized cattle boom”—pop up at the end of Jor-
dan’s account as “other causal factors [which] also played a role” (1993:
239), since they cannot be made to fit into his approach to ranching.
Adding contradiction to confusion, Jordan concludes by scrapping eco-
logical determinism rather than address the economic dimension: “The
Texas system was not merely maladapted to the Great Plains; it was not
sustainable in any environment and would have collapsed even in the
lushest and mildest of settings” (p. 239)—this, two pages after asserting
that “the system died of cold and drought.”

In his book Hunters, Pastoralists and Ranchers, Tim Ingold advances
a more sophisticated anthropological theory of the social relations of
production surrounding large ungulates such as reindeer, caribou, bis-
on, and cattle. Arguing against abstract, positivist definitions, Ingold
conceives of ranching as developing historically out of pastoralism un-
der specific circumstances, and he isolates two major components to
this transformation: one relating to the source of production itself and
the other relating to the control of land. He does not examine the cat-
tle boom in depth, but his arguments provide a powerful theoretical
framework for examining the history and ecology of ranching in the
American West.

In terms of Ingold’s first distinction, the transformation from pas-
toralism to ranching began in the late 1860s and was largely complete
by the turn of the century. Ingold distinguishes between “two spirals of
accumulation, one distinctively pastoral and based on the natural re-
production of herds, the other distinctively capitalist and based on the
exchange of products, through the medium of money, for factors of
production including labour and animals” (1980: 3). In a pastoralist
economy, “the economically productive work on which herd growth
ultimately depends is performed by the animals themselves, and not
by their human guardians” (p. 222). Nature produces the surplus, so
to speak, which the pastoralist simply protects and then appropriates.
In ranching, by contrast, the surplus is measured in money and is
the product of combining various inputs obtained in the marketplace. Natural productivity gives way to value produced by human labor, congealed in the inputs. This occurred as the railroad and cattle trails connected western rangelands to eastern markets. As early as the 1870s, cattle producers were buying (as well as selling) their animals in the marketplace. This conforms with Webb’s, Worster’s, and Jordan’s treatments in viewing ranching as a market-mediated form of livestock production.

The second distinction concerns access to land. In pastoralism, access to animals is divided (i.e., the animals are property of individuals or households) whereas access to land is common; in ranching, both land and animals are individually allocated and controlled (p. 4f.). On this point, the transformation to ranching occurred later, predominantly in the period from 1907 to 1934, when exclusive use of public lands for grazing was institutionalized in the form of leases. Before leases, under the “open range” system, access to the vast majority of rangelands was legally shared (though individuals made valiant and sometimes violent efforts to monopolize portions of the range). Despite the Spanish derivation of the term “ranch,” then, Spanish and Mexican cattle raising in the New World was not “ranching,” and the Anglo-American open range was a transition period, a hybrid of pastoralism and ranching.

Understood in Ingold’s terms, ranching did not simply spread across North America, monolithic harbinger of the railroad, capitalism, and Anglo culture. It was formed by and through historically specific social relations over the seven decades between the Civil War and the Dust Bowl. This prolonged transformation had profound ecological ramifications, as the worst damage was done between 1880 and 1920. Production became market-mediated and profit-driven well before land tenure arrangements were established that could effectively limit the number of animals grazing the land. Ingold observes that overstocking is endemic to pastoralism, as “every pastoralist strives to maximize his herd, even though the aggregate result of these individual strategies of security is to bring about the catastrophic losses against which they are

5. Leases were instituted for grazing on state lands in Texas earlier, under laws passed in 1879 and 1883, with important precedents for the larger western range. Forest Reserve leases were instituted following 1907. Arizona State Trust Lands were leased for grazing after 1915, under authority of the Enabling Act and State Constitution of 1911–12. The remaining public domain was brought under leases for grazing under the Taylor Grazing Act of 1934.
intended to insure. In short, a system of social relations of production which combines the principles of divided access to animals and common access to pasture contains no intrinsic brake on accumulation” (1980: 207, italics in original).\(^6\) Ranching, by contrast, imposes on each individual the necessity to protect his/her lands from long-term degradation due to overstocking (p. 261f.).\(^7\) Ingold is careful to stress that there is nothing inevitable or teleological about this transformational logic, and that both distinctions are “fraught with ambiguities” (p. 3). Only empirical work guided by theory can elucidate these ambiguities. The empirical, ecological record compels me to begin—despite the preceding cautions—with pre-capitalist livestock production in the area now known as southern Arizona.

**PRE-CAPITALIST LIVESTOCK PRODUCTION**

The first cattle to enter what is now Arizona accompanied Coronado in his exploration of 1540. It appears that this herd was consumed as food or otherwise perished without establishing a breeding population. The first enduring herds arrived with Jesuit missionary Eusebio Francisco Kino, who disbursed cattle and other livestock to the missions and *visitas* he founded in present-day northern Sonora and southern Arizona (the area then called the *Pimería Alta*) between 1687 and 1710 (Wagoner 1952: 10). For Kino, cattle were a necessary component of Christian civilization. Animal husbandry was part of settled

\(^6\) Ingold bases this conclusion on a number of circumstances which collectively resemble Mancur Olsen’s “logic of collective action” thesis and Hardin’s “tragedy of the commons”—arguments which others would read as paradigmatically capitalist. Ingold’s point is that pastoralists aren’t ecologically conservative “by nature,” even though they also are not capitalist in their social relations. For my purposes, the point is slightly different: that capitalist production contains an element of “natural” production—that is, it always presupposes certain factors which aren’t priced and therefore are externalized in the accounting of profits—even while it strives to produce nature and thereby overcome this dependence. It should be stressed that neither Ingold nor the present author views the distinction pastoralist/rancher as seamlessly equivalent to the noncapitalist/capitalist or ecologically destructive/sustainable distinctions.

\(^7\) This argument is made frequently by ranchers today, without persuading many critics. It makes several critical assumptions, foremost among them that the land will never find another, more lucrative use than grazing. Under the pressure of urbanization, this is no longer the case in much of southern Arizona. If these assumptions hold, however, the point is valid. “Contrary to popular belief, the economic optimum (maximum profit) stocking rate is almost always lower (and never higher) than the biological optimum (maximum sustained yield)” (Workman and Fowler 1986: 101).
agriculture, which was viewed as superior to nomadic, hunter-gatherer lifeways associated with "savages"; the relation between people and domesticated livestock was both morally and ecologically symbiotic. Kino’s cattle were descendents of Andalusian breeds, well adapted to the semiarid conditions of the area (Wagoner 1952: 5): The mild winters, abundant grasses, and naturally occurring water sources sustained them without supplementary feed or intensive management. Untended, they became feral and reproduced on their own; kept in domestic state, they provided a reliable supply of milk, meat, hides, tallow, and traction to the local economy.

From Kino’s time until about 1873, cattle raising in the Pimería Alta expanded or contracted depending on the condition of relations with the Indians, especially the Apaches (Wagoner 1952). For some eighty years after Kino’s death in 1711, the Indians held the upper hand. For the most part, Spanish settlement was limited to the Santa Cruz River, concentrated around the presidio at Tubac and missions at Tumacacori and Tucson. The Pima uprising of 1751 expelled missionarics from outlying settlements such as Arivaca. Visiting Jesuit Juan Nentvig reported in 1764 that nearly three hundred ranches and estancias in Sonora (which at that time included present-day southern Arizona) had been abandoned in the preceding seven years, with thousands of head of livestock lost to Apaches and Seris (Nentvig 1980: 27). From 1790 into the 1820s, by contrast, relatively peaceful relations with the Indians allowed a handful of secular cattle operations to occupy favorable locations in the Santa Cruz, Sonora, San Pedro, and Babocomari Valleys. When the peace broke down in the decades after Mexican Independence, these sites were abandoned and their herds reverted to a feral state on the range, where they were hunted as game by Indians and others. In the 1840s and 1850s, U.S. military parties found the remnants of these herds, mostly bulls, to be extremely wild and dangerous. Apache raiding declined after 1873, but it continued to cast a shadow over settlement efforts into the 1880s (Sheridan 1995: 81–97).

The effect of the Indian threat was to prevent the widespread establishment of Spanish and Mexican livestock production in southern Arizona right up to the time of the cattle boom. Although scholars have debated the size and distribution of Spanish and Mexican cattle herds (Haskett 1935; Hastings and Turner 1965: 31; Cooke and Reeves 1976: 84f.; Bahre 1991), the consensus is that pre-capitalist livestock raising did little or no lasting damage to southern Arizona ecosystems. Conrad
Bahre, after citing evidence of significant herds in the 1820s and '30s, seems dubious that there could have been so many cattle yet so little damage:

Considering the general lack of livestock water developments during the early nineteenth century in Arizona (there were no windmills or stock tanks) and the intermittent nature of most streams, it is difficult to believe that the grass and browse in the rangelands adjacent to major sources of perennial water could have supported such high numbers of cattle. . . . Even if there had been large numbers of cattle in the region in the 1820s and 1830s, there is no evidence of overgrazing. . . . That overgrazing was insignificant in the 1820s and 1830s is further substantiated by the fact that most descriptions of southeastern Arizona from 1850 to 1880 emphasize largely pristine vegetation ideal for cattle. (Bahre 1991: 114f.)

The scale of Spanish and Mexican livestock production in present-day southern Arizona was contained within its ecological foundations. Due to the Apaches and other factors, trade in cattle was sufficiently limited that increases in stock were primarily endogenous to the region. Rates of animal reproduction depended directly on cycles of plant reproduction.

**THE GADSDEN PURCHASE**

Southern Arizona—the portion south of the Gila River—became part of the United States through the Gadsden Purchase, negotiated in 1853 and ratified in 1854. Two aspects of the Purchase, which was the last addition of territory in the lower forty-eight states, warrant emphasis. First, the acquisition was motivated largely by the quest for an all-weather transcontinental railroad. Mexico was in a state of political turmoil and badly needed hard currency. Knowing this, President Franklin Pierce sent James Gadsden, a railroad promoter from North Carolina, to Mexico City with authorization to make any one of five deals. Mexican President Santa Anna chose the smallest: almost thirty thousand square miles of land for $10 million (Wagoner 1975). Although significant mineral deposits were later found there, the land was obtained with very little knowledge of or ambition for it, aside from the fact that
it provided a relatively easy way around the southern end of the Rocky Mountains. The Spanish and Mexican settlers in the Purchase area—

who apparently embraced the change of sovereignty after decades of turmoil in Mexico—were neither consulted nor much considered in the deal. That the entire area can be likened to a huge, state-backed real estate venture speaks volumes about the tenor and balance of power of the time.

Second, becoming part of the United States radically altered legal relations between the state, the land, and the inhabitants. Under Spanish and Mexican rule, only large parcels (townsites or agricultural grants) had typically been surveyed and registered (and often these steps were imperfectly completed); everywhere, “traditional understandings, rather than legal documents, provided the foundation for land tenancy” (Officer 1987: 284). The Gadsden Purchase treaty recognized existing property rights, but only if paperwork had been duly filed with Mexican government officials (or, in the case of pre-Independence grants, with Spanish officials). In 1855 and early 1856—after the Purchase had been ratified but before American officials had taken command of the presidio at Tucson—Mexican officials worked to rationalize landownership, provoked by “some of Tucson’s more sophisticated residents [who] made last minute efforts to create a written record of their landholdings” (Officer 1987: 285). Prospective Anglo settlers, miners, and speculators were already on the scene, sometimes assisting or encouraging Mexicans to obtain title to their holdings and subsequently negotiating advantageous deals to become the owners themselves. Opportunities for fraud were abundant; they foreshadowed several decades of speculative maneuvering and legal feuding over the fertile Santa Cruz River bottomlands adjacent to Tucson (Sheridan 1986: 63ff.). By 1862, when U.S. officials ordered all lands within three miles of Tucson titled and registered, almost one-third of Tucson’s 129 lots were under Anglo ownership (Officer 1987: 288ff.) In the long run, the majority of large Spanish and Mexican land grants in Arizona were invalidated by the U.S. Supreme Court for lack of adequate paperwork and/or permanent survey markers (Mattison 1946).

From the Gadsden Purchase forward, land use was increasingly determined by land ownership rather than the other way around. Unclaimed or imperfectly documented lands—the vast majority of the Purchase area—became “public domain” subject to privatization under laws of the U.S. federal government, regardless of historical or tradi-
tional use. In theory, all types of land use rested on exclusive, alienable, state-backed rights to abstractly defined parcels of territory. In practice, however, the arid land would not support agricultural settlement as envisioned in the Homestead Act of 1862, and the majority of land would find no owner. This reality was not squarely acknowledged by federal laws until the Taylor Grazing Act of 1934, by which time it was too late to prevent the damage of the intervening years.

THE CATTLE BOOM:
GLOBAL CAPITAL, LOCAL ECOLOGY

Are you a stock-raiser? If so, here is a veritable paradise for your calling. Millions of acres of fine grass lands are yet unoccupied and can be had for the taking. Here are no northern snows, no Texas blizzards, no disease. . . . The market is at your door, the local demand is steadily on the increase and two transcontinental railroads give you the choice of shipping either to the east or the west. . . . There is yet room for millions of cattle in Arizona . . . and the fortunate man who is in possession of a good range and a few hundred head of cattle has found a short and easy road to fortune. He can sit in the shade of his hacienda, enjoy the good things of life and see his wealth increase on every hill and valley that surrounds him. (Hamilton 1884: 401-2)

In 1870 there were fewer than 40,000 cattle in Arizona, just over one-third of them in the Gadsden purchase area. Twenty-one years later there were one and a half million, with about 400,000 grazing in southeastern Arizona.8 Unlike the earlier Spaniards, Anglo-American settlers had little experience with arid ecosystems. Perennial grasses blanketed the broad valley floors, betraying no hint of the wide variations in annual rainfall and productivity that would later catch cattlemen unprepared. Years of good rain9 fostered an optimistic determination to hang

8. The federal census of 1870 listed 5,132 cattle in the territory; Territorial Governor Safford reported in 1891 a cattle population of 720,940. These numbers were compiled from tax assessors’ records, however, and were recognized at the time to be underestimates. Sheridan (1995: 132, 140) estimates the real numbers to have been about 38,000 and 1.5 million, respectively. For the portion of the total located in southern Arizona, see Wagoner (1952: 36) and Bahre (1991: 117).
on (i.e., not sell) in dry years. A threshold was crossed in the drought of late 1891 to 1893, when 50 to 75 percent of cattle perished. "Allowing cattle to starve during droughts on southeastern Arizona's overstocked ranges probably contributed more than any other factor to rangeland deterioration at the turn of the twentieth century" (Bahrc and Shelton 1996: 1). The damage done can hardly be overstated. In photographs from the time, "hundreds of square miles of rangeland are denuded of cover; the grasses, even the sacaton in the bottomlands, are grazed to the ground; the hills are covered with cattle trails; erosion is rampant; and the oaks and other trees have browse lines" (Bahre 1991: 113). D. A. Griffiths, botanist in charge of field management for the Arizona Experiment Station in Tucson, described Arizona as "a region more completely divested of range grasses than any other in the entire country" (Griffiths 1901: 23). In response to a survey circulated by Griffiths, a prominent cattleman reported in 1901: "Twelve years ago 40,000 cattle grew fat along a certain portion of the San Pedro Valley where now 3,000 can not find sufficient forage for proper growth and development" (pp. 13–14). Large areas where grass had grown waist-high were reduced to dirt. Unusually heavy rains in 1889–90, 1896–98, and 1907–11 fell on denuded soil, and the resulting erosion cut arroyos in the soft alluvial bottomlands of most major valleys (Hastings 1959; Cooke and Reeves 1976: 77). These arroyos, and the fire exclusion and shrub invasion of subsequent decades, constitute permanent changes to the desert grassland ecosystem. If virtually all pastures have improved since then, it is minimally due to the fact that they could not have gotten any worse; some have scarcely recovered to this day.

What caused the massive overgrazing of the late nineteenth century? The obvious answer is cattle. But as we have seen, cattle had been grazing in southern Arizona since the end of the seventeenth century. It was not cattle per se but the numbers of cattle that precipitated the crisis. In this, the railroad was a decisive factor, making possible the movement of large numbers of cattle between western ranges and markets in California, Kansas, Chicago, and farther east. Prior to the arrival of the Southern Pacific in 1881, demand for cattle was dominated by the federal government, whose contracts to provision forts and Indian reservations enabled a few early Anglo cattlemen such as Henry Hooker to get started. But for all its significance in shaping the economy and society of the late nineteenth-century West, the railroad by itself cannot be viewed as the cause of overgrazing; it was a necessary condition but not a sufficient one. Another theory sees the cause in "cultural factors"
characteristic of Anglo-American civilization. The Anglo-American “belief system” commodified nature, viewing it “primarily as raw material for wealth.” Thus “by viewing the grasslands as ‘cattle forage,’ profit-seeking ranchers stocked all available acres of the public rangelands, encouraging their livestock to consume everything palatable” (Hirt 1989: 180). This may be true, but it does nothing to answer the material question: How did the cattle get there in such numbers? Seeing something as a commodity is not tantamount to exploiting it as a commodity. It also ignores the fact that cattlemen were themselves among the first to notice and warn against overstocking (Griffiths 1901; Hastings and Turner 1965: 41; Bahre 1991).

Like a wave, the cattle boom washed heavily across Arizona only after it had broken on the Great Plains. Animals arrived by railroad and on the hoof (and from both east and west) largely in response to deteriorating grazing conditions elsewhere. Imports to Arizona exceeded exports until 1885, when overstocking began to produce serious ecological damage (Wagoner 1952: 44f.); the two went hand in hand. To understand the boom in Arizona, then, we must first understand the boom as a whole, from its origins in the Civil War. The classic account is found in Walter Prescott Webb’s 1931 history, The Great Plains, where he chronicles the rise of what he calls “the Cattle Kingdom.” Although Webb’s geographic determinism and anglocentric cultural triumphalism are today out of fashion, his data concerning the cattle boom and his summary of its historical development remain an apt starting point for our discussion.

During the Civil War, trade between the Confederate states and the rest of the world was blockaded, with increasing effectiveness, by Union ships. Around Texas, trade in the Gulf of Mexico and across the Rio Grande and Mississippi River was suppressed, although a few enterprising individuals pursued a dangerous and lucrative commerce across the border with Mexico (Atherton 1961: 224). In the southern portion of the state were some four million longhorn cattle,10 which multiplied in a more or less feral state while their owners were away fighting. By the end of the war the herds were enormous, wild, and effectively ownerless. Anyone capable of rounding them up on the range and branding

10. The longhorns were descended predominantly from the same Andalusian breeds as Kino’s herds 150 years earlier, crossed with “Anglo American introductions such as the English longhorn” (White 1991: 220). While numerically dominant in the initial spread of cattle across the Great Plains and into southern Arizona, they were quickly crossbred with, or replaced by, other breeds (Jordan 1993: 231–32).
them could put together a herd. Meanwhile, trade with the North was resuming, and demand for beef was high. In 1865, "cattle in Texas could be bought for $3 and $4 per head, on the average; but even so, there were no buyers. The same cattle in the Northern markets would have brought $30 or $40, 'and mature Texas beeves which cost in Texas $5 each by the herd were worth $50 each in other sections of the United States.' It was easy for a Texan with a pencil and a piece of paper to 'figure up' a fortune... They [the Texas cattlemen] took vigorous measures to connect the four-dollar cow with a forty-dollar market. As a matter of fact they did within fifteen years actually deliver to the North the five million head of cattle, and more... At the same time the number of cattle remaining on the breeding ground in Texas was greater than before by more than eight hundred thousand head" (Webb 1931: 216f.). In addition to the five million or so cattle shipped to market, an unknown number (Webb dubs them "the overflow") continued moving north and west to feed on "the free grass of the Great Plains" (p. 216), stocking ranches. In fifteen years, the Cattle Kingdom took over the area known earlier as "the Great American Desert."

In Webb’s account, the cattle boom originated as a normal if rapid market adjustment between western producers and eastern consumers of beef. He assimilates this economic process to the "natural" conditions that underwrote low costs of cattle production: free land, free grass, free water, and nearly free cattle. "The grass would produce cattle with little expense and, in the popular estimation, with less work" (p. 233). In simplified form, this is the pastoralist-ranching hybrid suggested by Ingold’s theory: By appropriating the surplus products of a "natural" process and transporting them to market, early cattlemen profited handsomely.11 Some—such as Ben Snipes, Granville Stuart, and C. C. Slaughter—started with little or nothing and built fortunes from the growth of their herds. Others had significant capital of local origin to begin with; for example, Richard King and Mifflin Kennedy, who had made a fortune dominating trade in the Rio Grande region in the 1850s and ’60s. All of them likely shared the view, exemplified by Webb, that their fortunes were "natural." King—who eventually bought up 600,000 acres of land—once said to his partner, "Land and Livestock have a way of increasing in value. Cattle and horses, sheep and goats, will reproduce themselves into value" (cited in Oppenheimer 1964: 64).

11. "This locational moment—the bringing of the product to market, which is a necessary condition of its circulation... could more precisely be regarded as the transformation of the product into a commodity." (Marx 1973: 534, emphasis in original).
The 1873 depression demonstrated that cattle profits were not simply the "natural" result of grasses and animals. The market price of beef in Chicago and New York determined profits, and it was in turn determined by financial conditions nationally. If anything, natural abundance made circumstances worse: the market couldn't absorb the supply of animals, and prices fell further as cattlemen scrambled to liquidate. Although banks failing in the East were more visible signs of—and contributing factors to—the national panic, the victims in the livestock industry were primarily western banks which had extended credit to cattle traders and cattlemen on the rising market. The crisis thus had the effect of ratcheting the source of credit up a level of scale: cattlemen came to rely on credit from larger banks and syndicates in New England and Great Britain, rather than small western banks (Atherton 1961: 184–92).

As prices rose again through the late 1870s and early '80s, this new configuration of capital flows brought the cattle boom to full fruition and determined both its scale and its ecological destructiveness. The boom began in earnest after 1873, particularly with the arrival of Scottish and British capital between 1880 and 1885. It was a period of massive capital surpluses in the British Empire:

Between 1844 and 1862 the British Parliament passed a series of corporation laws legalizing and regulating investment trusts, which made it easy for even the small investor to share in foreign opportunities. Thus, the flow of investment capital became still larger through changes in British corporation laws just at the time when the cattleman's frontier was opening in the American West. . . . By the late 1870s British capital began to move rapidly into the ranching field. Eastern Scotland possessed large reserves of investment capital, which flowed all the more easily to the American West because Scotsmen had specialized at home for generations in animal husbandry. . . . Awareness that strategic land controlling water rights would soon be gone contributed to the great speed with which funds flowed across the ocean. (Atherton 1961: 189–90)

Lenders and investors used the 1873 crisis as an opportunity to move into U.S. agriculture, beginning with farm mortgages in the Midwest

12. Cf. Graham (1960: 423): "Just at the time the cattle industry in America was proving such a profitable venture for both American and British individuals, an enormous accumulation of capital was taking place in Great Britain. In 1880 the London Economist reported that annual new capital subscriptions had almost doubled in amount between 1877 and 1880." Graham argues that early individual investors, both American and British, made enormous profits, but that later investors, organized as limited liability corporations, ended up losing money.
and quickly shifting to ranching. Just as differentials in the price of beef had provoked Texans to take cattle north, differentials in the price of capital lured British investments west. Interest rates in the West at the time averaged between 1.5 and 2 percent per month, making possible 12.5 to 15 percent dividends to British investors based simply on the interest rate disparity between the two places (Frink, Jackson, and Spring 1956: 137). The surge of investment prompted the delegation of a British Royal Commission to the United States to examine the cattle industry firsthand. In their 1882 report, they confirmed that some investors had earned 33 percent annual returns, and they concluded: “With regard to cattle, for the present the American stockman of the West is possessed of singular advantages; land for nothing, and abundance of it” (cited in Frink, Jackson, and Spring 1956: 141f.; see also Graham 1960: 425; Gressley 1966). With this scal of legitimacy, the pace of investment accelerated further. Between 1880 and 1884, “perhaps as much as 15 percent of the total British investment in western America was in ranching,” and the total for the 1880s is estimated to have been $45 million (Frink, Jackson, and Spring 1956: 319, 223). “During the heyday of open-range ranching in the 1870s and 1880s, the industry probably had a higher proportion of European investment than any other western business” (White 1991: 261).

American incorporated investments in ranching were larger still, though somewhat later in time and therefore probably less lucrative. A spate of federal and state legislation in the late 1880s and early 1890s curtailing foreign ownership of American land and corporations reflected in part a sense of resentment that the Brits had beaten the Yanks to the opportunity for profits in ranching. Working from incorporation records, Gressley (1966: 105) concluded that more than $284 million was invested in ranching in Montana, Wyoming, Colorado, and New Mexico between 1880 and 1900. “A perusal of dozens of ledgers and hundreds of letters between bankers and cattlemen leads to the inescapable conclusion that the Western range cattle industry during the last two decades of the nineteenth century was operated basically on borrowed capital” (Gressley 1966: 145). Ranches without significant capital backing could not survive the droughts and market fluctuations that characterized the industry throughout the period. The hyperbolic claims of Western boosters—such as Patrick Hamilton, quoted at the beginning of this section—have been noted many times, usually in connection with the dashed hopes of disillusioned settlers (Limerick 1987). But investors, most of whom never even came West, were as much the
targets of promotional rhetoric as settlers, and they were perhaps still more carried away. The cattle boom quite simply would not have happened—at least not on the scale that it did—without this massive influx of capital from outside the region. Webb acknowledges this, but dismisses it as “intangible” and “irrational.”

The British influence on the boom was not limited to financial backing. A great many well-to-do and/or aristocratic Englishmen and Scots came to the American West in search of a place to recapture the life of the landed gentry quickly disappearing in their native countries. A central component of this ambition was sport hunting, which became inextricably linked with ranching in the Dakotas, Montana, and Wyoming in the 1880s. A large ranch could serve both lifestyle and investment purposes at once, providing abundant game, social status, and financial returns. “The running of a cattle ranch was pictured [in British periodicals] as something of a sporting affair, for the ‘ordinary work consists of riding through plains, parks, and valleys.’ There were, it was said, only two short seasons of hard work ‘when masters and men, well mounted,’ carried on a roundup” (Graham 1960: 423–24). Affluent Americans from New England and Chicago, such as Teddy Roosevelt and Potter Palmer, joined with the British gentlemen in forming a new aristocracy of the Great Plains:

By the time Theodore Roosevelt bought his first ranch on the Little Missouri in 1883, ultimately at a cost of over seventy thousand dollars for about ten years of use, the aristocratic invasion had gone so far that it was said that nine tenths of those in the stock business were gentlemen. “The new West,” said a writer in Lippincott’s, “is largely peopled today with the sons of families in which learning and culture have long been hereditary.” (Pomeroy 1957: 80)

Through Roosevelt and his associates, the cattle boom’s blend of high society and wilderness experience would go on to shape both the myths of ranching and the nascent environmental movement in the twentieth century.

13. “Any attempt to explain a boom or a panic fails in that we cannot weigh the irrational factor, the contagion which spreads from one member of the group to another until the whole is caught up in a frenzy of buying or selling. Yet we must seek explanations in the tangible things, realizing at the same time that the intangible factor is dominant.” (Webb 1931: 233). In other words, that which is dominant but irrational cannot be accounted for—we must content ourselves with the “rational” story even if it is inadequate as an explanation.
Along with their preference for well-bred people, the British brought something that would have a far greater effect on the Western cattle industry: finer breeds of cattle. Though a handful of cattlemen, such as Richard King, endeavored to own the land their cattle grazed, most did not. Even in Texas, where the public ranges were not owned and administered by federal agencies, nine out of ten early ranchers in the Panhandle had no title to their grazing lands (Jordan 1993: 235). The capital went instead into cattle, especially “improved” breeds imported from England and Scotland: shorthorns, Herefords, and Angus in roughly that chronological order. The breeding of these animals had been stabilized only around 1800, in pursuit of an idea born in the middle of the eighteenth century: to breed “an animal designed to mature early and produce the maximum amount of meat for the least amount of pasture, labor, and feed regardless of his ability to pull a plow” (Oppenheimer 1964: 53–54; cf. Trow-Smith 1959). In Britain in the early nineteenth century, selective breeding of cattle found social expression and reinforcement in competitive stock shows. The animals produced a higher quality of beef, thereby earning a premium in the marketplace and driving out the stringier, tougher meat of the longhorns. To compete in the booming cattle business, it became necessary to purchase “improved” animals (usually bulls); the source of productivity was no longer “raw” nature but a capital expense. This necessity further enabled Eastern and British capital to take over the range cattle industry between 1873 and 1885 (Webb 1931: 231–39). Harold

14. “Most of the ranching ventures were based upon the availability of just such free ranges, where cattle could feed without cost on land belonging to the government. Outright ownership of sites beside streams or around springs gradually became the rule; but the bulk of the land in use cost nothing” (Graham 1960: 422).

15. Jordan’s summary (1993: 236) is worth quoting at length, since it reveals (concedes?) the limitations of a culturalist approach to ranching once the boom took hold.

By the 1880s the big operators had mainly seized control of the ranching industry in Texas extended [the area of the “Texas system,” i.e., the high plains]. The eventual passing of the free-grass era and the trend toward leasing and landownership favored them. Some acquired huge land grants as their base of operation, most notably the famous XIT Ranch in the Texas Panhandle. Others, including numerous “land and cattle companies,” depended upon capital flowing westward from the cities of the East or even Europe, particularly Britain. Speculating in land and livestock, these investors often realized huge profits in the “beef bonanza” of the early eighties. Some large enterprises formed “pools” to permit an even grander scale of operation. These big ranches initiated, in effect, an agribusiness, one fully in harmony with the Industrial Revolution, with all the attendant benefits and curses. Large-scale ranching became little more than a risk-capital venture, more fully commercialized and specialized than before. Cattle raising became the sole activity on many of these big spreads.
Oppenheimer’s characterization of the legendary “Big Spreads” (1964: 61) illustrates the relation between land, capital, and cattle:

The general pattern involves a strong character with capital acquired by inheritance or from some other enterprise moving into an area which consists largely of open range, government lands, and Indian territory. He proceeded to acquire choice tracts of land around the water holes and established his headquarters. In some areas he acquired the watered districts by recorded deed; in other areas he held them by force-of-arms. His cattle ranged in common with other large ranches as far as they could graze from water. The amount of land they occupied was generally limited only by the amount of capital he had available to buy cattle and hire gunmen.

The boom is widely seen as having crested in 1885, when overstocking in the Great Plains led to disastrous die-offs of animals and huge financial losses. Drought in the southern Plains killed thousands of cattle in 1883–84, and owners shipped as many animals as they could to pastures elsewhere, including both the northern Plains and Arizona. More animals perished, in turn, in the blizzards that blighted northern states (especially Montana and the Dakotas) in the winter of 1886–87. By 1888, “much of the western ranching industry was lying in ruins, the victim of severe overgrazing and desperately cold winters. Many thousands of animals were lying dead all over the range, starved and frozen; the survivors were riding in boxcars to the stockyards for rapid liquidation by their owners” (Worster 1992: 41). This may explain why so few scholars of the boom have considered its effects on Arizona, where the damage was just beginning.

It was in response to the crashes of the 1880s, both economic and ecological, that southern Arizona’s rich but fragile desert grasslands became a safety valve for livestock from elsewhere, somewhat the way the West as a whole was seen as a safety valve for growing urban populations in the East during the same period. Faced with large herds of animals, low market prices, no forage, and high debt, operators had little choice but to default or move, and Arizona was one of the last places where free grass remained. The natural water sources were already claimed (Gordon et al. 1883: 85), however, so newcomers had to form partnerships with established operators or, if they could afford it, buy out others’ claims or invest in water developments adjacent to ungrazed
areas (Wagoner 1952: 47ff). Pedro Aguirre, for example, developed waters on his Buenos Ayres Ranch in the mid-1880s and pastured herds on contract for outsiders (Sayre 1999a). According to tax assessors’ records, cattle numbers in Arizona increased from about 120,000 in 1881 to 287,000 in 1885; they reached 721,000 in 1891.\(^\text{16}\) Scholars today agree that the actual numbers were likely double these.

Eternally optimistic, promoters insisted that Arizona’s ranges were green right up to the end. Like Webb forty years later, the territorial governors’ annual reports portrayed the cattle boom simultaneously as the natural result of Arizona’s biogeography and as a relative economic advantage over other areas, where the damage was further advanced. This passage, from the 1885 report, is typical:

> In Arizona a day without bright sunshine is so rare as to be remarkable, and every month in the year cattle run on their ranges and find no lack of feed. These favorable climatic conditions make Arizona the stock-raisers’ paradise. . . . Arizona may be called one vast grazing field; from north to south and from east to west its entire area, with the exception of a strip along the Colorado, is carpeted with a generous growth of rich grasses. . . . [The grass] cures itself upon the stalk, the process being as perfect as if done by the labor of man. During the fall and winter months stock graze upon this seemingly worthless grass and keep fat upon it. . . . With its magnificent climate and abundance of pasture, its large natural increase and small percentage of loss, this Territory can produce beef more cheaply than any grazing region in the United States; this fact has been clearly demonstrated. (Secretary of the Interior 1885: 6–7)

Without a single mention of overgrazing elsewhere, the governor observed that “[d]uring the present year there has been a steady influx of cattle from Texas, Colorado, and New Mexico. Available ranges are eagerly sought after and are being rapidly occupied” (p. 7). The reason for this, he asserted, was the arrival of farmers in those states, rather

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\(^{16}\) The 1881 figure is estimated by assuming that the ratio of cattle numbers from county to county remained roughly the same between 1881 and 1885 in order to arrive at figures for Gila and Cochise Counties, which did not report cattle numbers in 1881. There is no way to test this assumption, but margins of error are so indeterminate for all these figures that one should rely on them only for a gross sense of the boom’s pace in any case.
than ecological crisis. The 1889 report characterized Arizona’s ranges as “nearly if not fully occupied,” and it concluded optimistically:

For three or four years previous to the winter of 1888–89 the rainfall in this Territory was very light, and in consequence, with herds rapidly increasing, considerable apprehension prevailed in regard to the future welfare and promise of this most important industry, and many range men, especially those who embarked in the business during the period of its highest prosperity, threw their herds upon the market, tending greatly to the reduction of prices. During the winter of 1888–89 and the summer following rains have been plentiful, the grazing country is now clothed with an abundance of feed, and an era of great prosperity must follow in consequence. (Secretary of the Interior 1889: 12–13)

The dependence of cattle production on nature was differentially acknowledged: Prosperity was constructed as a “natural” result of rainfall and grasses, whereas low prices and recession were viewed as anomalous social products born of panic. Making money from nature’s work—the peculiar admixture of pastoralism and ranching of the time—was naturalized and thereby effaced; losing money was not natural but social (see Smith 1970: 187f.).

The influx of capital that underwrote the cattle boom has been frequently remarked but rarely analyzed as a factor in the ecological catastrophe that followed. Hirt (1989: 178), for example, notes graphically that “outside capital flooded in from easterners and Europeans seeking to profit from the free forage on the public rangelands,” but he then blames cultural dispositions for the effects of the boom. In his recent history of Arizona, Sheridan observes that those “who had access to capital and credit in San Francisco, New York, Philadelphia, and London, fueled the explosion of the cattle industry. Speculation ran rampant” (1995: 132). Hastings and Turner (alone among ecologists who’ve written on the topic) acknowledge that “the biggest factor, perhaps, was the ease with which the cattle industry attracted investment capital” (1965: 40). William Abruzzi takes the issue somewhat further:

The ultimate cause of regional grassland deterioration [in northern Arizona] lay in the speculative nature of the nineteenth-century range cattle industry and in the effect that livestock speculation had on local range management policies. Because range-stocking
decisions were based on national market considerations rather than on local environmental conditions, the number and density of cattle that were maintained on local ranges was both excessive and unresponsive to the marked variability which characterized local climatic conditions. (Abruzzi 1995: 96)

This analysis—an incongruity between a market, operating on one scale, and an ecological system operating on another—is astute. But the attribution of "ultimate" causality to speculation is imprecise. Abruzzi is careful to distinguish open range cattle ranching from later, regulated practices (the latter, he argues, stabilized range conditions in their much depleted condition), and he implies that the former was speculative while the latter is not. This correspondence is inexact, however. It was debt that structured operators' management decisions:17 "With large sums of money invested in herds, specific prices needed to be obtained if speculators were to recover their investment. When drought conditions prevailed and prices declined in the ensuing buyer's market, the Aztec Company withheld its herd from sale and waited for prices to return to their previous levels" (Abruzzi 1995: 88).

Although speculation undoubtedly increased the volatility of the market and thus the financial risk involved in cattle production, the structural conditions described by Abruzzi have not changed in substance with the advent of more regulated ranching. The weather remains highly variable, and beef prices continue to fluctuate. Credit squeezes are not as severe as they were in the depressions of the 1870s, 1890s, and 1930s, but many ranches continue to be dependent on credit for their financial viability; those that aren't are typically owned by corporations or individuals of significant wealth, which insulates them against bad years. Almost all family-owned ranches (in the area of southern Arizona I've studied, at least) depend in part on non-ranching income earned on the side or by a spouse. As for cattle, as a business it is still the case today that the market and the weather dominate ranchers' concerns, and that debt significantly determines economic

17. Many of the earliest Scottish and British cattle corporations made this explicit in their incorporation agreements: Management received salaries or other compensation only after investors had received specified returns in the form of dividends (Frink, Jackson, and Spring 1956: 148ff.). However, the same structural relation existed between managers and investors whether or not terms such as these were contractually formalized.
survival. The difference between speculative and non-speculative operations, in Abruzzi’s framework, is one of degree.18

Abruzzi is correct that a decisive change occurred after the boom, fundamentally altering the ecological impacts of cattle grazing, but that shift was not from speculation to something else. It was from the pastoralist-ranching hybrid—in which land was “free” because it was (legally) common—to ranching proper. Abruzzi reiterates (unwittingly, I believe) the analysis of H. L. Bentley’s 1898 Department of Agriculture report, *Cattle Ranges of the Southwest: A History of the Exhaustion of the Pasturage and Suggestions for its Restoration,* except that Bentley put speculation second in importance behind “free grass.” Knowing that they did not own the lands on which their cattle grazed, “Every man was seized with the desire to make the most that was possible out of his opportunities while they lasted. He reasoned that there was more grass than his own cows could possibly eat. There was plenty of stock water for five times as many cows as were now on the range. *There was no rent to pay, and not much in the way of taxes, and while these conditions lasted every stockman thought it well to avail himself of them. Therefore all bought cows to the full extent of their credit on a rising market and at high rates of interest*” (Bentley 1898: 8, emphasis added). Numerous other analysts reached the same conclusion in the period up to 1934 (e.g., Thornber 1910; Smith 1899). From the vantage point of the cattlemen and investors alike, free land—and the insecure tenure that accompanied it—was a precondition for speculation.

As a natural product of western rangelands, grass depended on local and regional ecological conditions for its reproduction. As an input in the reproduction and accumulation of capital, however, it was part of a global financial system. The geographical distance between investors

18. Abruzzi appears to take speculation simply as an issue of the “exuberance” of the investors, who in their enthusiasm bid each other up in an effort to get a piece of the action, with scant regard for the productive foundations underlying their enterprise. But the work of Graham (1960) and Gressley (1966) makes it plain that investors were concerned about the “real” basis of ranching, though they could do almost nothing about it and suffered frequently from poor-quality information. Moreover, this interpretation doesn’t help delineate the distinction Abruzzi needs between speculative and non-speculative enterprises. One can only distinguish them retrospectively—speculative enterprises collapse while non-speculative ones do not—which renders the definition tautological and begs precisely the question we seek to explore here: How did economic activities interact with ecological processes? In the case of grazing, the bubble burst on two fronts, more or less simultaneously: The grasses gave out and debts were called in. For a brief discussion of the difficulties of defining “speculation,” see Gressley (1966: 285–86 n. 5).
and cattle herds was bridged by financial arrangements—banks, stock markets, corporations, and other instruments—that represented the value of animals by use of paper shares (see Cronon 1991). These shares were tradable goods in their own right, with a market value that could move up or down regardless of the cattle, the ranges, or the weather, and the real “killings” were to be made here, in buying low and selling high. The elastic relation between paper and reality was the structural keystone of the system, a source of great potential and equally great risk. Accurate information about the material basis of shares was itself valuable, as Graham (1960), Gressley (1966), and Frink, Jackson, and Spring (1956) demonstrate in detail. Many companies formed in Britain bought herds in the West on “book count”—an approximation of the herd based on calf sales or other extrapolative data; on more than one occasion these figures were inaccurate. (Some stateside managers used the natural disasters of the 1880s as opportunities to revise their paper accounts closer to reality, after several years of fudging the numbers to placate faraway investors.) The Economist and other financial journals knew quite well that the boom was at least potentially a confidence game, and the annual reports of cattle companies were scrutinized closely for signs of weakness. But the supply of capital was so great and the early returns of cattle so tantalizing, that exuberance far outweighed skepticism.

Why was there so much capital available? Most scholars have neglected this question, choosing instead to ask who made money. Graham concludes (1960: 444) that British investments yielded no “real profits,” early dividends having been paid out of capital rather than returns. Gressley (1959, 1966) disputes this, pointing out that investors who did not sell out eventually profited, though not until many years after the boom. Both may be right. As in most booms, many investors lost money by buying too high; a few early investors received handsome dividends at first, only to watch the value of their capital vanish in a crash. Honestly or not, some Westerners (including self-refashioned Easterners) reaped windfalls by starting ranches and selling them at over-valued prices to syndicates; others frittered away capital subscriptions by living high on the frontier (Gressley 1959). When the crash came (in 1885 and again in 1893), most investors dumped their stock and wrote off their losses, disillusioned but oblivious to their own role in the debacle. “There were some solid residual benefits, representing, in
effect, an involuntary gift by British investors to their American cousins” (Graham 1960: 421).

The ecological issue is not so much who made or lost money, however, but the genesis of the process itself, beginning with the finance capital. This was a product of imperialism. The British Empire circled the globe, extracting raw materials and agricultural products from colonies and dominating trade on the high seas. At home, agricultural improvement and enclosures tossed small farmers and herders off the land, forcing them to find work in the industrializing cities. Farms, factories, and trade all produced surpluses of capital that could only be plowed back into domestic productive capacity for so long before overproduction began to curtail profits. As had happened to the Dutch before, the decline of British dominance in the world capitalist system was signaled by a turn toward high finance—“financialization”—as capital took the form of paper and was exported in search of new opportunities elsewhere (Arrighi 1994). Arrighi locates the beginning of this stage for Great Britain in the 1840s, and its height from 1873 to 1896. The cattle boom should be viewed as one expression of this international phenomenon.

The structure and operation of this global pastoral-ranching hybrid presupposed the “free” open range; ecological destruction resulted from this combination. The owners of the paper cattle did affect management decisions, as Abruzzi argues. Dividends and share prices were all that they could see and, in many cases, all that they cared about. Ideally, natural productivity and paper productivity would mirror one another, the faraway investor’s pastoralist fantasy being one of “natural” increase through capital appreciation. “The perpetual tendency to try to realize value without producing it is, in fact, the central contradiction of the finance form of capitalism” (Harvey 1985b: 88). But there was a great deal of distortion and potential for illusion depending on one’s position in the structure of capital flows and cattle production. Were profits and losses a function of natural bounty, “irrational exuberance,” or both? In the pastoralist-ranching hybrid of the cattle boom, it was often hard to tell the one from the other. Cattle were frequently constructed as a way to achieve wealth without work, as the passage opening this section illustrates. The result in the 1890s was overstocking, severe overgrazing, a host of related environmental problems, and cattle dying on the range. The unambiguous loser was the range itself, the “bounteousness of nature.”
In summary, four conditions made the cattle boom possible. First, a natural process was subsumed within market-mediated processes of capital accumulation. Cattle eating "free" grass, drinking readily available water and generally following their "natural" instincts produced more cattle, which were shipped to markets elsewhere; the result was, for a time, staggering profits. Second, this form of capital accumulation was more profitable on the open range of the recently pacified West than elsewhere, and it held out the possibility of greater profits than other forms of production and accumulation. A competitive advantage was found and exploited in the natural geography relative to rates of return prevailing in national and international financial markets (see White 1991: 243). Third, means were available for the large-scale movement of capital (as money and as cattle) from one place to another, across this economic-geographical boundary. And fourth, a huge surplus of capital existed and was looking for a form and place to undergo transformation and reproduction as finance capital. Its availability enabled ranchers to expand their herds immensely, while its demands compelled them to disregard ecological limits until it was too late. If any of these conditions had not been met, the cattle boom and subsequent ecological collapse of western rangelands would not have occurred, at least not on the scale that it did. It was not cattle or the railroad19 or culture that stripped bare the grasslands of the arid plains, but all three, driven and united by an unprecedented scale and rate of capital immigration.

CONCLUSION: TOWARDS A CRITICAL POLITICAL ECOLOGY

In the period 1907 to 1934, federal and state land laws changed to secure individual access to publicly owned rangelands in Arizona and throughout the West. These reforms ended the pastoralist-ranching hybrid and completed the formation of ranching proper, even as they institutionalized an uneasy compromise between public and private interests, "natural" carrying capacity and capital-intensive "improvements."

19. It need hardly be pointed out that the railroad was another form of massive capital investment, and that railroad interests were often directly involved in ranching as well as promoting—in booster fashion—settlement schemes of various sorts.
In the twentieth century, “ranchers replaced reliance on the natural production of the land with reliance on a managed and transformed environment” (White 1991: 227), and agencies of the state were integral parts of this “production of nature” (Smith 1984). There is no room here to address these developments; I treat them in detail elsewhere (Sayre 1999b). By way of conclusion, I will instead return to the issue of the cultural definition of ranching.

Ingold’s conceptualization of ranching allows us to recognize the historical specificity of the cattle boom.20 The very factor that distinguished boom-era livestock production from present-day ranching—common access to land—provoked the influx of capital that made the boom so ecologically devastating. Notwithstanding its many cultural continuities, ranching today is structurally distinct from the pastoralist-ranching hybrid of the boom. Unfortunately, scholarly and popular treatments alike have collapsed this socio-historical distinction and defined ranching by its symbols: cattle, cowboys, spurs, big hats, etc. Many ranchers have themselves embraced these symbols and deployed them as “cultural capital.” Yet this culturalist confounding has obstructed cogent analysis of ranching throughout the American West. A critical political ecology must ask why this is so.

As an economic hybrid, the boom capitalized on attributes of both pastoralism and ranching: free land and lush grasses, high market prices, and abundant credit. Yet the mythology of ranching, which emerged after the boom, took its themes almost exclusively from pastoralist features of boom-era cattle raising: roundup, roping and branding, riding all day and camping under the stars, rustlers and lawlessness on the frontier. These are not gone from ranching today, but their

20. In the politically charged debates over ranching today, historical perspective is conspicuously absent, perhaps because history fails to support either side unambiguously. Environmentalists disregard the evidence for Ingold’s (1980) contention that ranching, unlike pastoralism, contains a structural brake on accumulation of animals, refusing to admit that stocking rates have diminished and range conditions have stabilized since leasing systems were implemented. (Note, in this connection, that it does not follow from Ingold’s formulation that ranching entails an incentive to restore degraded range, only to conserve existing resources at the moment that control is secured.) On the other hand, those who would take Ingold’s (and my) arguments as evidence supporting privatization of public lands are mistaken both in their history and in their theory. Historically, the point is moot: the government simply could not have preceded the settlers and speculators into the West and imposed private property rules on land prior to occupation. Theoretically, the argument is a meaningless counterfactual, since there is no guarantee that the grasslands would not have been overstocked anyway, given the lack of knowledge possessed by early settlers about the arid ecosystems.
practical necessity or centrality ended with the closing of the range. They persist in large measure because they have been valorized and ritualized in cultural spectacles such as rodeo and Westerns. What we mythologized, in short, was precisely not ranching, though we call it by that name. It has been both revered and reviled for reasons that ceased long ago to describe ranching as it actually occurs on the ground. Capitalists were drawn to the idea that nature, rather than labor, was the source of wealth, and to the fact that in ranching the proletariat was not only out of sight but quite basically irrelevant. Men like Teddy Roosevelt, by participating in the work of the ranch, could ritually efface social distinctions between capital and labor. In its relation to nature, pastoralism was fundamentally at odds with the dominant industrial system of production, but in the mythology of ranching it carried romantic appeal that helped to naturalize global market production as a democratic, American destiny grounded in the nation’s fecund landscape. It combined and affirmed—however paradoxically—both the “rugged individualism” of the frontier and the financiers’ fantastical visions of wealth without labor, profits without class struggle. For the middle classes, too, growing rich without working has been a tantalizing fantasy. With epithets such as “cattle baron” and “welfare rancher,” critics have simply turned this around, pointing with Protestant fingers at the immorality of unearned wealth. These cultural imaginaries are all the more powerful for being detached from reality.

Mythmakers and critics alike have helped to obscure the lessons of the cattle boom, even as another boom has swept through southern Arizona during the past forty years. The urban boom disguises itself in mythical ranching garb: Subdivisions take the names of the ranches they devour; developers invoke the “ranching lifestyle”—starry skies, expansive vistas, the deer and the antelope, etc.—to promote sprawling developments to buyers at all levels of the income ladder; one meaning of “ranch” in the Oxford English Dictionary is “a single-storey or split-level home.” Like the cattle boom before it, the urban boom capitalizes on “natural” bounty: the abundance of cheap land blessed with views, sunsets, warm weather, and wildlife. It rests, like the cattle boom, on credit, this time in the form of mortgages, and on the exuberance that seized investors wherever rapid population growth appears to guarantee economic expansion. Through highways, water systems, tax policies, and mortgage insurance, governments at all levels subsidize urban growth much as they have done for ranching through most of the
twentieth century. Property owners (including ranchers) reap unearned increments through real estate appreciation; in turn, these gains undermine the economic viability of livestock production and eliminate one of the fundamental preconditions for stewardship: that the land will remain in grazing indefinitely. Critics of ranching point to its economic "irrationality" as proof that public lands grazing should cease altogether, usually without any mention of this larger structural context or the immense ecological impacts that urbanization entails (see e.g., Nelson 1995: 91–120).

The cattle boom demonstrates that environmental change in capitalist societies cannot be understood apart from the dynamics of capital. "Capitalism perpetually strivest...to create a social and physical landscape in its own image and requisite to its own needs at a particular point in time, only just as certainly to undermine, disrupt and even destroy that landscape at a later point in time. The inner contradictions of capitalism are expressed through the restless formation and re-formation of geographical landscapes" (Harvey 1985a: 150). Confronted with rising costs and stagnating returns, some progressive ranchers have in recent years embraced the pastoralist basis of range livestock production, seeking to harness "natural processes" to improve forage production, water and nutrient cycling, and wildlife habitat simultaneously. The larger capitalist economy has found another way around the complex, unpredictable dynamics of climate and vegetation, however: an urban economy based on the relatively tractable environment required (and produced) by industrial, service, and public sector production.

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