

NATURAL RESOURCE PROPERTY CUSTOMS

Monika U. Ehrman

ABSTRACT

This Article examines the role that property customs played in the development of American mining law. It analyzes how small communities of international miners developed systems of property governance and how those customary systems led to the shaping of mineral ownership and mining legislation in America.

Natural resource communities often rely on custom as a form of governance and assertion of property ownership. Resource-based knowledge transfer and relative isolation from established legal systems ensured these customs flourished. But the legislation of these natural resource property customs does not necessarily promote a governance framework that benefits all stakeholders.

This Article begins with a study of mining communities and how a unique system of property ownership flowing from natural resource customs encouraged mineral development and wealth accumulation. These customs were developed by global mining communities over centuries and even millennia. They were brought to the United States in the 1800s where they took root and were eventually enacted as the 1872 General Mining Law, which remains in effect today. In the modern era of space exploration, e-commerce, and internet, the U.S. follows the same Civil War-era mining law, enacted prior to the invention of the lightbulb and automobile.

Because of these original mining customs, the U.S. government does not collect any royalty revenue or even know what is produced from hard rock mines on public domain lands. Moreover, the miners' customs were also adopted to govern other resources, such as water. The prior appropriation doctrine, which uses a priority system of rights and largely governs water in the arid West, originates from the mining communities. The doctrine's use has exacerbated conflicts as water becomes scarce. This Article advises that understanding the origin of legislated property customs is necessary before their continued use and application to other natural resources.

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INTRODUCTION

The story of mining is the story of civilization. From the development of metal currency and rudimentary tools to the extraction of fossil fuels and rare earth minerals necessary for renewable energy technology, mining is fundamental to human advancement. The United States' story is no different. The country possesses an abundance of mineral wealth,¹ along with the engineering ingenuity of a diverse immigrant body. A lesser-known tale is the surprising role of international property customs in the development of American natural resources law.²

Ultimately, it was a unique system of natural resource customs developed by global mining communities over centuries and millennia that allowed mineral development and the ensuing wealth accumulation to flourish.³ The most important of these mining customs centered on property law. The customs permitted miners to cross lands owned by another in search of minerals and to mine veins of minerals that crossed tracts owned by another without any trespass violation or obligation to share revenue with a non-sovereign. These customs were brought to the United States in the 1800s where they took root and were eventually enacted as the 1872 General Mining Law, which remains in effect today. The General Mining Law governs the extraction of minerals on federal lands and remains fundamentally unchanged since President Ulysses S. Grant signed it to promote westward expansion.

Under this archaic law: (1) the United States government does not collect any royalty revenue or even know what is produced from hard rock mines on public domain lands; (2) miners are not obligated to share in the cost of cleanup for old, abandoned mines; and (3) miners are not subject to modern environmental standards to protect water quality, farmland, and fish and wildlife habitat from the release of toxic chemicals. Moreover, these mining customs became the foundation of Western water law with the adoption of the “prior appropriation” doctrine, which is becoming increasingly untenable

1. This mineral wealth was essential to the resources necessary to declaring independence from Great Britain and supporting the Union during the Civil War. See e.g., Zachary Hubbard, *Stories from the Trail: Fincastle County and Independence*, VA. DEP'T CONSERVATION & RECREATION (Mar. 24, 2020), <https://www.dcr.virginia.gov/state-parks/blog/stories-from-the-trail-fincastle-county-and-independence> [https://perma.cc/F5CL-T4XX]. The New River lead mines, near Fort Chiswell (the county seat of Fincastle County) provided lead needed for ammunition during the Revolutionary War. See discussion *infra* Subpart 1.

2. Natural resources law is a broad field, encompassing such diverse fields as agriculture, energy, environment, forestry, mining, oil and gas, public lands, water, and wildlife.

3. Tobias Lewin, *The History of Government Property in Minerals in the United States*, 16 ST. LOUIS L. REV. 245 (1931); John C. Lacy, *The Historic Origins of the U.S. Mining Laws and Proposals for Change*, 10 NAT. RES. & ENV'T, no. 1, Summer 1995, at 13–20 [Hereinafter Lacy, *Historic Origins*]; K.K. DuVivier, *Animal, Vegetable, Mineral—Wind? The Severed Wind Power Rights Conundrum*, 49 WASHBURN L.J. 69, 77–85 (2009); John C. Lacy, *Going with the Current: The Genesis of the Mineral Laws of the United States*, 41 ROCKY MTN. MIN. L. INST. 10–1, 10–3–4 (1995) [Hereinafter Lacy, *Going with the Current*].

in an age of widespread droughts and depleting water sources.⁴ The failure to recognize and acknowledge these foundational customs results in continuing outdated and outmoded legislation. For example, over a century and a half later—in an era of space exploration, e-commerce, and internet—the country follows the same Civil War-era mining law, enacted prior to the invention of the lightbulb and automobile. The General Mining Law is the same mining law that the U.S. government and private institutions intend to rely on for extraterrestrial (and extrajurisdictional) ventures for asteroid and lunar mining. These hard rock mines hold the critical minerals necessary for renewable energy projects and other defense and essential infrastructure. Similarly, jurisdictions continue to consider custom-based natural resource governance for other natural resources (e.g., adoption of the prior appropriation doctrine for wind resources.)

The economic impacts of antiquated laws are staggering. For example, the General Mining Law does not require federal royalty collection or even the reporting of minerals extracted on public lands.⁵ This lack of federal revenue collection is directly attributable to the absence of governance over the mining communities and the stubbornness of the miners. The government failed to adopt or create a revenue leasing system and the miners refused to acknowledge government ownership. Likewise, Western communities face devastating water shortages that are not easily remedied because of the miners' custom of diverting water for their own use. The prior appropriation doctrine, which allocates water ownership based on seniority of beneficial use, arose out of mining communities.

Any discussion about the future of American natural resources law requires an understanding of its origins. Specifically, an analysis of U.S. mining law begins with the foundational relationship between customary property traditions and mineral resources. Failing to understand the role of these customs leads to an exacerbation of conflicts as the customs are propagated under existing and future legislation. This Article examines the history of American natural resource customs in mining systems and how those traditions have led to our current governing mining law, in addition to Western water law's prior appropriation doctrine. It analyzes how small communities of miners developed systems of property governance and how those customary systems led to the shaping of natural resource ownership and legislation in the United States. Part I of this Article discusses natural resource property customs and their

4. While this Article mainly focuses on mining law, it is clear and dually applicable that the rationale for these natural resource laws is founded upon those ancient natural resource customs.

5. Juliet Eilperin, *Mining Firm Profits from Public Lands Remain a Mystery*, *New GAO Study Shows*, WASH. POST (Dec. 11, 2012), https://www.washingtonpost.com/national/health-science/mining-firm-profits-from-public-lands-remain-a-mystery-new-gao-study-shows/2012/12/11/c3416110-43c1-11e2-8061-253bccfc7532_story.html [https://perma.cc/39PX-V4XG].

theoretical framing. Part II provides a historical overview of American mining development, including the California Gold Rush. Part III discusses the classification of subsurface property and the adoption of mining customs by international mining communities, and then investigates the formation of U.S. mining law. Part IV and the Conclusion discuss how the adoption of custom or the continued application of custom-based legislation requires a critical reexamination to ensure efficient use and conservation of natural resources.

I. NATURAL RESOURCE PROPERTY CUSTOMS

Custom is a longstanding origin of property rights.⁶ Often, in the absence of an established property framework, “communities adopt and follow customs and norms to create and order property rights.”⁷ For inherently public property, such as natural resources, custom may indeed be a preferred source of property rights.⁸ Relying upon a theory of custom to establish property rights requires a public assertion of “ownership of property under some claim so ancient that it antedates any memory to the contrary.”⁹ In *The Comedy of the Customs*, Carol Rose challenges the traditional notion that private rights are a superior solution to the management of property, focusing on “inherently public property,” such as natural resources.¹⁰ She examines the origin and role of custom in property, noting:

Customary claims originated in ancient British legal doctrine, whereby residents of given localities could claim rights as “customs of the manor” overriding the common law. Blackstone noted that some localities had their own customary rules for such matters as inheritance and the time and manner of rental payments. To be held good, a customary right must have existed without dispute for a time that supposedly ran beyond memory, and it had to be well-defined and “reasonable.” In British law, custom had traditionally supported a community’s claims to use a variety of lands in common: for example, manorial tenants’ rights to graze animals, gather wood, or cut turf on the manor commons. Though many of these rights had

6. See Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 714 (1986) and Henry E. Smith, *Community and Custom in Property*, 10 THEORETICAL INQUIRIES L. 5 (2009). For an example of natural resource custom, see Anthony Scott & Georgina Coustalin, *The Evolution of Water Rights*, 35 NAT. RES. J. 834 (1995); David J. Bederman, *The Curious Resurrection of Custom: Beach Access and Judicial Takings*, 96 COLUM. L. REV. 1375 (1996); and Timothy M. Mulvaney, *Walling Out: Rules and Standards in the Beach Access Context*, 94 S. CAL. L. REV. 1 (2020).

7. Gregory M. Duhl, *Property and Custom: Allocating Space in Public Places*, 79 TEMP. L. REV. 199, 200 (2006) (examining food cart vendors and the role of custom in spatial ordering).

8. *Id.* at 200 n.6 citing Carol Rose, *The Comedy of the Commons: Custom, Commerce and Inherently Public Property*, 53 U. CHI. L. REV. 711, 742 (1986) (suggesting that custom is sometimes an appropriate source of property rights for “inherently public property” such as natural resources).

9. Rose, *supra* note 6, at 714.

10. *Id.* at 720 and Duhl, *supra* note 7, at 200 n.6.

vanished by the nineteenth century, some communities' customary claims to use lands persisted.¹¹

Rose explores early American jurisprudence and the reluctance to embrace custom,¹² observing that custom “thus suggests a means by which a ‘commons’ may be managed—a means different from exclusive ownership by either individuals or governments.”¹³ A managed commons may in fact be more efficient than individualized private ownership because administrative costs are low.¹⁴ During the settlement of the American West, “settlers treated land, water, and other resources as a commons, and managed them through their own customs. It was only with the arrival of increasing numbers of claimants with conflicting claims that customs were formalized into law.”¹⁵

American mining law originated in the historic customs of miners who traveled to the American West from countries with long histories of mining. Their customs began with the creation of mining districts, which were efficient due to the geological and geographical diversity of the mineral resource. One reason for the success of the customary system was the very nature of the resource. Unlike many natural resources, minerals are typically not a visible resource—they remain hidden beneath the surface.¹⁶ Only those within the community are generally aware of their nature and potential for development. Moreover, the insular nature of many natural resource communities means that they are relatively closed to disruption from entrants, who may influence or alter custom. Finally, the geographic location of mines, typically in mountainous regions, adds another physical barrier to entry, further isolating communities and strengthening custom. Mining required a character and discipline foreign to other visible natural resource fields—descending into the dark depths of the earth required an iron will and unwavering trust in fellow miners. “Mining communities were almost unique in their outlook and support for each other. No industry centers itself in the middle of a community like mining.”¹⁷ It was no wonder that their customs survived the centuries.

11. Rose, *supra* note 6, at 740–41. Rose’s discussion likely applies to the origin of American property law.

12. *Id.* at 741 (noting “In the early nineteenth century, some American courts seemed willing—albeit reluctantly—to acknowledge a limited doctrine of customary claims, even though, as one court said, customary law was ‘prejudicial’ to agriculture, and ‘uncongenial with the genius of our government and with the spirit of independence’ of our farmers”).

13. *Id.* at 742.

14. *Id.* at 744.

15. Rose, *supra* note 6, at 744, citing Anderson & Hill, *The Evolution of Property Rights: A Study of the American West*, 18 J.L. & ECON. 163, 169–78 (1975); see Stephen J. McCurdy, *Field and Public Land Law Development in California 1850–1866: A Case Study of Judicial Resource Allocation in Nineteenth-Century America*, 10 LAW & SOC’Y REV. 235, 240–46 (1976) (studying gold mining claims); J. Umbeck, *A Theory of Contract Choice and the California Gold Rush*, 20 J.L. & ECON. 421, 434–37 (1977).

16. Monika U. Ehrman, *Hidden Resources*, 13 UC IRVINE L. REV. 1, 7 (forthcoming 2023).

17. Rosemary Power, *‘After the Black Gold’: A View of Mining Heritage from Coalfield*

II. A BRIEF HISTORY OF MINING IN AMERICA

Mining is an ancient practice.¹⁸ Minerals, especially precious metals, were used as an early form of currency.¹⁹ The quest for mineral resources was a strategic driver of territorial expansion and conquest. Metal coinage was used to pay for supplies, ships, and labor, which subsequently required military expansion to accumulate additional metallic and currency resources. Empires such as the Macedonian, Sumerian, Ancient Greeks, and Ancient Romans expanded favoring conquests of lands with existing mining operations.

A. *Pre-American and Colonial Mining*

American mining predates the Colonial period and may have been practiced by a migratory indigenous population, who arrived prior to more recent Native American populations.²⁰ Some of these ancient sites may be as old as the third millennium BC.²¹ Although no written history exists about this prehistorical mining development, geoscientists and prospectors describe

Areas in Britain, 119 FOLKLORE 160, 160 (2008).

18. Even the chronologic system of archeologic and information periods reference minerals and alloys like stone, bronze, iron, and silicon. The Ngwenya Mines (Lion Cavern), in modern-day Eswatini (formerly Swaziland) revealed evidence of an ancient iron ore mine operation dating back to 40,000 BC. U.N.E.S.C.O. World Heritage Convention, Ngwenya Mines, <https://whc.unesco.org/en/tentativelists/5421> [<https://perma.cc/XS85-GVSY>]. MICHAEL COULSON, *THE HISTORY OF MINING* 6 (HARRIMAN HOUSE, 2012). The subsequent discovery of metallurgy was the catalyst that propelled man from the Stone Age to the Bronze Age. See Alan Cottrell, *AN INTRODUCTION TO METALLURGY* 1.1 (Routledge, 2d. Ed. 2015) (1975) (defining metallurgy). But alloying required labor-intensive efforts to uncover, transport, and process the minerals. During Antiquity and the global colonial period, large mines often used enslaved people to power these industrial operations. See e.g., A.E. Zimmern, *Was Greek Civilization Based on Slave Labour*, 2 SOCIOLOGICAL REV. 159, 163–65 (1909) (describing the appalling mine conditions worked by the enslaved miners) and Andrés Reséndez, *Perspective: The Other Slavery* 4 (Smithsonian) (describing a system of enslavement of Native Americans by Spaniards, Mexicans, and Americans for mining and other activities).

19. The cowrie shell was used as a form of currency, predating and coexisting with metallic forms in India and Central Asia. Metallic coinage was later favored after the development of mining. Bin Yang, *The Rise and Fall of Cowrie Shells: The Asian Story*, 22 J. WORLD HIST. 1, 2, 7–9 (2011) (footnotes omitted) (citing Deena Bandhu Pandey, *Cowries as a Monetary Token in Ancient India*, 28 J. NUMISMATIC SOC. INDIA 129 (1966)).

20. Michael Coulson's historical review of mining details discoveries of ancient mine sites in the Great Lakes and Western regions of the United States. In one example, the predecessor to 3M, Minnesota Mining, discovered an ancient copper site in Michigan, replete with stone hammers and mining tools. The mine set-up required an understanding of the copper vein geology and extraction process, which the unknown miners accomplished using a gallery that had been excavated subsurface. In another example, on Isle Royale in Lake Superior, more mine sites were found with pits sunk 60 feet and extending two miles to expose copper veins. An estimated 500,000 tons of ore may have been mined over 1,000 years. COULSON, *supra* note 18, at 37–38. (detailing discoveries of ancient mine sites in the United States).

21. *Id.* at 38.

discovering prehistoric mining sites in areas such as modern-day Michigan and Utah, about which the then-present tribal members have no cultural memory.²² In contrast, the Ancestral Puebloans,²³ who lived on the Colorado Plateau, mined turquoise and salt in what is now Nevada.²⁴ However, a lack of tribal written or oral history hinders the development of a resource origin story; and academics hesitate to rely on reporting by culturally-biased sources.²⁵

The quest for resources was central to the European colonizers in their empire-building journeys to North America. Although gold and silver were the preferred precious metals, the Spanish (and then the Mexicans) found an abundance of copper and other metals in New Mexico and Arizona.²⁶ Accounts detail an initial reluctance of the Indigenous peoples to assist the Spaniards and Mexicans to mine veins, followed by opposition from local tribes against the foreign and domestic mine operators.²⁷ The American government, in cooperation with the mine operators, disposed of this opposition by removing the original inhabitants.²⁸ Indeed, the eventual exile and reloca-

22. *Id.*; see also Charles Whittlesley, *Smithsonian Contributions to Knowledge: Ancient Mining on the Shores of Lake Superior* (Smithsonian Inst. 1863), available at https://scienceviews.com/ebooks/ancient_mining/index.html [<https://perma.cc/D2JU-JVB7>]. But the author herself notes that such testimony is likely affected by cultural and racial bias.

23. Sometimes referred to as the Anasazi Indians. The term “Anasazi” is a Navajo term meaning *enemy ancestors*. As a result, modern Native Americans may prefer the name “Ancestral Pueblo People” or “Ancestral Puebloans.” Note that some Navajo contest the definition of “Anasazi,” stating it instead means “those who came before us.” Archaeology, *Insider: What’s in a Name*, Vol. 59 Number 4 (July/Aug. 2006), <https://archive.archaeology.org/0607/news/insider.html> [<https://perma.cc/94SW-5KMN>]. This article refers to the Anasazi as “Ancestral Puebloans,” following the National Park Service’s treatment. See e.g., *Mesa Verde National Park: People*, NATIONAL PARK SERVICE, <https://www.nps.gov/meve/learn/historyculture/people.htm> [<https://perma.cc/PJ39-YBXH>].

24. Sharon Hull, Mostafa Fayek, F. Joan Mathien & Heidi Roberts, *Turquoise Trade of the Ancestral Puebloan: Chaco and Beyond*, 45 *J. ARCHAEOLOGICAL SCI.* 187, 188 (2014) (noting that “[e]vidence of prehistoric turquoise mining has been documented from various western resource areas . . . , suggesting that these regions may have been important resource areas for the Ancestral Puebloan.”) The Ancestral Puebloans’ native lands are rich in mineral resources, particularly those necessary for energy, including coal, petroleum, and uranium. See William Willard, *The Anasazi Legacy Is the Light of the Jurassic Sun*, 7 *STUDS. IN AM. INDIAN LIT.* 37, 37 (1995), <https://www.jstor.org/stable/20736882> [<https://perma.cc/GH4S-AEEX>].

25. See e.g., Charles Whittlesley, *Smithsonian Contributions to Knowledge: Ancient Mining on the Shores of Lake Superior* (SMITHSONIAN INST. 1863), available at https://scienceviews.com/ebooks/ancient_mining/index.html.

26. COULSON, *supra* note 18, at 62.

27. *Id.* at 63.

28. Native Americans have long possessed a sacred and cultural relationship with natural resources within their environments that was originally dismissed by non-Native Americans as primitive or trivial. These colonizer-central narratives remove the culpability of Europeans and Americans in the systematic taking of natural resources from the Native Americans, who predated their arrival. See generally Jessica A. Shoemaker, *Transforming Property: Reclaiming Indigenous Land Tenures*, 107 *CAL. L. REV.* 1531 (2019) (examining

tion of Native Americans to federally-created reservations was motivated by the desire of Americans to take possession of natural resources from the Indigenous populations.²⁹

Both the British and French continued mineral exploration and operation through the 18th century.³⁰ The Jamestown settlers first discovered iron ore in North Carolina in 1585, using it for tools and construction materials for their new settlements.³¹ But the mined iron ore could not be smelted³² in the colonies and was instead shipped back to England to be smelted in local ironworks.³³ Similarly, French traders discovered outcroppings of lead ore as they voyaged down the Mississippi River.³⁴ Their 17th century discovery spawned lead mines in the Mississippi Valley, which were some of the earliest documented mining operations in the colonies.³⁵ Lead was an immensely valuable metal, used for ammunition for the rifles preferred by traders and trappers.³⁶ Thus, even with an abundance of mineral wealth, the lack of established industrial process and enterprise in the colonies created barriers, not only to industrial growth, but also to independence.³⁷

potential alternatives to American Indian land tenure).

29. The protection and repatriation of Native American land is an enduring issue. In southern Arizona, the San Carlos Apache Tribe is contesting the copper mining site proposed by Rio Tinto's & BHP's Resolution Cooper. Benedict Moran, *In Arizona, a Struggle Over a Sacred Site of the Apache Tribe*, PBS NEWSHOUR WEEKEND (Mar. 7, 2021, 5:17 PM), <https://www.pbs.org/newshour/show/in-arizona-a-struggle-over-a-sacred-site-of-the-apache-tribe> [<https://perma.cc/2B7T-YRSP>]; Sahar Akbarzai, *Arizona Democrat Reintroduces Bill to Protect Sacred Apache Site from Planned Copper Mine*, CNN (Mar. 18, 2021, 3:40 PM), <https://www.cnn.com/2021/03/18/politics/oak-flat-copper-mine-legislation/index.html> [<https://perma.cc/5RND-YVZ2>].

30. COULSON, *supra* note 21, at 63–68.

31. *Id.* at 64.

32. A metallurgic process involving heat whereby a metal is extracted from ore.

33. American ironworks were only established in the 1600s. Steven A. Walton, *Iron Beginnings in America*, CENTER FOR MEDIEVAL STUDIES AT THE PENNSYLVANIA STATE UNIVERSITY, <https://www.engr.psu.edu/mtah/about.htm> [<https://perma.cc/A6Y7-LYKC>] (last visited Jan. 31, 2023). The development of the iron industry advanced in the United States with the discovery of iron deposits in northwest Connecticut. See Ed Kirby, *Salisbury Iron Forged Early Industry*, CONNECTICUT HISTORY (July 26, 2022), <https://connecticuthistory.org/salisbury-iron-forged-early-industry> [<https://perma.cc/K4KT-WUF3>] Consequently, Connecticut is referred to as the “cradle of American mining.” COULSON, *supra* note 21, at 64–65 (smelting required high heat and the forest-covered lands of the northeast United States were razed for timber as a fuel source).

34. COULSON, *supra* note 21, at 66.

35. *Id.*

36. The treatment to extract the lead from the mined material required placing the mined material within a bowl over a large log fire. The metal was then shaped into bars and often shipped back to France, where it was used in various processes. *Id.* at 67.

37. *Id.* at 64.

B. *Mining in 19th Century America: The California Gold Rush*³⁸

The California Gold Rush forever altered the course of American natural resource development. Gold was first found near Sacramento on January 24, 1848.³⁹ The discovery was only eight days prior to the Treaty of Guadalupe Hidalgo, which transferred 529,000 acres of land,⁴⁰ including present-day California, to the United States from Mexico following its defeat in the Mexican-American War.⁴¹ Worried that news of the discovery would place

38. The California Gold Rush was not the first in the United States. Gold was first discovered in North Carolina and continued to be produced there into the 20th century. COULSON, *supra* note 21, at 105. In fact, the first gold minted by the U.S. government in 1793 was from North Carolina. CURTIS HOLBROOK LINDLEY, A TREATISE ON THE AMERICAN LAW RELATING TO MINES AND MINERAL LANDS WITHIN THE PUBLIC LAND STATES AND TERRITORIES AND GOVERNING THE ACQUISITION AND ENJOYMENT OF MINING RIGHTS IN LANDS OF PUBLIC DOMAIN § 29 N. 5 (3d ed., Bancroft-Whitney 1914) [hereinafter “LINDLEY ON MINES”]. Gold was also discovered in neighboring South Carolina; its Haile and Brewer mines operated for over a century. However, the Carolinas’ mines and their output were small, which is why this article—and much of American mining history—focuses on California and the subsequent gold rush states (e.g., Colorado, Arizona, Alaska, etc.). COULSON, *supra* note 21, at 105.

39. Stuart Thornton, *Gold Fever*, NAT’L GEO. RES. LIBR. (Jan. 21, 2011), <https://www.nationalgeographic.org/article/gold-fever> [<https://perma.cc/SJ9K-D645>] (describing the California Gold Rush and its effects on state development and the economy). Although gold was discovered in California in 1848, the public is more familiar with the term “49ers,” which is also referential of the California Gold Rush. The American National Football League franchise, the San Francisco 49ers, references the year 1849, in which many prospectors began arriving to the state after the 1848 discovery. AJ Willingham, *Why the San Francisco 49ers are Called the 49ers*, CNN (Feb. 1, 2020, 1:30 PM), <https://www.cnn.com/2020/02/01/us/super-bowl-49ers-san-francisco-name-why-trnd/index.html> [<https://perma.cc/T3NP-SQ7V>]. Although Super Bowl season with the San Francisco team may result in light-hearted name origin stories, there is less serious discussion of the unspeakable atrocities and violence committed by those prospectors and others. See Bruce Barcott, *The Real Story of the 49ers*, THE ATLANTIC (Feb. 2, 2020), <https://www.theatlantic.com/ideas/archive/2020/02/real-story-49ers/605911> [<https://perma.cc/S7XQ-A2SJ>] (detailing the genocide of Native Americans by the California gold prospectors and the state government’s complicity).

40. Also encompassing the present-day states of Nevada, Utah, and portions of Arizona, Colorado, New Mexico, and Wyoming. Christine A. Klein, *Treaties of Conquest: Property Rights, Indian Treaties, and the Treaty of Guadalupe Hidalgo*, 26 N.M. L. REV. 201, 201 (1996).

41. See generally RICHARD GRISWOLD DEL CASTILLO, THE TREATY OF GUADALUPE HIDALGO: A LEGACY OF CONFLICT 3–6 (UNIV. OF OKLA. PRESS 1990) (reviewing background on American expansionism and its role instigating the Mexican War). The expansionist period of American history centered around the Manifest Destiny ideology and was embraced by statesman and settler alike. American aggression and arrogance in both its declaration and resolution of the war culminated in a treaty that created incredible resource disparity in Mexico. Ranging from land to water and mineral rights, the disparity further marginalized and harmed indigenous and enslaved populations in the United States. For example, Southern opposition to the war related not to its human indecency, but to fear that “the acquisition of a large nonwhite, nonslave (Mexican) population would have an undesirable effect on blacks, encouraging their aspirations for freedom.” *Id.* at 5.

newfound wealth in Mexican coffers, American legislators feverishly attempted to withhold news of and title to the mineral wealth from Mexico.⁴²

With the treaty's execution came the emergence of a grander America; but it also heralded the further and future mistreatment of minorities and people of color. Mexicans remaining in the encompassed treaty territory became Mexican-Americans, which would lead to a perpetual struggle for voice and identity in America.⁴³ Likewise, a robust Indigenous population would face intense conflict and brutal massacre at the hands of the expansionist U.S. government and citizenry; incessantly crying Manifest Destiny as they inflicted tragedy.⁴⁴ Furthermore, the call to build infrastructure, such as railroads to connect the country and its mines, catalyzed the migration of thousands of Chinese and other immigrants. These groups were poorly paid and subjected to dangerous working conditions. They were "denied a path to citizenship, victimized by violent reaction, [and] yet without them America would be a different and a poorer place."⁴⁵

42. See generally, JOHN F. DAVIS, CALIFORNIA ROMANTIC AND RESOURCEFUL 12, 15–16 (1st ed. 1914), noting:

James W. Marshall made the discovery of gold in the race of a small mill at Coloma [Sutter's mill], in the latter part of January, 1848. . . . At the time of Marshall's discovery, the United States was still at war with Mexico, its sovereignty over the soil of California not being recognized by the latter. . . . On the 12th of February, 1848, ten days after the signing of the treaty peace and about three weeks after the discovery of gold at Coloma, Colonel Mason did the pioneers a signal service by issuing, as Governor, the proclamation concerning the mines, which at the time was taken as a finality and certainty as to the status of mining titles in their international aspect. "From and after this date," the proclamation read, "the Mexican laws and customs now prevailing in California relative to the denouncement of mines are hereby abolished." Although, as the law was fourteen years afterwards expounded by the United States Supreme Court, the act was unnecessary as a precautionary measure, still the practical result of the timeliness of the proclamation was to prevent attempts to found private titles to the new discovery of gold on any customs or laws of Mexico.

43. Pamela Oliver, *What the Treaty of Guadalupe Hidalgo Actually Says*, RACE, POLITICS, JUSTICE BLOG (July 12, 2017), <https://www.ssc.wisc.edu/soc/racepoliticsjustice/2017/07/12/what-the-treaty-of-guadalupe-actually-says> [<https://perma.cc/QYL7-BHY8>]; see also Jon M. Haynes, *What is it about Saying We're Sorry? New Federal Legislation and the Forgotten Promises of the Treaty of Guadalupe Hidalgo*, 3 THE SCHOLAR: ST. MARY'S L. REV. ON RACE & SOCIAL JUSTICE 231, 232–36 (2017) (revealing the property conflicts that arose subsequent to the execution of the Treaty of Guadalupe Hidalgo were resolved against those holding interests that dated back to Spanish or Mexican title even though the treaty provided that "Mexican property holders were to retain full enjoyment and protection of their property as if they were citizens of the United States.") *Id.* at 232.

44. Edward D. Castillo, *Short Overview of California Indian History*, STATE OF CAL. NATIVE AM. HERITAGE COMM'N, <http://nahc.ca.gov/resources/california-indian-history> [<https://perma.cc/BRJ8-3QQB>].

45. Michael Hiltzik, *Chinese Immigrants Helped Build California, but They've Been Written out of its History*, L.A. TIMES (Apr. 5, 2019, 6:30 AM), <https://www.latimes.com/business/hiltzik/la-fi-hiltzik-chinese-immigrants-history-20190405-story.html> [<https://perma.cc/BRJ8-3QQB>].

The 1848 discovery of a few small gold nuggets near Sacramento, by a carpenter from New Jersey, triggered prospectors from around the world to engage in a colossal pursuit for the precious metal.⁴⁶ Cities emptied, homes were abandoned, and thousands migrated to camps in California,⁴⁷ seeking the dream of instantaneous wealth gathered only with pan, pick, and tremendous fortitude.⁴⁸

But Midas's call resonated with another community: a diverse group of immigrants from countries whose rich, historic mining customs and knowledge would permanently alter the course of American natural resource development and ultimately block resource revenue to the federal government. There were the English miners from Cornwall, where tin had been mined since 2000 BC, heralding British entry into the Bronze Age;⁴⁹ the German hard rock miners, whose Saxon ancestors had mined metals since Charlemagne became Emperor of the Holy Roman Empire;⁵⁰ and the silver and gold miners of Mexico and Peru, where the Indigenous populations searched for minerals millennia before explorers began their quest for the New World.⁵¹ By 1852,

cc/4EJU-VRC6].

46. COULSON, *supra* note 21, at 95.

47. *Military Governor Mason's Report on the Discovery of Gold*, MUSEUM OF THE CITY OF S.F., <http://www.sfmuseum.org/hist6/masonrpt.html> [<https://perma.cc/2VT6-FJ6T>] (providing Colonel Mason's "Official Report on the Gold Mines," dated August 17, 1848). The report observes:

The discovery of these vast deposits of gold has entirely changed the character of Upper California. Its people, before engaged in cultivating their small patches of ground, and guarding their herds of cattle and horses, have all gone to the mines, or are on their way thither. Labourers of every trade have left their work-benches, and tradesmen their shops; sailors desert their ships as fast as they arrive on the coast; and several vessels have gone to sea with hardly enough hands to spread a sail. Two or three are now at anchor in San Francisco, with no crew on board. Many desertions, too, have taken place from the garrisons within the influence of these mines; twenty-six soldiers have deserted from the post of Sonoma, twenty-four from that of San Francisco, and twenty-four from Monterey. I have no hesitation now in saying, that there is more gold in the country drained by the Sacramento and San Joaquin Rivers than will pay the cost of the present war with Mexico a hundred times over. No capital is required to obtain this gold, as the labouring man wants nothing but his pick and shovel and tin pan, with which to dig and wash the gravel, and many frequently pick gold out of the crevices of rocks with their knives, in pieces of from one to six ounces.

48. COULSON, *supra* note 21, at 95; PBS AM. EXPERIENCE, *The California Gold Rush*, <https://www.pbs.org/wgbh/americalexperience/features/goldrush-california> [<https://perma.cc/Z9W8-ZDZ7>] (recalling that "[w]hen news of gold reached San Francisco first, it was met with disbelief. Then entrepreneur Sam Brannan marched through town waving a vial of the precious metal as proof. By mid-June, stores stood empty. Most of the male population of San Francisco had gone to the mines. The rest of California soon followed").

49. COULSON, *supra* note 21, at 31.

50. *Id.* at 35–36.

51. See, e.g., Daniel Cressey, *Mercury Traces Expose Inca Mining Boom*, NATURE

immigrants constituted one-quarter of the 300,000 prospectors who flocked to California.⁵² These international miners brought skills, technology, and knowledge of mineral extraction. However, their legacy would be their mining customs for mineral property ownership and mine governance. Through the 1850s and early 1860s, these customs took root in the far-flung mining districts scattered across the ancient peaks and valleys of the Sierra Nevadas and spread to the adjoining mineral-rich states of Arizona, Colorado, and Utah. In 1872, Congress legislated those customs through its enactment of the General Mining Law.⁵³

C. *The General Mining Law of 1872*⁵⁴

The General Mining Law of 1872, as amended, still governs mineral development on federal lands in the United States. Critically, the law: (1) does not require royalties to be paid to the U.S. government (and thus taxpayers) “for the extraction and sale of valuable minerals”;⁵⁵ (2) “does not include any environmental, reclamation or financial assurance provisions”;⁵⁶ and (3) “fails to have a single department in charge of mining, leaving stakeholders and companies to navigate a morass of systems and laws.”⁵⁷ More than 150 years after its enactment, it is the reason why, in 2020, the U.S. General Accounting Office noted that the federal government has no knowledge of what minerals are produced from hard rock mines on public domain lands,

(2009), <https://www.nature.com/articles/news.2009.488#citeas> [https://perma.cc/DU3H-6YR5] (2009) (researching mercury measurement from lake cores taken near cinnabar ore (mercury sulfide) mines in the Huancavelica region of present-day Peru to show Incan mining began around 1400 BC); D.A. Brading and Harry E. Cross, *Colonial Silver Mining: Mexico and Peru*, 52 *HISP. AM. HIST. REV.* 545 (1972) (detailing the history of Colonial-era mining operations).

52. COULSON, *supra* note 21, at 95.

53. The General Mining Law of 1872, as amended, is mainly codified in 30 U.S.C. § 21.

54. This Article does not examine the General Mining Law of 1872 in great detail. Information on the Law may be found at: Andrew P. Morriss, Roger E. Meiners & Andrew Dorchak, *Homesteading Rock: A Defense of Free Access Under the General Mining Law of 1872*, 34 *ENV'T. L.* 745 (2004); Roger Flynn, *The 1872 Mining Law as an Impediment to Mineral Development on the Public Lands: A 19th Century Law Meets the Realities of Modern Mining*, 34 *LAND & WATER L. REV.* 301 (1999); and GORDON MORRIS BAKKEN, *THE MINING LAW OF 1872: PAST, POLITICS, AND PROSPECTS* (2008).

55. White House, Readout of the White House’s First Stakeholder Convening on Mining Reform (May 11, 2022).

56. *Id.*

57. *Id.*

or in what amounts—there are no reporting requirements.⁵⁸ Although presidential administrations,⁵⁹ academics, nongovernmental organizations,⁶⁰ and the private sector⁶¹ have sounded the alarm regarding the need to supply the nation with the minerals necessary for renewable energy development, electric battery storage, defense, and futuristic technologies, the United States has little knowledge of what is happening to the public's minerals. Most importantly, the United States collects no revenue attributable to hard rock mineral extraction on public domain lands. Estimates of the lost mineral value since 1872 begin at \$300 billion.⁶² And today, “failure by Congress to require the mining industry to pay royalties on minerals taken from federal public lands, added to various tax breaks and subsidies companies enjoy, will cost American

58. U.S. GOV'T ACCOUNTABILITY OFF., LETTER TO CHAIRMAN RAUL GRIJALVA, COMM. ON NAT. RES. (May 28, 2020), <https://www.gao.gov/assets/gao-20-461r.pdf> [<https://perma.cc/3Y3M-PNQW>] (The Government Accountability Office reports that although there are over 800 mining operations on federal land, the total amount of mineral production is unknown) and Statement of Steve Feldgus, Ph.D. Deputy Assistant Secretary, Land and Minerals Management, House Natural Resources Committee, Subcommittee on Energy and Mineral Resources, Hearing on “Reforming the Mining Law of 1872,” U.S. DEP'T INTERIOR (May 12, 2022), <https://www.doi.gov/ocl/mining-law-reform> [<https://perma.cc/7RHF-DTGY>].

59. See e.g., Executive Order on America's Supply Chains, 86 Fed. Reg. 11849 (Feb. 24, 2021) (Biden Administration announcing examination of rare earth elements); Samantha Subin, *The New U.S. Plan to Rival China and End Cornering of Market in Rare Earth Metals*, CNBC (Apr. 17, 2021, 9:00 AM), <https://www.cnbc.com/2021/04/17/the-new-us-plan-to-rival-chinas-dominance-in-rare-earth-metals.html> [<https://perma.cc/WN32-LDHC>]; Executive Order Addressing the Threat to the Domestic Supply Chain From Reliance on Critical Minerals From Foreign Adversaries and Supporting the Domestic Mining and Processing Industries, 85 Fed. Reg. 62539 (Sep. 30, 2020) (Trump Administration order to identify critical minerals and domestic mining and processing abilities).

60. See e.g., Sarah Ladislaw et. al., *Critical Minerals and the Role of U.S. Mining in a Low-Carbon Future*, CSIS (Dec. 2019) https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/191218_CriticalMinerals_layout_v3.pdf?ylnsna.D_ByXyoknOYstNr_otjenDILf [<https://perma.cc/5S2A-UZML>]; Graham W. Lederer & Erin A. McCullough, *Meeting the Mineral Needs of the United States*, *Eos* (July 18, 2018), <https://doi.org/10.1029/2018EO102177> [<https://perma.cc/ZZ52-8ZND>] (authors affiliated with USGS, but writing in *Eos* periodical for the Association of Geoscientists).

61. See e.g., USA RARE EARTH, LLC, *USA Rare Earth Applauds President Biden's Executive Order to Secure America's Critical Supply Chains for Rare Earth Elements and Electric Vehicle Batteries*, P.R. (Feb. 24, 2021, 5:44 PM), <https://www.globenewswire.com/news-release/2021/02/24/2181964/0/en/USA-Rare-Earth-Applauds-President-Biden-s-Executive-Order-to-Secure-America-s-Critical-Supply-Chains-for-Rare-Earth-Elements-and-Electric-Vehicle-Batteries.html> [<https://perma.cc/ZDF4-SPPP>]; Stew Magnuson, *Mining Company Determined to Restore U.S. Rare Earth Supply Chain*, NAT. DEF. (Nov. 20, 2020), <https://www.nationaldefensemagazine.org/articles/2020/11/20/mining-company-determined-to-restore-us-rare-earth-supply-chain> [<https://perma.cc/C9WH-BCSN>].

62. Joanna Derman, *Congress Must Establish a Hardrock Mining Royalty*, PROJECT ON GOV'T OVERSIGHT (Oct. 28, 2021), <https://www.pogo.org/resource/2021/10/congress-must-establish-a-hardrock-mining-royalty> [<https://perma.cc/UP9Y-P7F6>] (last visited Jan. 31, 2023).

taxpayers more than \$160 million annually.”⁶³ These costs do not include the environmental remediation costs that taxpayers will ultimately bear—about \$20–54 billion.⁶⁴ The genesis of this suboptimal revenue arrangement began in the old mining districts of the 1800s, rife with the borrowed property traditions of foreign miners.

III. SUBSURFACE PROPERTY AND THE EVOLUTION OF MINING CUSTOMS

The absence of mining legislation and oversight resulted in one of the greatest democratic systems of property ownership and governance in history.⁶⁵ Even though immigrant mining communities brought their mineral property customs and governance structures to the United States, it was the relative absence of local, state, or federal subsurface resource legislation that allowed those customs and structures to become established.

Although these customs varied by district, in general, the most important included: (1) the ability to cross lands of other owners, without permission; (2) the ability to mine a mineral vein that traversed owner tracts without obtaining that owner’s permission; (3) the use of other natural resources to develop the minerals (e.g., streams, rivers); and (4) no royalty was paid to the federal government.⁶⁶ The General Mining Law essentially legislated these customs. In addition to no royalty paid to the federal government, as described above, currently under the law, anyone can enter federal land to prospect. If a claim is secured after “discovery,” which itself is poorly defined and often unaudited, the claimant files a permit and pays a small fee.⁶⁷ The extralateral right, which allows a miner to mine a mineral vein that crosses onto the tract of another is also supported under the current law, although boundaries on the distance that may be pursued have been set. And the original mining communities were able to divert streams and rivers to develop mines, which became the “prior appropriation” doctrine, followed mostly in the American West.⁶⁸

63. PEW CHARITABLE TRUSTS, REFORMING THE U.S. HARDROCK MINING LAW OF 1872: THE PRICE OF INACTION, 2–3 (2009).

64. *Id.*

65. Wm. E. Colby, *The Extralateral Right: Shall it be Abolished?*, 4 CAL. L. REV. 362, 439 (1916). [https://www.google.com/books/edition/The_Extralateral_Right_Shall_it_be_Aboli/_s2EAAAIAAJ?hl=en&gbpv=1.]

66. The failure to pay a royalty to the federal government was completely unique to mining communities in the United States. The originating mining countries all required payment of the *bergreal* (royalty) to the sovereign.

67. Even today, the General Mining Law only requires the payment of \$1 per acre to secure a permit prior to production on public domain lands and \$0.50 per acre on acquired lands. On public domain lands before production (after lease/claim), the fees are minimal: \$20 processing fee, \$40 location fee, \$165 initial maintenance fee, and \$165 annual maintenance fee. There is no fee to secure a lease or claim on public domain lands. Additionally, there are no fees paid during production. See *Natural Resources Revenue Data*, U.S. DEPT. INT., <https://revenue.data.doi.gov/how-revenue-works/revenues/#Hardrock-minerals> [<https://perma.cc/8JW3-KSY6>] (last visited Jan. 31, 2023).

68. See generally *Irwin v. Phillips*, 5 Cal. 140 (1855) and *Coffin v. Left Hand Ditch*, 6

A. *The Origin of American Mineral Property Ownership*

A child of British parentage, the United States adopted much of its property jurisprudence from England. Although mining property systems developed contemporaneously over millennia around the world,⁶⁹ many systems, including England's, required a similar payment of tribute or royalty to the sovereign or state. America does not have such a royalty or regalian right in mining. America's preindustrialized state during Independence likely influenced its lateness to withhold the mineral estate from land grants and the continued absence of royalty collection from hard rock mining on federal lands.

Tin mining may have begun around 2000 BC in Cornwall, where the rich deposits of tin likely encouraged the development of trade even prior to the Roman invasion.⁷⁰ But long after the Romans departed British soil,⁷¹ the Cornish tin miners continued their dogged exploitation of the subsurface. In these dim⁷² earthen depths, they toiled through the Dark Ages.⁷³

Cornish tin miners—or “tinnners”—and the Derbyshire lead miners are central to the development of American mining property. Not only was post-Independence resource law based on English common law, but the Cornish tinnners and the Derbyshire lead miners were some of the earliest arrivals to the American West during the gold rushes. They were central players within those first mining communities, and so their knowledge and customs became part of American mining customs and were legislated in the 1872 mining law.

Colo. 443 (1882) (both *Irwin & Coffin* recognize a legal right to appropriate public resources based on local mining custom, creating the “prior appropriation” doctrine in California and Colorado, respectively). Robert W. Adler, *Natural Resource and Natural Law Part I: Prior Appropriation*, 60 WM. & MARY L. REV. 739 (2019); Paul R. Harrington, *The Establishment of Prior Appropriation in Idaho*, 49 IDAHO L. REV. 23 (2012).; and A. Dan Tarlock, *The Future of Prior Appropriation in the New West*, 41 NAT. RES. J. 769 (2001).

69. For a thorough overview on the development of global mining systems in relation to American mining law, see generally Lacy, *Historic Origins*, *supra* note 3 (detailing the history of ancient mining systems, in context of American development).

70. COULSON, *supra* note 21, at 32 (stating that Cornwall, and to a lesser extent, Devon, was the center of the British mining industry; further noting that Roman records during their occupation of Britain do not mention tin mining, likely because the Romans had established tin mines in Spain, which satisfied much of their need). British mining exploits also occurred in Devon, Wales, and Ireland, but this article focuses on mining history in Cornwall due to its great relevance in both British and American mining property histories. For more information on British mining history, see *id.*

71. The Romans brought their legal system to Britain after conquest. But subsequent invasions by the Angles, Saxons, Danes, and Normans resulted in a blending of legal systems to culminate in a uniquely British legal system (composed of statutes and common law), which would then be dispersed to other countries during colonization. See Barry Ryan, *The Law Surrounding “Miner’s Right”: Origin of the Mining Law of Queensland*, 9 J. ROYAL HIST. SOC’Y OF QUEENSLAND 101, 104 (1974).

72. Prior to mine electrification, underground mines were lit by candlelight. Interview with Gold Mine Foreman at Country Boy Mine, in Breckenridge, Colo. (June 30, 2021).

73. COULSON, *supra* note 21, at 32 (noting that Cornish mining operations continued through the Roman departure around 400 and into the Norman invasion in 1066).

Cornish tin mines, referred to as “stannaries,”⁷⁴ were not only places of resource exploitation, but were also spaces of property ownership and governance. The importance of the Cornish tanners and their industry is evident in their recognition by John I during the beleaguered monarch’s reign and his assent to the Magna Carta.⁷⁵ But the tanners were undoubtedly able to assert their independence due to their relative geographic isolation,⁷⁶ common to many resource-based communities, and to the plebian prevalence of the unassuming metal. Unlike its coveted metallic cousins, gold and silver, tin was neither used for currency or coinage⁷⁷ nor was it subject to the regalian right,

74. G.R. LEWIS, *THE STANNARIES: A STUDY OF THE MEDIEVAL TIN MINERS OF CORNWALL AND DEVON* 33 (1908), <https://socialsciences.mcmaster.ca/~econ/ugcm/3ll3/lewis/stannaries.pdf> [<https://perma.cc/MM8W-S6YA>]. The word “stannary” derives from the Medieval Latin for tin mine, *stannaria*, and the Late Latin for tin, *stannum*. Merriam-Webster, <https://www.merriam-webster.com/dictionary/stannary> [<https://perma.cc/88PY-466Q>]. Note the atomic symbol for tin is *Sn*.

75. Dan Jones, *The Mad King and Magna Carta*, *SMITHSONIAN MAG.* (July 2015), <https://www.smithsonianmag.com/history/mad-king-magna-carta-180955745> [<https://perma.cc/87AG-R89J>]; Paul Halsall, *Medieval Sourcebook: Accounts of Tin Mining in Cornwall, Stanner Charters of 1198 & 1201*, *FORDHAM UNIV.* (last revised Jan. 20, 2021), <https://sourcebooks.fordham.edu/source/1201tinmines.asp> [<https://perma.cc/8XNU-YQ8C>] (with the Stannary charter of 1201, as translated from LEWIS, *supra* note 74, at 238. The Stannary Charter of 1201 provided:

... Be it known that we have granted that all tin miners of Cornwall and Devon are free of pleas of the natives as long as they work for the profit of our ferm or for the marks for our new tax; for the stannaries are on our demesne. And they may dig for tin, and for turf for smelting it, at all times freely and peaceably without hindrance from any man, on the moors and in the fiefs of bishops, abbots, and earls, as they have been accustomed to do. And they may buy faggots to smelt the tin, without waste of forest, and they may divert streams for their work just as they have been accustomed to do by ancient usage.

The language is very similar to oil and gas lease language, which generally allows reasonable use of the surface estate to develop the dominant subsurface estate. See e.g., *Getty Oil Co. v. Jones*, 470 S.W.2d 618, 621 (Tex. 1971) (holding that “[i]t is well settled that the oil and gas estate is the dominant estate in the sense that use of as much of the premises as is reasonably necessary to produce and remove the minerals is held to be impliedly authorized by the lease; but that the rights implied in favor of the mineral estate are to be exercised with due regard for the rights of the owner of the servient estate.”)

76. The tin mines of Cornwall are located in the far southwest corner of England. The area is described below in LEWIS, *supra* note 74, at 1:

C[ornwall], the farthest west of all England, a wedge of land jut[ting] some eighty miles into the Atlantic, has for a backbone a central ridge of rock running longitudinally through the country from east to west and throwing out ramifications which meet the sea on either side in the rugged outlines that render the country so attractive to the tourist and the artist.

This geographic isolation is similar to American mines, where there was vast distance between the California, Western mines, and Washington D.C.

77. GEORGE A. BLANCHARD & EDWARD P. WEEKS, *THE LAW OF MINES, MINERALS, AND MINING WATER RIGHTS* 83 (SUMNER WHITNEY & Co., 1877) (stating that “[a]ccording to the law of England, mines of gold and silver have been claimed by the crown as ‘royal mines,’ and as the exclusive property of the sovereign by prerogative.”) According to Blackstone:

an ancient custom adopted by the Romans and their civil law successors.⁷⁸ Although common to those mining communities that immigrated to America, the regalian right was not adopted in the United States. The mining districts in the U.S. were content to pay no royalty to the government and the government did not require any such payment from them. A Roman practice that the Cornish tanners implemented, *res nullius*, provided that unowned items belonged to the finder or person who first appropriated them. These concepts, along with the principle that a land owner owns both the surface estate and the mineral estate, are central to the Anglo-American foundations of property jurisprudence. The development of American mining law centered on these general property principles with the crucial addition of the extralateral right, which allowed acquisition on adjacent and non-owned mineral estates.

The melding of foreign mining customs and practices was not unique to a newly liberated America. The Saxon influence, brought to England from Germanic tribes,⁷⁹ was prominent in the lead mines of Derbyshire.⁸⁰ Under Derbyshire custom, a lead miner could search for and produce lead from any

... [T]he right to mines[] has its origin[] from the king's prerogative of coinage, in order to supply him with materials; and, therefore, those mines, which are properly royal, and to which the king is entitled when found, are only those of silver and gold. By the old common law, if gold and silver be found in mines of base metal, according to the opinion of some, the whole was a royal mine, and belonged to the king, though others held that it only did so if the quantity of gold or silver was of greater value than the quantity of base metal. But . . . this difference is made immaterial, it being enacted that no mines of copper, tin, iron, or lead shall be looked upon as royal mines, notwithstanding gold or silver may be extracted from them in any quantities; but that the king, or persons claiming royal mines under his authority, may have the ore, (*other than the tin ore in the counties of Devon and Cornwall*) paying for the same a price stated in the act.

Id. (citing Blackstone, 1 Com. 294).

78. Gunther Kuehne & Frank J. Trelease, *The New West German Mining Law*, 19 LAND & WATER L. REV. 371, 372 (1984) (discussing the regalian right and stating that “[f]rom the dawn of history, . . . Pharaohs, god-kings and oriental potentates have claimed all gold, silver and often precious gems found within their realms, and this ‘regalian property’ concept found its way into Roman law and was applied to mines and mineral deposits that became the property of the Roman Empire by the conquests of Europe, Africa and Asia Minor.”). But one problem with the regalian right is that gold, silver, and other precious metals were often never found independent of other minerals. Therefore, the designation of a “royal mine” often depended on the characterization by the miner or finder.

79. This Article will refer to the Germanic states that made up the pre-Austrian and pre-Germanic Empires collectively as “Germany.”

80. Some scholars doubt whether the customs originated from the Saxons. Lewis “intimates that the laws of the Derbyshire lead miners are customs dating back to a time beyond the memory of man and notes that Pliny refers to the fact that the lead miners in the interior of Britain are governed by certain rules of their own making.” Colby, *supra* note 65, at 377, citing LEWIS, *supra* note 74, at 82–83.

private land with few exceptions.⁸¹ Any lead mined from that privately-owned land belonged to the miner.⁸²

Like England, Germany has a long history of mining. The first mining districts are believed to have formed in Germany; the earliest records of mining law are, in fact, the rules adopted by the German mining districts.⁸³ One of the critical foundations of American mining custom and law, which was first adopted by the Derbyshire miners and brought to the United States via the English and the Germans, was the *bergbaufreiheit*—the free mining right.⁸⁴ The etymology reflects the geologic and social origins of the most important custom in mining:

berg = mountain | *bau* = construction | *frei* = free | *heit* = ness⁸⁵

Under the *bergbaufreiheit*, miners had the privilege “to prospect for and lay claim to minerals regardless of surface ownership, and the right of the discoverer to extract the deposit . . . and to his exclusive privilege to smelt and treat the ores and sell the metal.”⁸⁶ Still, even with this freedom, the miners were required to pay a tithe to the sovereign.⁸⁷ Moreover, some minerals

81. Kuehne & Trelease, *supra* note 78, at 375–76.

82. The customs of these Saxon and Derbyshire practices would become evident in American mining law. *See e.g., Id.:*

The Derbyshire customs were clearly brought to England from Germany. It has been said that they were one of the few Anglo-Saxon institutions to survive the Norman conquest. They showed their ancestry by their similarity to the German customs and the use of Saxon words in the technical terminology of the industry—words such as “strike,” “drift” and “stope”—and in the names of mines. The miner could enter, search for and mine lead on any private land except churchyards [*sic*], burial grounds, dwelling houses and gardens. Any mineral other than lead was the property of the landowner, even if it was brought to the surface by the lead miner. The discoverer of a lead mine was entitled to two meers, usually of 96 feet, each measured along the vein from the point of discovery, and of sufficient width for convenient working of the claim. A third meer was set aside at one end for the king, or the person to whom his royalties had been assigned. All of these were set out by the barmaster, the English cousin of the Bergmeister of the Harz Mountains. Title to the mine did not pass until work was begun and the ceremony of “freeing the meer” was performed by delivery of the first “dish” or measure of ore to the barmaster. Thereafter the finder might claim and free other meers along the vein . . .

The owner of a Derbyshire lead mine was said to have an “estate of inheritance.” He owned a length of the vein regardless of surface titles. His surface area was fixed in regard to convenient mining, but he might follow his vein under “excepted places” such as churchyards, and if two veins conjoined, the miner with the prior title took the whole. This privilege was only to follow his portion of the vein laterally, and if he “worked out of his own length” into an adjoining meer he was guilty of trespass.

83. *Id.* at 374.

84. Kuehne & Trelease, *supra* note 78, at 374.

85. *Ness*, Merriam-Webster, <https://www.merriam-webster.com/dictionary/ness>.

86. Kuehne & Trelease, *supra* note 78, at 374.

87. *Id.*

were claimed entirely by the crown under the sovereign's regalian right. For example, in Germany, the *bergregal* was first extended to gold and silver but was later extended to other common minerals and metals.⁸⁸

Miners were especially critical to these early societies, relied on by rulers for wealth generation and industrial inputs. The relative freedoms miners enjoyed demonstrates the power and privilege they held during the Middle Ages. Because of their expertise, they moved to other resource basins within states, establishing new mines for admiring princes who competed desperately for their attention.⁸⁹

These migrating miners relied on the familiarity of mining custom and governance as they moved. Even though each mining district operated independently, the districts' rules bore a remarkable similarity to each other—likely due to the migration of miners.⁹⁰ Each mining district was administered by a *Bergmeister* (mountain master), who was responsible to the prince and not to the local fiefdom holders.⁹¹ But the self-determination and freedom of miners was distinct from the common medieval practice of serfdom, where laborers were forced to work plots of land owned by others.⁹²

An examination of the origins of American mining law would be incomplete without a review of Spain and its former mining colonies, Mexico and Peru. Although Spanish civil law is heavily influenced by Roman civil law, Spanish mining law possesses little relation to its Roman parentage.⁹³ Rather, Spanish mining laws are remarkably similar to Germanic mining codes, even

88. *Id.* (Noting that the states may have included salt, marble (for building stone), saltpeter (the natural mineral source of potassium nitrate, used to salt meats and preserve food), Joe Schwarcz, *What is Saltpeter Used for and is it True it Reduces Certain "Carnal Urges?"*, MCGILL OFFICE FOR SCI. AND SOC'Y, Mar. 20, 2017, <https://www.mcgill.ca/oss/article/history-you-asked/what-saltpeter-used-and-it-true-it-reduces-certain-carnal-urges>), and coal).

89. Kuehne & Trelease, *supra* note 78, at 374.

90. *Id.* (observing that mining in the pre-Austrian and pre-Germanic empires [collectively referred to herein as "Germany"] began as early as the tenth century).

91. *Id.*

92. See generally Sheilagh Catheren Ogilvie, *Serfdom and the Institutional System in Early Modern Germany*, in *SLAVERY AND SERFDOM IN THE EUROPEAN ECONOMY FROM THE 11TH TO THE 18TH CENTURIES* 33-58 (FIRENZE UNIVERSITY PRESS 2014) (discussing the varying forms of serfdom present in Germany during the 1500s–1800s); Peter Blickle & Cathleen Catt trans., *Peasant Revolts in the German Empire in the Late Middle Ages*, 4 *SOC. HIST.* 223 (1979) (describing the peasant revolts that ensued during the 1300s–1500s in Europe).

93. Colby, *supra* note 65, at 379–80 (explaining that “the similarity [of Spanish mining laws to German mining laws] is accounted for when we learn that in framing the mining ordinances of Spain ‘recourse was had to the laws of Germany[.]’” citing learned mining jurist Francisco Xavier Gamboa’s *Comentarios a las Ordenanzas de Minas* (1759), which “constitute[s] the classic work on mining law in Spanish.” *Id.* at 380 n.61). Colby further notes that the “German system of jurisprudence on the subject of mines has met with general acceptance throughout the Continent of Europe, having been adopted in Russia; in the countries around the Baltic; in Spain; and in the extensive settlements of the latter country in America.” See *id.*

possessing the free mining right discussed above. The independence of the Spanish mining code from its jurisprudential history likely reflects the unique character of resource property.⁹⁴ Its subsurface domicile and relative lack of visibility—and therefore, access—required a bespoke system of property ownership and governance, which developed in the mining districts.⁹⁵

B. *The Formation of Mining Districts*

The first workings of the mining district appear in the Middle Ages.⁹⁶ Out of the slowly-ordered chaos that followed the collapse of the Roman Empire, there emerged among the hundreds of European potentates some of the earliest mining districts.⁹⁷ Formed in mineral-rich resource areas, these communities drafted charters—early predecessors to mining law codes.⁹⁸ The charters established certain miner privileges and the regalian right and the communities began to develop certain customs beneficial for mining.⁹⁹ Some of these customs were akin to a medieval form of labor organization.¹⁰⁰ Others

94. See Monika U. Ehrman, *Application of Natural Resources Property Theory to Hidden Resources*, 14 INT'L J. COMMONS 627, 634–35 (2020) (applying the author's theory of "hidden resources" to mineral property and discussing how the development of mining districts allowed optimal hidden resource development).

95. *Id.*

96. GEORGIUS AGRICOLA, *DE RE METALLICA* 82 n.6 (Herbert Hoover & Lou H. Hoover trans., Dover Publications, Inc. 1950) (originally published in *The Mining Magazine* (London 1912)). Before he became president of the United States, Herbert Clark Hoover was a geologist and mining engineer, graduating from Stanford University's first class. He was a member of the American Institute of Mining Engineers, Mining and Metallurgical Society of America, Societe des Ingeniures Civils de France, American Institute of Civil Engineers, and a Fellow of the Royal Geographical Society. His wife, Lou Henry Hoover, was also a Stanford-educated geologist, who herself was a Member of the American Association for the Advancement of Science, National Geographic Society, and Royal Scottish Geographic Society. The Hoovers are responsible for one of the greatest academic achievements in mining: they translated Georgius Agricola's famed *De Re Metallica* from its first Latin edition of 1556, which included a meticulous interpretation of associated technologies and processes from the Middle Ages. Agricola's work is considered one of the most complete and important historical treatises on mining and metallurgy and includes detailed sections on technology, law, finance, and labor. So important was the treatise that its original publication is believed to have "hastened the diffusion" of mining knowledge and operational practices. The Hoovers' translation includes careful notes on Agricola's observations, often inserting references to American mining law and custom. In one such note, the Hoovers note that "[i]f the American 'Apex law' is of English descent, it must be laid to the door of Derbyshire, and not of Cornwall, as is generally done. [Their] own belief, however is that the American "apex" conception—central to the 1872 General Mining Law—came straight from Germany. These references illustrate the movement and adoption of Germanic and Derbyshire mining customs by the American mining districts." [is this where the quote ends?] See *id.*

97. *Id.* at 84.

98. *Id.* (noting that the earliest of those charters "are those of the Bishop of Trent [present day Trento, Italy], 1185; that of the Harz Mines [present day Germany], 1219); of the town of Iglau [present day Czech Republic] in 1249").

99. *Id.*

100. Brigitte Weinstein, *The Medieval Roots of Colonial Iron Manufacturing*

involved the exploration and extraction of minerals, like the *bergbaufreiheit*. Another such custom, noted in the Iglau charter of 1249, is the “apex form of title.”¹⁰¹ The apex law, adopted by many mining districts over the course of centuries, would become the centerpiece of American mining law. Like the mining free right, it allowed a miner to follow the ore body regardless of the surface ownership.¹⁰² But the law further established property boundaries that centered around the resource itself, using vertical property boundaries perpendicular to the surface.¹⁰³

Meanwhile, in England, the mining communities of Cornwall and Devon were chartered into corporations—the stannaries—in the 13th century.¹⁰⁴ As discussed above, they possessed “definite legislative and executive functions, judicial powers, and practical self-government; but they were required to make a payment of the tithe in the shape of ‘coinage’ on the tin.”¹⁰⁵ The Cornwall and Devon mining customs differed in part from the older English mining communities such as the Forests of Dean and Mendip.¹⁰⁶ For example, in the Forest of Dean, where ochre and iron ore were mined for thousands of years,¹⁰⁷ Free

Technology, PENN ST. UNIV., https://www.engr.psu.edu/mtah/articles/roots_colonial_iron_technology.htm [<https://perma.cc/5LBN-FPYE>] (last visited Jul. 11, 2021).

101. *AGRICOLA*, *supra* note 96.

102. *Id.* This extralateral right, as it was to be called, became the foundation for the “Rule of Capture” central to other natural resources, including petroleum and wind.

103. *Id.*

104. *Id.*

105. However, a lack of contemporaneous written materials prevents a closer examination of stannary development. It was not until 1602, when Carew’s Survey of Cornwall was published, that information on mining customs and title became available. “At Carew’s time the miner was allowed to prospect freely upon ‘Common’ or wastrel lands . . . and upon mineral discovery marked his boundaries, within which he was entitled to the vertical contents. Even upon such lands, however, he must acknowledge the right of the lord of the manor to a participation in the mine. Upon ‘enclosed’ lands he had no right of entry without the consent of the landlord; in fact, the minerals belonged to the land as they do to-day[sic] except where voluntarily relinquished. In either case he was compelled to “renew his bounds” once a year, and to operate more or less continuously to maintain the right once obtained. There thus existed a ‘labour condition’ of variable character, usually imposed more or less vigorously in the bargains with landlords.” *Id.*

Note that the term “enclosed” refers to private ownership of land. See J. R. Wordie, *The Chronology of English Enclosure, 1500–1914*, 36 *ECON. HIST. REV.* 483, 484, which states:

[T]he term “enclosed” [as used within the paper] will be used in its legal rather than in its physical sense: that is to say, it will refer to land held in severalty, falling completely under the power of one owner to do with as he pleased, whether or not he chose to enclose his land in the literal sense with hedges or ditches. Such land was free of all common rights, except possibly for a right of way. Conversely, all land still subject to a measure of common rights will be referred to as “open,” or “open field,” or “common land.” See *id.*

106. Colby, *supra* note 65, at 378. Colby notes that the “lead miners in the forest of Mendip also mined under old customs which were not as complete in detail as the Derbyshire laws but similar in many respects”

107. CLEARWELL CAVES, 4,500+ YEARS OF MINING HISTORY IN AN AMAZING CAVE SYSTEM,

Miners were those “male persons born in the hundred of St. Briavels and who had worked a year and a day in a coal or iron mine”¹⁰⁸ Their free mining right was strikingly similar to the *bergbaufreiheit*.¹⁰⁹ But although these older English mining communities “possessed a measure of self-government,” those communities did not “display any features in their law fundamentally different from those of Cornwall and Devon.”¹¹⁰

But deep within those lead mines of Derbyshire, the mining districts reflected their Saxon origins. The *Barmaster*, *Barghmaster*, or *Barmar*—a corruption of the German *Bergmeister*—presided over “the same functions as to the allotment of title, settlement of disputes, etc., as his Saxon progenitor had, and, like him, he was advised by a jury.”¹¹¹ Miners had free mining right to all lands with some exceptions and were subject to the Crown and the landlord.¹¹²

Over centuries, these mining communities would develop their placer¹¹³ and subsurface bounties. Their mining districts would develop ownership and governance structures. They would flourish, decline, and die—like those conquering empires before them. But for these tenacious prospectors, the call of siren metals in a foreign country would cause them to leave their homes in search of greater opportunity. Traveling over wide oceans and across vast

<https://clearwellcaves.com/about-us> (last visited Jul. 12, 2021).

108. Colby, *supra* note 65, at 378–79.

109. See Clearwell Caves, *supra* note 107, which explains:

Freemining is an ancient mining custom practised in the Forest of Dean. Local inhabitants have exclusively taken minerals from the ground since prehistoric times—for as long as people have lived in the region. There is archaeological evidence to show that iron working in the Forest began well before the Roman occupation of this country. By Norman times, Forest of Dean iron ore had become vital to England’s economy. The Forest of Dean became the most prominent iron producing district in the British Isles, and the Forest miner became privileged as their skills were used particularly for military uses. It was during this time that the exclusive and ancient Freemining customs become documented.

...

The miners were protected by the King, becoming known as the ‘King’s Miners’ and ‘King’s pyoneers,’ they became a privileged group, with their own Mine Law Court. Through the court, they regulated the Freemining customs, under supervision of the King’s Gaveller, who in turn appointed Deputy Gavellers to do the work ‘on the ground,’ collecting royalties and administering the day to day operation of the mines and the custom.

See id.

110. AGRICOLA, *supra* note 96.

111. *Id.*

112. *Id.* Additionally, the miner was entitled to a finder’s “meer” of extra size, and title to the mineral vein was subject to the apex law.

113. EUGENE B. WILSON, *HYDRAULIC AND PLACER MINING* 1 (3d ed. John Wiley & Sons, Inc. 1918). Pronounced “plasser.” “The term placer is defined as a place where surface depositions are washed for valuable minerals, gold, tin, tungsten[,] gems, etc.” For example, placer mining occurs during the panning for gold—where surface depositions are washed for gold.

lands, these carriers of property traditions and successors to ancestral knowledge arrived on the shores of the United States to find fortune.

IV. CUSTOMARY MINING PROPERTY TRADITIONS IN AMERICA¹¹⁴

The stories of mining, natural resources, and public lands in the United States are woven together, inseparably, in a complex tapestry of tradition, requirement, aggression, and community.¹¹⁵ The discovery of gold in California triggered a mad rush of hundreds of thousands of prospectors seeking to discover the elusive element. The Californian territory, newly acquired during the Treaty of Guadalupe Hidalgo, did not enter statehood until 1850. In their eagerness to end all connection with Mexican—and therefore, Spanish—civil law, administrators determined that the Californian territory would not continue its predecessor civil system which had a rich history of mining law. Instead, in that interim period, the California territory became a no man's land—lawless and devoid of most established property systems, with the exception of the enduring *first in time, first in right* doctrine.¹¹⁶ But efforts at

114. Barry Ryan, *The Law Surrounding "Miner's Right": Origin of the Mining Law of Queensland*, 9 J. ROYAL HIST. SOC'Y OF QUEENSL. 101, 104–105 (1974). Detail on the role of mining customs and their influence in international jurisdictions can be found in Barry Ryan, *The Law Surrounding "Miner's Right": Origin of the Mining Law of Queensland*, 9 J. ROYAL HIST. SOC'Y OF QUEENSLAND 101 (1974), stating:

Within this body of [mining] law there are many principles, both written and unwritten, which regulate the customs and habits of citizens. The miner is treated no differently in this respect. Accordingly there are, in fact, many rules of law which have from a time un[k]nown in history been present in English law relating to the rights of a miner in the mining of mineral in various parts of England. These principles arose from the very customs of the miners themselves in the particular districts, and are peculiar to each district in question. Much of these principles have in later years been enacted in statute form for the benefit of record. Such is the case in relation to the mining of lead in Derbyshire, tin in Cornwall and Devonshire, coal and iron in the Forest of Dean.

The miners themselves were responsible for introducing the customs which, in turn, became the rule of law applic[able] in the districts in which the mining took place.

115. The development of public lands in the United States is beyond the scope of this article, but is well-documented and discussed by many scholars. *See e.g.*, John D. Leshy, *Are U.S. Public Lands Unconstitutional?*, 69 HASTINGS L.J. 499, 504–516 (2018) (providing background on the origin of American public lands), *referring to* JOSEPH J. ELLIS, *THE QUARTET: ORCHESTRATING THE SECOND AMERICAN REVOLUTION, 1783–1789* (2015); *see also* PAUL W. GATES, *HISTORY OF PUBLIC LAND LAW DEVELOPMENT* (PUB. LAND L. REV. COMM'N 1968) (a helpful map of territory acquisition appears on p. 76); *see also* Peter A. Appel, *The Power of Congress "Without Limitation": The Property Clause and Federal Regulation of Private Property*, 86 MINN. L. REV. 1 (2001) (providing an overview of the Property Clause and federal authority over federal lands); *see also* James L. Huffman, *The Inevitability of Private Rights in Public Lands*, 65 U. COLO. L. REV. 241(1994) (offering a history of public lands from their acquisition to ecosystem management).

116. *Refer to* Lawrence Berger, *An Analysis of the Doctrine That "First in Time Is First in Right"*, 64 NEB. L. REV. (1985) for a detailed discussion of the various instances in which

establishing priority and possession were often futile without the threat and commission of violence.¹¹⁷ The romanticized image of the rugged and tenacious prospectors, sporting full beards, wearing dusty Levis, and carrying picks and gold pans did not resemble the reality of rampant racism and greed which led miners and settlers to commit “state-sanctioned genocide” against Native Americans,¹¹⁸ Mexicans,¹¹⁹ and Chinese immigrants.¹²⁰ The U.S. Army and state government was often complicit, foreshadowing a distrustful future with Tribes and minorities.¹²¹ Madley “estimates that between 9,000 and 16,000 Indians, though probably many more, were killed by vigilantes, state militia-men and federal soldiers between 1846 and 1873 in what he calls an ‘organized destruction’ of the state’s largely peaceful indigenous peoples.”¹²² As Old West

the doctrine is applied; see also Richard A. Epstein, *Possession as the Root of Title*, 13 GA. L. REV. 1221 (1979).

117. Kuehne & Trelease, *supra* note 78, at 376.

118. Alexander Nazaryan, *California Slaughter: The State-Sanctioned Genocide of Native Americans*, NEWSWEEK (Aug. 17, 2016), <https://www.newsweek.com/2016/08/26/california-native-americans-genocide-490824.html> (reporting on BENJAMIN MADLEY’S AN AMERICAN GENOCIDE: THE UNITED STATES AND THE CALIFORNIA INDIAN CATASTROPHE, 1846–1873 (YALE UNIV. PRESS 2016)); see also Margaret A. Field, *Genocide and the Indians of California, 1769–1873*, (1993) (Graduate Master’s Thesis, U. Mass. Bos., on file with U. Mass. Bos.) (examining the murder and genocide of the California indigenous population during the Gold Rush period).

119. Richard H. Morefield, *Mexicans in the California Mines, 1848–53*, 35 CAL. HIST. SOC’Y. Q., 37 (1956) (detailing violence against Mexicans—now Mexican Californians post-Treaty—Chilean miners, and other groups); Paloma Esquivel, *El Paso Massacre was Just the Latest in Long Line of Anti-Latino Violence in the U.S.*, L.A. TIMES (Aug. 16, 2019), <https://www.latimes.com/california/story/2019-08-16/el-paso-massacre-timeline-of-anti-latino-violence-in-united-states> [<https://perma.cc/9KZW-JW2L>] (recalling the 1849 expulsion of Mexicans from California river mine sites).

120. Roger D. McGrath, *A Violent Birth: Disorder, Crime, and Law Enforcement, 1849–1890*, 81 CAL. HIST. 27 (2003) (relating the murder of Chinese miners working their claims).

121. Nazaryan, *supra* note 118, stating:

The tally is relentlessly grim: a whole settlement wiped out in Trinity County “excepting a few children”; an Indian girl raped and left to die somewhere near Mendocino; as many as 50 killed at Goose Lake; and, two months later, as many as 257 murdered at Grouse Creek, scores of them women and children. There were the four white ranchers who tracked down a band of Yana to a cave, butchering 30. “In the cave with the meat were some Indian children,” reported a chronicle published later. One of the whites “could not bear to kill these children with his 56-calibre Spencer rifle. ‘It tore them up so bad.’ So he did it with his 38-calibre Smith and Wesson revolver.”

122. Nazaryan, *supra* note 118; see also Int’l Indian Treaty Council, *Gold, Greed & Genocide*, <https://www.iitc.org/gold-greed-genocide> (last visited Oct. 29, 2022) stating:

The Gold Rush had severe effects on Indigenous Peoples of California and resulted in a precipitous Native population decline from disease, genocide and starvation. Over 150,000 Indigenous Peoples lived in California prior to the Gold Rush with sustainable cultures and economies based primarily on hunting, gathering and fishing. By 1870, the Native population of California had declined to an estimated 31,000 with over 60 percent perishing from diseases introduced

historian John Boessenecker writes, “[t]he 49ers who rushed into California created not just a new frontier, a new industry, and a new state, but a culture of extraordinary violence. The Gold Rush saw rates of homicide never equaled in American history.”¹²³

Within that turbulent environment, the absence of Spanish and Mexican mining laws resulted in the miners reaping millions of dollars by extracting “the minerals from the government’s land without a shred of legal authority.”¹²⁴ Eventually, from this chaos emerged a democratic order: the mining districts.

A. *Establishment of Mining Districts and Community Governance*

Experienced miners carried a significant advantage over those who lacked mining knowledge. They understood geology and rock structure and could identify indicator minerals that appear close to gold ore. They were used to the profession’s long, laborious days and its inherent dangers—both natural and manmade. Many miners came from countries with similar geographical and meteorological conditions. They knew how to mine in snowfall, rainfall, and in the heat. And most importantly, they knew how to organize and form self-governing communities.

by the 49ers. Tribes were also systematically chased off their lands, forcibly relocated to missions and reservations, enslaved and brutally massacred. In 1851, the California State government paid \$1 million for scalping expeditions. \$5 was paid for a severed Indian head in Shasta in 1855 and twenty-five cents was paid for a scalp in Honey Lake in 1863.

Over 4,000 Indigenous children were sold with prices ranging from \$60 for a boy to \$200 for a girl. In the 19th and 20th centuries Indigenous children were also forcibly removed to government and church-run boarding schools where they were forbidden to speak their languages. Many were forcibly placed in “work training programs” where they were used as slave labor in homes, farms, timber operations and other enterprises.

See also Bruce Barcott, *The Real Story of the 49ers*, ATL (Feb. 2, 2020), <https://www.theatlantic.com/ideas/archive/2020/02/real-story-49ers/605911>, stating:

“Through the indiscriminate use of terrorism and murder, California’s 49ers carried out one of the most successful—and, until recently, largely unacknowledged—campaigns of ethnic cleansing the world has ever seen. Land losses were near total. Disease, malnutrition, and starvation—driven by exotic white pathogens and widespread environmental destruction—accounted for a significant reduction in the indigenous population. Murder did the rest. The census of 1880 recorded just 16,277 Indians in California, a 90 percent decline from pre-Gold Rush days. To his credit, current California Governor Gavin Newsom recently took one of the first steps to acknowledge the facts of history by issuing a formal apology to the state’s Native American tribes. “It’s called a genocide,” Newsom said. “That’s what it was: a genocide. No other way to describe it. And that’s the way it needs to be described in the history books.”

123. John Boessenecker, *Violent Young Men of the Gold Rush*, SF GATE (June 30, 1999), <https://www.sfgate.com/news/article/Violent-young-men-of-the-Gold-Rush-3078204.php> [<https://perma.cc/6DBY-G4X5>].

124. Kuehne & Trelease, *supra* note 78, at 376.

The mining districts were formed around mines in geological resource basins similar to those in foreign miners' home countries. "These *de facto* governments established courts, elected executive officers and made their own laws in the form of rules adopted by the majority in open meetings."¹²⁵ Their importance was especially pronounced due to an entire absence of mining or mineral property laws in California before and after statehood. After the Mexican Cession, Colonel Richard Barnes Mason, California's military governor in 1848, abolished "the Mexican laws and customs now prevailing in California relative to the denouncement of mines."¹²⁶ While Mason's decision to end Mexican mining laws and customs in California appears abrupt and unwise, it was likely related to Mason's and the federal government's lack of resources—and willingness—to enforce any such laws.¹²⁷ As it turns out, his pronouncement was unnecessary; the Supreme Court of the United States became involved.

In *United States v. Casteller*, the Supreme Court held that Mexican registration of mines was improper due to a lack of compliance with Mexican-required ordinances.¹²⁸ Had a mine been on private property, the Governor of California was "wholly without power to make a grant of land there, for his jurisdiction under the colonization laws extends only so far as to make grants of public lands."¹²⁹ So, administrative and property "failures" to vest good title

125. *Id.*

126. Colby, *supra* note 65, at 437–38.

127. Colonel Mason's desire to secure the gold deposits for the benefit of the U.S. government is evidenced by his journal recordings. But he seems to have doubted his ability to enforce any laws governing the same:

The most moderate estimate I could obtain from men acquainted with the subject was, that upwards of 4,000 men were working in the gold district, of whom more than one-half were Indians, and that from 30,000 to 50,000 dollars' worth of gold, if not more, were daily obtained. The entire gold district, with very few exceptions of grants made some years ago by the Mexican authorities, is on land belonging to the United States. *It was a matter of serious reflection to me, how I could secure to the Government certain rents or fees for the privilege of securing this gold; but upon considering the large extent of country, the character of the people engaged, and the small scattered force at my command, I resolved not to interfere, but permit all to work freely, unless broils and crimes should call for interference.*

Official Report on the Gold Mines, THE MUSEUM OF THE CITY OF S.F., <http://www.sfmuseum.org/hist6/masonrpt.html> (last visited Oct. 29, 2022) (providing Colonel Mason's "Official Report on the Gold Mines," dated August 17, 1848) (emphasis added). *See also* Colby, *supra* note 65, at 437–38.

128. 67 U.S. 17 (1862).

129. 67 U.S. 17, 18 (1862), *holding* (with respect to acknowledgment):

A mining right or privilege under the Mexican ordinances relating to that subject, is a title to land within the meaning of the Act of 1851, and therefore the Board of Land Commissioners had jurisdiction to investigate a claim to such right. The ordinances made and established by the King of Spain at Madrid in 1783, prescribe the mode of acquiring titles to mines, and were in force throughout the Republic of Mexico at the date of the American conquest of California. A strict compliance with the terms and conditions of those ordinances is

served as a boon to the U.S. government—who was the new owner of a young territory’s prodigious riches.

There were some doubts about the authority of a military commandant to issue proclamations related to law.¹³⁰ Regardless, Mason’s announcement had the effect of chilling any application of Spanish and Mexican mining law in California.¹³¹ In the absence of law and enforcement, the miners needed to establish their own rules to govern their mining communities and associated

required by the ordinances themselves, and is shown to be necessary on general principles by all the writers on the subject. Registry is the basis of title to a mine, and no mine can be lawfully worked until it is registered; nor can any title thereto be acquired either by the discoverer or by any other person without a registry. Registry consists of an entry in a book kept by the proper public authority.

Also holding (with respect to procedure required in order for good title to vest):

Title to a mine is vested by the adjudication or decree of the proper tribunal in a case duly presented for decision, and by the registry of the adjudication, together with the proceedings on which it is founded. The mere fact of discovery without such adjudication and registry, gives no title to the discoverer, though it is also true that without proof of discovery there can be no adjudication in his favor. To complete the adjudication and carry it into effect, the boundaries must be fixed; else that title or claim, like other indefinite interests in lands, will be void for uncertainty; and this rule applies to mines situate on public as well as to those on private lands. An Alcalde [a magistrate in Spanish colonial governments] had no jurisdiction under the mining laws and could make no title to a mine. The tribunal empowered to exercise this jurisdiction was the Mining Deputation of the territory or the nearest one thereto. The fact that no Mining Deputation nor no Courts of First Instance were established in California, would show that a law, giving jurisdiction over mines to an Alcalde, might have been a convenience to the people, but it does not show that such a law existed. It may be safely inferred from the character and history of Mexico, that its supreme government reserved to itself the power over its mines, and purposely withheld all jurisdiction of that nature from the local authorities of its distant and frontier territories. If the Alcalde had jurisdiction it would be necessary for the claimant to show that such jurisdiction was exercised in accordance with the requirements of the mining ordinances. Some of the provisions of those ordinances are doubtless directory, and others conditions subsequent, but some of them are clearly conditions precedent. Those provisions which appertain to the registry of the mine and the action of the tribunal thereon, and in respect to the judicial possession of it, are conditions precedent, and a discoverer cannot support a title without showing a substantial compliance. Want of registry and omission to mark boundaries on the ground are fatal defects in a mining title. A discoverer who neglects to have his title adjudicated and registered agreeably to the ordinance, or to have his pertenencias measured and marked, does not by such negligence forfeit his title; but simply fails to acquire any title which could be the subject of forfeiture.

Id. at 20; *See also* Theodore Grivas, *Alcalde Rule: The Nature of Local Government in Spanish and Mexican California*, 40 CAL. HIST. SOCIETY QUARTERLY 11, 11 (1961).

130. LINDLEY, *supra* note 38, § 41, hereinafter “Lindley on Mines.”

131. *Id.*

privileges.¹³² Left to their own accord, “some show of order was brought out of chaos by the voluntary adoption of local rules or general acquiescence in customs”¹³³ As these mining communities moved from resource basin to resource basin within California and throughout the Western states, they brought their customs with them. Even though the miners were from diverse and foreign lands, they spoke a common geological language.

The main priorities of the mining districts were to establish rules regarding (1) discovery, (2) district boundaries, (3) marking the claim, (4) defining the amount of work necessary to hold a claim, and (5) claim abandonment.¹³⁴ In addition, like their ancestors, the mining communities established customs of exploration and the rights of the prospector.¹³⁵ Future American mining communities adopted these customs from the immigrant mining districts.¹³⁶

The mining customs prevailed in a new environment for the same reasons they survived in resource basins around the world: “mining district rules were shaped by cultural norms of fairness as well as by marginal costs and benefits.”¹³⁷ Ultimately, the mining districts and their customary practices were so successful that mining district customs became the basis of American mining law.¹³⁸

B. *California Statehood and the Legislation of Custom*

Two years after gold was discovered, California was admitted to the Union. Noticeably absent from its 1850 statehood admission was any reference to, or regulation of, the prolific mining activity in the state.¹³⁹ Thus, the industrious mining districts continued their promulgation and enforcement

132. *Id.*

133. *Id.*

134. *Id.* § 42.

135. *See generally id.* (referring to Rep. of J. Ross Browne, in his capacity as commissioner of mining statistics, on the mineral resources of the states and territories west of the Rocky Mountains (1868) for more detailed information on mining customs).

136. “Most of the rules and customs constituting the [mining district’s] code are easily recognized by those familiar with the Mexican ordinances, the continental mining codes, especially the Spanish, and with the regulation of the stannary convocations among the tin bounders of Devon and Cornwall, in England, and the High Peak regulations for the lead mines in the county of Derby. These regulations are founded in nature, and are based upon equitable principles, comprehensive and simple, have a common origin, are matured by practice, and provide for both surface and subterranean work, in allusion, or rock *in situ*.” *Id.* (citing Yale, Introduction to De Fooz on the Law of Mines, p. vii).

137. Karen Clay & Gavin Wright, *Order Without Law? Property Rights During the California Gold Rush*, 42 EXPLOR. ECON. HIST. 155, 156 (2005) (citing Zerbe and Anderson 2001).

138. John B. Clayberg, *Some Peculiarities of Our National Mining Law*, 7 YALE L.J. 53, 54 (1897); Clay & Wright, *supra* note 137. Clay & Wright assembled a data set of surviving mining district codes and provide an excellent analysis of their adoption, in addition to an economic analysis of the property system utilized by the districts. Clay & Wright, *supra* note 137, at 163..

139. LINDLEY, *supra* note 38, § 44.

of community customs and rules. Legislative deference to custom was evidence of the state's respect and dependence on the mining industry, namely that "customs, usages, or regulations, when not in conflict with the constitution and laws of the state, shall govern the decision of the action."¹⁴⁰ The Supreme Court of California supported this legislative deference, adding that "[i]n actions respecting claims[,] proof shall be admitted of the custom, usages, or regulations established and in force at the bar or diggings embracing such claims"¹⁴¹

Although the customs of each mining district varied depending on the mine and region, legislative adoption of mining property traditions had several benefits. The customs "were few, plain, and simple, and well understood by those with whom they originated."¹⁴² Further, they "were well adapted to secure the end designed to be accomplished, and were adequate to the judicial determination of controversies touching mining rights."¹⁴³ But most importantly, as Colonel Mason observed a few years earlier, supplanting the customs of a stubborn, strong, and economically-productive group would be imprudent.¹⁴⁴ Rather, the legislature sought to give miner customs "the additional weight of a legislative sanction."¹⁴⁵ Ultimately, the state government could not replace them and did not want to disrupt them, so it sanctioned them.

State adoption of mining custom served as a desired catalyst to increase mining activity. The customs became "as much a part of the law of the land as the common law itself, which was not adopted in a more solemn form."¹⁴⁶ Eventually, as the miners traveled across the West to explore, those same mining customs were adopted, "and their binding force [was] recognized from the beginning by the legislation of the states and a uniform line of decisions in the state and territorial courts."¹⁴⁷

C. *The Federal Government and Mining Custom: No Royalty or Regalian Right*

Thousands of miles away in Washington D.C., the federal government was relatively unconcerned with California mining legislation.¹⁴⁸ As the Supreme

140. *Id.*

141. *Id.* and Charles S. Cushing, *The Acquisition of California, its Influence and Development under American Rule*, 8 CAL. L. REV. 67, 77 (stating that the rules and customs of miners were legislated in Section 621 of the Practice Act of California); see e.g., *Morton v. Solambo Copper Mining Co.*, 26 Cal. 527 (1864), which held that the Practice Act (Sec. 621) "provides that in mining cases the customs, rules and regulations, shall govern the decision of the action."

142. LINDLEY, *supra* note 38, § 44.

143. *Id.*

144. *Id.*

145. *Id.*

146. *Id.*

147. *Id.*

148. It was only in 1863 that work on the Central Pacific line began. The line ran from

Court eloquently summarized: “For eighteen years—from 1848 to 1866—the regulations and the customs of miners, as enforced and moulded by the courts and sanctioned by the legislation of the State, constituted the law governing property in mines and in water on the public mineral lands.”¹⁴⁹

The relative lack of industrialization during American Independence resulted in the federal government retaining no regalian right or other type of royalty on minerals, which remains the most common financial compensation structure for resource development in the world. Post-Independence, the United States could have enacted a mineral code or similar legislation that would have applied to the Thirteen Colonies.¹⁵⁰ However, a relative lack of the historically treasured minerals (gold, silver, etc.), adoption of British mining jurisprudence (which awards all non-precious minerals to the surface owner), a pre-Industrial Revolution cession, and, perhaps most pointedly, a lack of foresight, resulted in congressional inaction.¹⁵¹ As demonstrated by adverse possession, allowing trespassers to enter and use property creates a strong right of ownership.

Because the federal government failed to address mining claims and mining district customs, its silence effectively acted as ratification of these practices. Further, because it did not claim a regalian right or demand a royalty from mine production, it was presumed the federal government was not entitled to a share of extracted minerals from federal lands. Congress confirmed this tacit policy and legislated those mining customs in 1866, under the uninspired title of *An Act Granting the Right of Way to Ditch and Canal Owners Over the Public Lands, and for Other Purposes*, generally referred to as the Act of 1866.¹⁵² Even by name, it appeared the U.S. government paid scant attention to the prospects of securing mineral wealth for benefit of its landowner citizens.

This hands-off approach permitted the miners to possess and work the mining ground in accordance with the rules of their own making. These rules were, for all practical purposes, “the law of the land” and were recognized as such by the courts. This development of custom dominance is unprecedented in global mining regulation.¹⁵³ But a more fitting truth is that by 1866, it was already too late for any alternative.

Sacramento to Promontory Point, Utah. On May 10, 1869, the Central Pacific line met the Union Pacific, creating a transcontinental railroad. *From Gold Rush to Golden State*, LIBRARY OF CONGRESS, <https://www.loc.gov/collections/california-first-person-narratives/articles-and-essays/early-california-history/from-gold-rush-to-golden-state>. [<https://perma.cc/Z35F-7DSA>].

149. *Jennison v. Kirk*, 98 U.S. 453, 458 (1878). Justice Field’s opinion in *Jennison* is a superb review of the evolution and legislation of mining customs in California.

150. William E. Colby, *Mining Law in Recent Years*, 33 CAL. L. REV. 368, 370 (1945).

151. *Id.*

152. Act Granting Right of Way to Ditch and Canal Owners over Public Land; 14 Stat. 251 (1866). US Government Legislation and Statutes. 13.

153. Colby, *supra* note 150.

1. Mining Resources and the Civil War

Although the history of using enslaved people of color for labor is primarily associated with Southern U.S. states, California has its own history of this practice.¹⁵⁴ Mining is a labor-intensive operation and the Gold Rush attracted both *free-soilers* and *Chivs*.¹⁵⁵ Free African-American settlers journeyed to California to seek their golden fortune, but slave-holding owners also arrived—and by 1852, roughly three hundred Black slaves labored in the mines.¹⁵⁶ Moreover, in 1850, the California Legislature passed the horrifically ironic *Act for the Government and Protection of Indians*.¹⁵⁷ In actuality, the legislation removed basic citizenship rights for Native Americans and permitted their enslavement. By the end of the decade following passage, over 10,000 California Indians were sold into slavery. The law remained in place until its repeal in 1937.¹⁵⁸

Prior to entering the Union, lawmakers had to decide whether California would enter as a slave-holding state or a free state.¹⁵⁹ Under the Compromise of 1850,¹⁶⁰ it was founded as a free state; but its decision was not morally decisive.¹⁶¹ Even after entry and until the outbreak of the Civil War, debate continued over the practice of slavery in the state. Certain factions favored allowing ownership of slaves within a non-slave state. Essentially, they advocated that enslaved persons could not be freed upon reaching California, but

154. *California's Role in the Civil War*, NAT'L PARK SERV., <https://www.nps.gov/goga/learn/historyculture/california-in-civil-war.htm> [<https://perma.cc/QD2G-8LK7>].

155. *Id.* (noting that “California was now home to people from the North, often referred to as free-soilers, who were against slavery, and transplanted Southerners who supported slavery and called themselves the Chivs (for ‘chivalry’)”).

156. *Id.*

157. *Compiled Laws of California, 1850–1853*, Ch. 133 (1850).

158. *California in Time: The Fight Over Slavery through the Civil War*, CAL. DEP'T. PARKS & RECREATION, <http://parks.ca.gov/pages/735/files/ca%20timeline--civil%20war--with%20images%20draft2.pdf> [<https://perma.cc/N4AY-CHYP>].

159. COULSON, *supra* note 21, at 97 (explaining that its key commodity—cotton, which may have served as currency backing—was sanctioned by the Unionist cotton mills and even its international buyers were reluctant to purchase, further destabilizing the currency). However, Coulson notes that even if the British mills had purchased Confederate cotton, the strength of the British pound still lacked the power of gold-backed currency. *Id.* at 97–98.

160. NAT'L PARK SERV., *supra* note 154; see Michael Landis, *A Proposal to Change the Words We Use When Talking About the Civil War*, SMITHSONIAN MAG. (Sep. 9, 2015), <https://www.smithsonianmag.com/history/proposal-change-vocabulary-we-use-when-talking-about-civil-war-180956547> (recommending against the use of “Compromise” to describe legislation passed during the antebellum era). The Fugitive Slave Act of 1850 was part of the 1850 Compromise. After its passage, all African-Americans in California, whether born free or formerly enslaved, lived under constant threat of capture. See generally, Susan Anderson, *California, a “Free State” Sanctioned Slavery*, CAL. HIST. SOC'Y (Apr. 2, 2020), <https://californiahistoricalsociety.org/blog/california-a-free-state-sanctioned-slavery> [<https://perma.cc/VWX7-UCVT>] (describing an example of how three freed Black men, who began a mining supply business, were later falsely reported as “runaway slaves”).

161. NAT'L PARK SERV., *supra* note 154.

free persons could not be enslaved within the state.¹⁶² As the drums of war sounded, the Union anxiously awaited California's decision, carefully following its many legal disputes.¹⁶³ California's eventual decision to support the Union was met with great relief. Union currency was backed by California gold and the Confederate currency lacked comparable monetary stability.¹⁶⁴

The outbreak of the Civil War hastened the U.S. government to protect its valuable resources, which included California's tremendous gold wealth. Aware of the precariousness of the nascent Union currency sans fiscal backing, Confederate-supporting Californians attempted to disrupt the passage of bullion-carrying ships from California to New York.¹⁶⁵ But these insurgent, maritime efforts at blockade failed and the gold continued to be moved.¹⁶⁶ This movement and dispersion was important to Union success: just as ancient empires required Plutonic wealth to expand and protect their kingdoms—so, too, did the United States.

The Civil War ended at great cost. Over 620,000 soldiers died between 1861 and 1865,¹⁶⁷ and the federal government amassed over a billion dollars of debt.¹⁶⁸ Anxious congressmen fretted about the country's credit. They debated whether Western mining lands "should either be leased on a royalty basis or sold to the highest bidder so that the nation might derive some revenue from its own property from which millions upon millions of dollars in gold value were being taken annually without a cent being contributed to it, the lawful owner."¹⁶⁹ The Western representatives demanded action, but their mining constituents would not stand for such change. "The miners of the West were jealous of any interference with the authority and control over the mining regions which they had been exercising for so many years."¹⁷⁰

As a result of the resistance by the Western miners and their federal representatives who sought to protect them, the 1866 Act essentially recognized those foundational mining district customs, including the free mining right and discovery.¹⁷¹ The Act legally sanctioned the presence of miners and the staking

162. *Id.* at 97.

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.*

167. Drew Gilpin Faust, *Death and Dying*, NAT'L PARK SERV., https://www.nps.gov/nr/travel/national_cemeteries/death.html.

168. Colby, *supra* note 150, at 371.

169. *Id.* at 371 (noting that "[w]hen Senator Stewart's [Nevada] bill came before the Senate[,] it contained a clause providing for payment to the government of a royalty of three per cent of the output of the mines. This was eliminated before the bill was finally passed.") Currently, the federal government receives a 12.5 percent royalty on oil and natural gas produced from federal lands. See Brandon S. Tracy, *Revenues and Disbursements from Oil and Natural Gas Production on Federal Lands*, CONG. RSCH. SERV., at 9 (Sep. 22, 2020), <https://fas.org/sgp/crs/misc/R46537.pdf> [<https://perma.cc/P8HW-QR4H>].

170. Colby, *supra* note 65, at 453.

171. Act Granting Right of Way to Ditch and Canal Owners over Public Land, 26 - 14

out and mining of locations on public lands.¹⁷² Further, the Act exacted no payment for granting this privilege that had previously taken place under sufferance.¹⁷³ Payment was required only upon the patent's application, and the price even then was nominal.¹⁷⁴

The Supreme Court confirmed congressional intent of the 1866 Act in *Jennison v. Kirk*, declaring:

“In the first section it was declared that the mineral lands of the United States were free and open to exploration and occupation by citizens of the United States, and those who had declared their intention to become citizens, subject to such regulations as might be prescribed by law and the local customs or rules of miners in the several mining districts, so far as the same were not in conflict with the laws of the United States *In no provision of the act was any intention manifested to interfere with the possessory rights previously acquired, or which might be afterwards acquired; the intention expressed was to secure them by a patent from the government.*”¹⁷⁵

If the federal government was going to assert ownership and authority over minerals, it would have been in that 1866 Act. However, the fear of angering constituents motivated those Western congressmen to bow to the mining districts and their customs. When Congress passed subsequent mining legislation—the 1870 Placer Act and the 1872 General Mining Law—these customs remained intact and became the law of the country.¹⁷⁶

V. MODERN CHALLENGES AND CONFLICTS

A century and a half later, the 1872 General Mining Law still governs locatable minerals on federal lands. Although there have been some changes, such as separate legislation for coal leasing on public lands,¹⁷⁷ the law has not

Stat. 251 (1866), https://digitalcommons.csumb.edu/hornbeck_usa_2_d/13 [<https://perma.cc/55FT-885R>].

172. *Id.*

173. *Id.*

174. Colby, *supra* note 150, at 372.

175. *Jennison v. Kirk*, 98 U.S. 453, 458–59 (1878) (emphasis added).

176. Placer Mining Act of July 9, 1870, ch. 235, 16 Stat. 217 (codified as amended at 30 U.S.C. 35 et seq.) “The Placer Mining Act gave locators of placer deposits the same rights to locate (‘stake’) a claim and purchase title to the land (patent the claim) as the Lode Mining Act gave to locators of mineral lodes.” Carl J. Mayer, *The 1872 Mining Law: Historical Origins of the Discovery Rule*, 53 UNIV. CHI. L. REV. 624, 625 n.3 (1986). The General Mining Law of 1872 codified the 1866 Act (Lode Mining Act) at 30 U.S.C. § 43 et seq., as amended, and the 1870 Act (Placer Mining Act) at 30 U.S.C. 35 et seq.

177. Various legislation followed the General Mining Law, including the Mineral Leasing Act of 1920, which “provided for the leasing of minerals from public lands including oil, gas, coal and other non-energy leasable minerals such as phosphates and sodium. It require[d] that a royalty be paid on amounts mined and sold.” *About Mining and Minerals*, U.S. DEPT. INTERIOR, BUREAU LAND MGMT., <https://www.blm.gov/programs/energy-and-minerals/mining-and-minerals/about> [<https://perma.cc/CSF2-AFNT>]. The Mining and Mineral Policy of 1970 “declare[d] that it is the continuing policy of the federal government

kept up with the demand for minerals or increased public revenue participation. There are constant efforts by Congress, the Executive Branch, and environmental groups to instigate such reform,¹⁷⁸ but none have succeeded.¹⁷⁹ For example, to illustrate the unequal bargains between companies and the public, former Interior Secretary Bruce Babbitt used signing ceremonies to highlight the lack of mining law reform. Secretary Babbitt signed patents using an ink-dip pen that previously belonged to President Ulysses S. Grant—the original signer of the 1872 General Mining Law.¹⁸⁰ Babbitt asked, “How can a public official give away \$1 billion without going to jail?,” as he signed over 110 acres of public land in Idaho, worth \$1 billion, to a Danish mining company for a paltry \$275.¹⁸¹ Under the General Mining Law, he was obligated to approve the transaction.

In May 2022—the 150th anniversary of the 1872 Mining Law—the Biden-Harris Administration convened a meeting to discuss the law, including its benefits and challenges. The meeting also included reform discussion, which addressed a myriad of issues foreign to those early miners and of priority to current stakeholders. These major issues included:¹⁸² payment of royalties to taxpayers for extraction and sale of minerals; inclusion of environmental, reclamation, and financial assurance provisions; and creation of a single department responsible for mining activities.

to foster and encourage private enterprise in the development of a stable domestic minerals industry and the orderly and economic development of domestic mineral resources. This act includes all minerals, including sand and gravel, geothermal, coal, and oil and gas.” *Id.* More information on current mining laws is available in AMERICAN LAW OF MINING, 2ND EDITION (MATTHEW BENDER & COMPANY, INC., 2022).

178. Andrew P. Morriss, Roger E. Meiners & Andrew Dorchak, *Hardrock Homesteads: Free Access and the General Mining Law of 1872*, 24 J. ENERGY NAT. RES. L. 255 (2006); Patrick Garver & Mark Squillace, *Mining Law Reform—Administrative Style*, in PROC. ROCKY MOUNTAIN MIN. L. 45TH ANN. INST., Ch. 14 (1999) Mining Laws of 1872 and 1989: Hearing Before the Subcommittee on Mineral Resources Development and Production of the Committee on Energy and Natural Resources, United States Senate, 101st Cong., First Session, on S. 1126 (1989), Volume 4, Part 2 at p. 33 (testimony by Dr. Sandra L. Blackstone).

179. See John D. Leshy, *Mining Law Reform Redux, Once More*, 42 NAT. RES. L.J. 461 (2002); Sam Kalen, *An 1872 Mining Law for the New Millennium*, 71 COLO. L. REV. 343 (2000); JOHN D. LESHY, *THE MINING LAW: A STUDY IN PERPETUAL MOTION* (RFF Press, 1987); John D. Leshy, *Reforming the Mining Law: Problems and Prospects*, 9 PUB. LAND L. REV. 1, 11 (1988). Various legislative efforts have been introduced, but have failed. *E.g.*, Mining Law Reform Act of 1995, S.506, 104th Cong. (1995); Mining Law Reform Act of 1997, S.1102, 105th Cong. (1998).

180. Chip Giller, *Babbitt Protests a \$1 Billion Giveaway*, HIGH COUNTRY NEWS (Oct. 2, 1995), <https://www.hcn.org/issues/44/1338> [<https://perma.cc/8UYH-C4UX>].

181. *Id.*

182. *Readout of the White House’s First Stakeholder Convening on Mining Reform*, WHITE HOUSE, (May 11, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/11/readout-of-the-white-houses-first-stakeholder-convening-on-mining-reform> [<https://perma.cc/RV4M-BNWH>] [hereinafter “White House”]

Reformation is urgent. The Inflation Reduction Act allocates \$369 billion to climate and energy provisions, which includes \$280 billion in clean energy tax incentives.¹⁸³ This investment is the largest climate action taken by the United States.¹⁸⁴ But this investment in the clean energy economy requires an investment in critical minerals.¹⁸⁵ Demand for minerals such as “lithium, cobalt, and nickel, are projected to increase in demand by 400–600% in the coming decades.”¹⁸⁶ Critical mineral applications not only support clean energy—they support almost every modern infrastructure relied on by human populations: mobile phones, computers, fiber optic cables for telecommunications, semi-conductors, bank notes, defense and aerospace technologies.¹⁸⁷ As the saying goes, “if it wasn’t grown, it was mined.”¹⁸⁸ These critical minerals may also be found outside of Earth, on the Moon, within asteroids, and on other planetary bodies. Participants in space mining are not waiting for the U.S. government to decide ownership or development issues that are particular to extraterritorial jurisdiction.¹⁸⁹ They are already beginning their exploration and lobbying efforts.¹⁹⁰

Closer to home, water conflicts abound in the Western United States. The miners’ custom to use water for development and to attribute ownership to the senior user became the West’s prior appropriation doctrine. Under the application of the prior appropriation doctrine in a dry, arid climate with dwindling rivers and aquifers, there is not enough water to satisfy the senior rights holders, let alone the junior rights holders. Moreover, Native American tribes who held cultural rights, much older than those recognized by the federal government, are not often represented in discussions among states and water right users. With these conflicts in mind, it seems untenable to apply the prior appropriation doctrine to other resources, such as wind. But there is interest

183. Justin McCarthy, *Analysis of Climate and Energy Provisions in the “Inflation Reduction Act of 2022,”* THE CONGRESSIONAL PROGRESSIVE CAUCUS CTR., <https://www.progressivecaucuscenter.org/climate-and-energy-provisions-in-the-inflation-reduction-act> [https://perma.cc/U8A8-RJ8X] (last updated Aug. 2, 2022).

184. *Id.*

185. White House, *supra* note 182.

186. *Id.*

187. *Critical Minerals at Geoscience Australia*, GEOSCIENCE AUSTL., <https://www.ga.gov.au/scientific-topics/minerals/critical-minerals> [https://perma.cc/2VES-W6M8].

188. Exhibit at National Mining Museum and Hall of Fame, in Leadville, Colo. Visited by author in July 2022.

189. Space Law generally falls under International Law for academic purposes. *See, e.g.*, Benjamin David Landry, *A Tragedy of the Anticommons: The Economic Inefficiencies of Space Law*, 38 BROOKLYN J. INT’L L. 523 (2013).

190. Matt Williams, *US House of Representatives Passes Asteroid Mining Bill*, HEROX, <https://www.herox.com/blog/381-us-house-of-representatives-passes-asteroid-mining> [https://perma.cc/54BD-WSY5] (last accessed Aug. 8, 2022) (the bill was not enacted into law per Govtrack.us.).

in doing so, moving away from the rule of capture, another antiquated property doctrine.¹⁹¹

CONCLUSION

The Treaty of Guadalupe Hidalgo signaled one of the greatest expansions of the United States. Those ceded territories were public domain lands—owned in trust for the American people and managed by the federal government. However, at the time of the 1848 treaty—as at Independence—the United States was not focused on mineral extraction and development. Unlike most countries that declared independence from their British colonizers, the United States declared independence prior to its Industrial Revolution.

The pre-industrial birth meant that the United States was unaware of the impending demand for hard rock minerals, rare earth metals, and other subsurface resources. The Founders and post-independence legislators certainly did not possess the ability to predict the escalating need for lithium and other critical minerals. If they had, the United States, like almost all former British colonies and, most of the rest of the world, would have retained all subsurface resources in favor of the government. If the United States is to address the cataclysmic challenges of climate change, energy access and resiliency, and maintain existing technologies such as cancer treatment, electric engines, telescope lenses, televisions, cellphones, and fighter jets, it will need to reexamine its mining laws and policy.¹⁹²

Sustainable resource development requires cooperation between stakeholders. This cooperation is impossible without a representative legislation that balances development with environmental conservation and public revenue collection to support conservation and remediation. Similarly, firms appreciate the certainty of legislative and fiscal environments, which reduce the risk of moratoria and bans. This legislative modernization is also especially necessary for the future of mining, which may lie in outer space. There, the potential for wealth generation is staggering. And critical minerals are not the only prize—the quest for water will be the next Gold Rush.¹⁹³ Frozen water available on astronomical bodies, such as asteroids and moons, may provide a parched Earth with a bountiful supply of the life-giving liquid. Importantly, this opportunity raises one of the most complicated property ownership dilemmas: who owns these natural resources?¹⁹⁴ Ownership not only includes the

191. See generally, TERENCE DAINIITH, *FINDERS KEEPERS? HOW THE LAW OF CAPTURE SHAPED THE WORLD OIL INDUSTRY* (Routledge 1st ed. 2010) (offering a meticulous review of the historical and political background that shaped the rule of capture, which largely governs petroleum ownership in the U.S.)

192. Sabri Ben-Achour, *The U.S. is Trying to Reclaim its Rare-Earth Mantle*, MARKETPLACE.ORG (Apr. 30, 2021), <https://www.marketplace.org/2021/04/30/the-u-s-is-trying-to-reclaim-its-rare-earth-mantle> [<https://perma.cc/84H9-47SJ>].

193. Monika U. Ehrman, *Hidden Resources*, 13 UC IRVINE L. REV. (forthcoming 2023).

194. *Id.*

right to take, but also the right to exclude. The right to exclude is the centerpiece of property rights, but who holds these rights? And, in fact, should anyone have these rights? Space is the ultimate Ostromian commons.¹⁹⁵

Recently, the Biden Administration recommended that Congress “develop legislation to replace outdated mining laws including the [1872] General Mining Law . . . to have stronger environmental standards, up-to-date fiscal reforms, better enforcement, inspection and bonding requirements, and clear reclamation planning requirements.”¹⁹⁶ Perhaps this is finally the political environment for Congress to examine those longstanding customs. Do these customs square with advanced mining technology, global supply chains, and public prioritization of environmental conservation and fair fiscal treatment?

For now, the General Mining Law of 1872 still governs all exploration and production of hard rock minerals on federal land.¹⁹⁷ Those ancient mining customs from faraway lands took root in the United States and endured. There would be neither royal nor regalian right in America: they were both overthrown.

195. The “Ostromian Commons” refers to economist Elinor Ostrom’s characterization of resources with open access problems. See ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* (Cambridge University Press 1990).

196. Shane Lasley, *Biden Seeks Federal Mining Law Overhaul*, MINING NEWS N. (Jun. 25, 2021), <https://www.miningnewsnorth.com/story/2021/06/25/in-depth/biden-seeks-federal-mining-law-overhaul/6860.html> [<https://perma.cc/U895-BTMS>].

197. Mayer, *supra* note 176, at 625.