ARTICLE

BEYOND THE PROGRESS OF THE USEFUL ARTS: THE INVENTOR AS USEFUL CITIZEN

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ABSTRACT

There is a robust scholarly discussion about whether and how the U.S. patent system fulfills its constitutional directive to promote the progress of the useful arts. There is also increasingly a discussion that investigates extraconstitutional roles for the patent system, from signaling and credentialing to self-expression and bolstering nationalism. This Article expands our pluralistic vision of the patent system by exploring the ways in which the patent system has served to foster and identify what I call "useful citizens," who possess the ability to perform civic duties. As legislators and bureaucrats experimented with patent laws and practices in a struggling postcolonial country, they came to define the inventor-patentee in unique ways. A patent certified the originality and independent thought of the inventor, abilities defined as crucial for participation in democratic self-governance. I argue that this unacknowledged sociopolitical role for patents explains in part the persistence of the U.S. patent system in the face of the long-running critique of its efficacy in promoting innovation and economic growth. Further, I argue that the ideology of inventor as useful citizen reveals the role of patents

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and invention in the historic restriction of full citizenship rights in the United States to white men and the continuing stakes of patent system participation as patents continue to be linked in the public imagination to American national identity.

To make this argument, this Article develops a comparative legal history among the early United States, the Republic of Texas (1836–1846), and the Confederate States of America (1861–1865), contrasting the U.S. patent system to the patent systems in each of these imitative democracies founded by former U.S. citizens. I analyze how these countries, engaged in desperate battles for survival, devoted scarce resources to establishing a patent office, briefly tracing the constitutional, legislative, and bureaucratic history of the Texas and Confederate patent systems. In each case, politicians looked to the U.S. patent system as a model even as other patent systems, such as those of Great Britain and Mexico, offered alternatives seemingly advantageous to these cash-strapped and under-industrialized nations. I argue that the form these new patent systems took demonstrated that the white men who created them believed in the inventor as useful citizen. Further, the political context of these start-up republics explains their decision to implement patent systems that credentialed inventors as well as incentivized invention. Returning to U.S. history, I demonstrate how using patents to identify useful citizens was linked to race and gender restriction of civil rights. In conclusion, I consider how the continued link of patents and citizenship offers possibilities for both the inclusive and exclusive mobilization of patents as group credentials.

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I. INTRODUCTION

What are we doing in the United States when we implement and maintain a patent system? This question is significant both descriptively and normatively, as U.S. legislators and bureaucrats consider how best to shape and administer the patent system.[1] This Article argues that when answering it, we should consider what Texans and Confederates thought they were doing when they implemented and operated patent systems.[2] By analyzing how two war-torn and impoverished republics copied the U.S. patent system, we can see how U.S. citizens had come to understand the purposes of their patent system. Using comparative legal history, this Article demonstrates that by the mid-nineteenth century, when the U.S. patent system took its present form, U.S. citizens believed that it was promoting the functioning of their democratic republic. The U.S. patent system, as it had been haltingly shaped into its modern contours, encouraged the "useful arts" *and* useful citizens, the type of individuals needed to make an uncertain experiment in democratic republicanism succeed.[3] This underappreciated purpose explains why a U.S.-style patent system was a priority in countries struggling to replicate the U.S. government and, more consequentially, why the patent system has retained pride of place in the U.S. national imagination.

The purpose of the patent system provided in the U.S. Constitution is to "promote the progress" of the "useful arts"—"useful arts" being eighteenth-century parlance for what we now call technology.[4] The patent system offers an exclusive period in

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1. *See, e.g.*, Patent Eligibility Jurisprudence Study, 86 Fed. Reg. 36257 (July 9, 2021) (seeking information regarding possible need to reform patentable subject matter); ANDREI IANCU & LAURA A. PETER, USPTO, STUDY OF UNDERREPRESENTED CLASSES CHASING ENGINEERING AND SCIENCE SUCCESS: SUCCESS ACT OF 2018 (Oct. 31, 2019) (reporting on efforts to increase patent system inclusion in response to congressional mandate).

2. I use Texans to refer to white Anglophone residents of the Republic of Texas, distinct from Tejanos, "native Hispanic inhabitants of Texas." ANDRES TIJERINA, TEJANOS AND TEXAS UNDER THE MEXICAN FLAG, 1821–1836 x (1994). "Confederates" refers to white residents of the Confederate States of America.

3. U.S. CONST. art. I, § 8, cl. 8 (capitalization modernized).

4. *Id.* (capitalization modernized); RUTH OLDENZIEL, MAKING TECHNOLOGY MASCULINE: MEN, WOMEN AND MODERN MACHINES IN AMERICA 1870–1945 20 (1999).

which to commercialize an invention.[5] What is often referred to as the incentive theory explains that by maintaining a patent system that offers individual financial incentives, the United States harnesses inventiveness that, en masse, hastens technological innovation and national economic growth.[6] This description provides normative benchmarks by which to measure the success of the patent system.[7] Even as much scholarship considers ways in which the patent system might be modified to better meet these goals, an increasing number of scholars have also noted that individuals and firms seek patents for reasons other than the hope that exclusivity will lead to profit.[8] They choose patent system participation in support of other ends that do not necessarily advance the progress of useful arts. These extraconstitutional ends range from signaling and reputation-building to self-expression and bolstering nationalism.[9]

This Article reframes our understanding of constitutional and extraconstitutional roles for the U.S. patent system. Rather than understanding them as, respectively, primary and incidental, it suggests that both are significant, designed into the patent system, and interdependent. This Article argues that patents can

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5. U.S. CONST. art. I, § 8, cl. 8 ("[S]ecuring for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries."); 35 U.S.C. § 154(a)(1) (stating that a patent includes "a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling the invention"); 35 U.S.C. § 154(a)(2) (mandating a patent term of no more than twenty years). While the language of grant has shifted, and the patent term has been slightly lengthened, these aspects of patents have been in place since the Patent Act of 1790, ch. 7, § 1, 1 Stat. 109, 110 (repealed 1793) ("[G]ranting to such petitioner or petitioners, his, her, or their heirs, administrators or assigns for any term not exceeding fourteen years, the sole and exclusive right and liberty of making, constructing, using and vending to others to be used.").

6. Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480 (1974); *see, e.g.*, Eric E. Johnson, *Intellectual Property and the Incentive Fallacy,* 39 FLA. ST. U. L. REV. 623, 624, 626–27 (2012) (describing incentive theory as "elegant" and "the most influential theory" while also critiquing it as wrong); JESSICA SILBEY, AGAINST PROGRESS: INTELLECTUAL PROPERTY AND FUNDAMENTAL VALUES IN THE INTERNET AGE 5 (2022) (introducing "grand incentive narrative" and critiquing technoeconomic definition of progress).

7. *See, e.g.*, Mark A. Lemley, *Faith-Based Intellectual Property,* 62 UCLA L. REV. 1328, 1332–33 (2015) (surveying three decades of empirical research); Petra Moser, *Patents and Innovation: Evidence from Economic History,* J. ECON. PERSPS., Winter 2013, at 23, 23–25 (2013) (identifying questions that can be answered using historical examples to gauge effect of patent systems on innovation).

8. *See, e.g.*, Jason Rantanen & Sarah E. Jack, *Patents as Credentials*, 76 WASH. & LEE L. REV. 311, 314–16 (2019) (surveying scholarship considering motivation for patenting); Stephanie Plamondon Bair & Laura Pedraza-Fariña, *The Sociology and Psychology of Innovation: A Synthesis and Research Agenda for Intellectual Property Scholars,* 60 HOUS. L. REV. (forthcoming 2022) (manuscript at 116–17) (on file with the *Houston Law Review*) (noting need to go beyond law and economics to understand decisions to innovate).

9. *See* discussion *infra* text accompanying notes 19–27.

and do simultaneously support technological and economic progress and the ongoing functioning of the United States as a democratic republic, at least aspirationally.

To make this argument, this Article applies comparative legal history, a perspective-shifting approach that exposes the implicit assumptions of U.S. citizens about their patent system by analyzing the actions of those who left the United States and formed imitative democracies: the Republic of Texas (1836–1846) and the Confederate States of America (1861–1865). Each of these new countries, engaged in desperate battles for survival, devoted scarce resources to establishing a patent office, choosing the U.S. patent system as a model even as other patent systems, such as those of Great Britain and Mexico, offered alternatives seemingly more advantageous to these cash-strapped and under-industrialized nations.[10] I argue that these choices demonstrate that the white men who founded these countries carried with them from the United States a belief that a patent system could be a means of fostering useful citizens who would promote much-needed political stability as well as the stimulus to the useful arts sought by these countries reliant on slave-based commodity agriculture. By investigating what these imitators copied and changed as they established patent systems even in the midst of wartime turmoil, we can uncover the understandings they brought from the United States about the dual roles of patents in a republic. Identifying these understandings can assist us in understanding the U.S. patent system.

In Part II, I briefly review constitutional and extraconstitutional roles for U.S. patents before turning in Part III to the patent system models available to the new United States and to its later imitators. I describe features of the systems in Great Britain and France and briefly trace the choices made by U.S. legislators and bureaucrats to craft the system in place in the United States by 1836, which has remained the basis for the U.S. patent system until the present and is unique in its breadth of access and emphasis on the creative achievement of the named inventor. In Part IV, I develop a comparative history, comparing the U.S. system to those of the Republic of Texas and the Confederate States of America. I then use this history in Part V to consider the shared political context of nation-building, identifying the role of the U.S. patent system in fostering useful citizens, a role

10. *See* discussion *infra* text accompanying notes 91–167.

subsequently mobilized in Texas and the Confederacy to support not only democratic republicanism but also citizenship linked to white racial identity in which full legal personhood was reserved for men only. To conclude, I consider the useful citizen today, identifying how the dual role of the patent system continues in ways supportive of equality and broad participation in technology creation and commercialization and also in ways that continue to exclude.

II. PATENT PURPOSES

The U.S. Constitution offers the shortest answer to the question of what we are doing when we create and implement a patent system. Patents are intended "to promote the progress of . . . [the] useful arts," providing the benefits of new technologies and associated economic growth to all.[11] In the two centuries since Congress launched the U.S. patent system, however, patents have come to serve many other purposes. In addition to their constitutionally mandated technoeconomic role, patents serve social roles. Like other forms of property, patents have been used to mediate relations among people in ways that have little to do with increasing innovation or national economic growth.

A. *The Progress of the Useful Arts*

The Founders of the United States shared a concern about domestic manufacturing. The inability of the new nation to manufacture armaments during the Revolutionary War underscored the need to transform a colonial economy, based on raw materials, into one that shared in the emerging industrialization of the European imperial powers.[12] Congress launched the U.S. patent system with the Patent Act of 1790, titling it "[a]n Act to promote the progress of useful arts."[13] While

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11. U.S. CONST. art. I, § 8, cl. 8 (capitalization modernized).

12. NEAL LONGLEY YORK, MECHANICAL METAMORPHOSIS: TECHNOLOGICAL CHANGE IN REVOLUTIONARY AMERICA 79–81 (1985) (explaining that despite efforts, the munitions industry never became self-sufficient during the Revolutionary War, "awakening Americans to the necessity of improving [manufactures]"); JOHN KASSON, CIVILIZING THE MACHINE: TECHNOLOGY AND REPUBLICAN VALUES IN AMERICA, 1776–1900 17 (1976) ("[A]n increasing number of Americans in the 1780s demanded that the nation . . . restore her vigor by promoting domestic manufactures."). Even Jefferson, famously a proponent of a primarily agrarian economy, while ambassador to France had participated in a scheme to steal English textile technology to promote North American manufacturing. Anthony F.C. Wallace & David J. Jeremy, *William Pollard and the Arkwright Patents*, 34 WM. & MARY Q. 404, 410 (1977).

13. Patent Act of 1790, ch. 7, 1 Stat. 109 (repealed 1793).

the end was clear, the means remained under negotiation for decades.[14] After two wholesale revisions of the patent system in 1793 and 1836, Congress established the U.S. patent system in the form in which it persists today, creating the world's first modern patent office and initiating the position of full-time patent examiner.[15] Looking back at the patent system's founding, those celebrating its centennial in 1891 concluded that the system had succeeded in "accelerating the prosperous growth of the Nation and . . . aiding the progress of our civilization." [16] In the twenty-first century, the patent office continues to offer this same technoeconomic explanation of its purpose as a driver of innovation and economic growth. The United States Patent and Trademark Office (USPTO) describes itself to the public as "at the cutting edge of the nation's technological progress" and a necessary support for the "strength and vitality of the U.S economy."[17] The "conventional story of patents" remains a narrative of individual rights, stimulating more invention, and thereby more technology and more economic growth, to the benefit of all.[18]

Despite this long-lasting consensus about the purpose of the patent system, there are competing theories to explain how it works, dominated by the incentive theory but encompassing a variety of utilitarian explanations, as well as nonutilitarian explanations that argue for patents as the natural property right of inventors.[19] These theories provide fodder for a robust scholarly discussion about whether and how the U.S. patent system

14. *See generally* Kara W. Swanson, *Making Patents: Patent Administration, 1790–1860*, 71 CASE W. RSRV. L. REV. 777, 777–80 (2020) (discussing the "tumultuous early years of the US patent system," with attention to changes in patent bureaucrats and their responsibilities).

15. Patent Act of 1793, ch. 11, 1 Stat. 318 (repealed 1836); Patent Act of 1836, ch. 357, 5 Stat. 117.

16. J. Elfreth Watkins, *To the Inventors of America and the Manufacturers of Inventions*, *in* PROCEEDINGS AND ADDRESSES, CELEBRATION OF THE BEGINNING OF THE SECOND CENTURY OF THE AMERICAN PATENT SYSTEM AT WASHINGTON CITY, D.C. APRIL 8, 9, 10, 1891 4 (1892) (describing the believed effects of the first century of the U.S. patent system).

17. USPTO, *About Us*, https://www.uspto.gov/about-us [https://perma.cc/P5AA-PCXK] (last visited Aug. 24, 2022).

18. Rantanen & Jack, *supra* note 8, at 313.

19. *See, e.g.*, Stephanie Plamondon Bair, *The Psychology of Patent Protection*, 48 CONN. L. REV. 297, 302–12 (2015) (providing utilitarian and non-utilitarian accounts of the patent system); Dan L. Burk, *On the Sociology of Patenting*, 101 MINN. L. REV. 421, 423–24 n.8 (2016) (giving examples of deontological theories of intellectual property); ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY 3–4 (2011) (noting both utilitarian justifications and rights-based justifications for intellectual property); RANDOLPH J. MAY & SETH L. COOPER, THE CONSTITUTIONAL FOUNDATIONS OF INTELLECTUAL PROPERTY: A NATURAL RIGHTS PERSPECTIVE 3–6 (2015).

performs its claimed technoeconomic function—a set of critiques and suggestions for improvements that is nearly as old as the patent system itself.[20]

B. Beyond Technology

There is also a growing scholarly literature identifying ways in which patent system participants have identified purposes for patents unrelated to invention, technology, or commercialization.[21] Without disagreeing with or working against the role of patents in promoting technoeconomic progress, those seeking and using patents might also be pursuing other ends, rooted in psychology or sociology more than innovation studies and economics.[22] This

20. This discussion is too extensive to be captured in a footnote. *See generally* sources cited *supra* note 7; ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT (2011); JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK (2008) (each extensively citing the scholarly discussion). For more recent additions to this discussion, see, e.g., Rachel Goode & Bernard Chao, *Biological Patent Thickets and Delayed Access to Biosimilars, An American Problem*, 9 J.L. BIOSCIENCES, July–Dec. 2022, at 1, 2–3 (critiquing the U.S. patent system as hindering introduction of biological drugs); Lisa Larrimore Ouellette & Rebecca Weires, *University Patenting: Is Private Law Serving Public Values?*, 2019 MICH. ST. L. REV. 1329, 1330–31, 1333 (investigating social benefit of patents measured by commercialization and inventor incentives against costs in context of university patents). For an early example, see OLIVER EVANS, ADDRESS OF THE ADVOCATE FOR THE PATENTEES, INVENTORS OF USEFUL IMPROVEMENTS IN THE ARTS AND SCIENCES; PETITIONERS TO CONGRESS, FOR REDRESS OF GRIEVANCES 4 (1806) (complaining that the patent system "plunder[s] . . . the fruit of [inventors'] labor" and fails to incentivize "[m]en of genius").

21. *See, e.g.*, Rantanen & Jack, *supra* note 8, at 317 (identifying "the non-exclusionary role of patents"); Jessica Silbey, *Patent Variation: Discerning Diversity Among Patent Functions*, 45 LOY. U. CHI. L.J. 441, 471–72 (2013) (identifying and analyzing "personal and moral dimensions [of patents]," including both "individual and public interests"). There is also a literature investigating how patents are used for profit-maximization in ways other than commercialization of the patented invention. *See, e.g.*, Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625 (2002) (analyzing patents as economic signals); Silbey, *supra*, at 459, 461 (explaining that patents can "signal[] business prosperity" and detailing six ways patents "function as business tools"); Stuart J.H. Graham & Ted Sichelman, *Why Do Start-Ups Patent?*, 23 BERK. TECH. L.J. 1063, 1071–83 (2008) (discussing other business reasons to patent). While such uses are arguably only indirectly related to technological progress as profit-seeking uses, such patent activity is generally analyzed within the framework of the incentive theory. *See, e.g.*, *id.* at 1068, 1071; Burk, *supra* note 19, at 425 (characterizing such "alternative rationales for patenting [as] . . . based on some sort of utility maximization").

22. Psychology and sociology can also be used as frames to analyze the effectiveness of patents as technoeconomic tools. *See, e.g.*, Stephanie Plamondon Bair & Laura G. Pedraza-Fariña, *Anti-Innovation Norms*, 112 NW. U. L. REV. 1069, 1083 (2018). *See generally* Richard S. Gruner, *Imagination, Invention, and Patent Incentives: The Psychology of Patent Law*, 2017 U. ILL. J.L. TECH. & POL'Y 375 (2017); Gregory N. Mandel, *To Promote the Creative Process: Intellectual Property Law and the Psychology of Creativity*, 86 NOTRE DAME L. REV. 1999 (2001).

scholarship has been mapping a pluralistic patent system that serves ends beyond those identified in the Constitution and, at least sometimes, arguing that such plurality is not a sign of failure.[23]

Much of this scholarship centers around ways in which patents, like all legal creations, exist within a social context.[24] Any decision to seek patents occurs within a matrix of personal, professional, social, and cultural connections that generates social meaning and value for patents and creates opportunities for their use in creating and modifying such connections. Individuals might seek patents in order to gain credit, reputation-enhancing attribution, and/or simply respect.[25] Firms, too, may acquire patents for "ceremonial" purposes to demonstrate that they are well-run, innovative enterprises and/or that they are in conformance with social norms.[26] A patent might be a vehicle of self-expression, serving as an external validation of the intimate connection between inventor and the embodiment of their creativity.[27]

Like college degrees, patents are a respected and recognized form of mobilizable social capital and can be used by patentees to change their position in the world in ways that are independent of the content of a patent and the commercialization of the claimed

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23. *See, e.g.*, Silbey, *supra* note 21, at 477 (explaining that patents "communicate messages and have personal as well as moral meaning . . . distinct from the constitutional mandate"); Burk, *supra* note 19, at 444 (patents can be both "[c]eremonial" and "an incentive to innovation"). *But see* Lemley, *supra* note 7, at 1342–44 (arguing that continued advocacy for patents in the absence of proof that they serve technoeconomic purposes is irrational and damaging).

24. *See* William Hubbard, *Inventing Norms,* 44 CONN. L. REV. 369, 396–97 (2011) (analyzing interrelationship among patent law, norms, and social meaning); Laura G. Pedraza-Fariña, *Patent Law and the Sociology of Innovation,* 2013 WIS. L. REV. 813, 816 (arguing that the sociological study of innovation is "essential" to an understanding of patent law); Silbey, *supra* note 21, at 444 (investigating social context of invention and patenting through interviews); Burk, *supra* note 19, at 440–42, 444–48 (applying new institutional sociology to patent decision-making); Bair & Pedraza-Fariña, *supra* note 8 (manuscript at 102, 105–07, 109) (reviewing literature discussing social influences on technology creation).

25. *See, e.g.*, Hubbard, *supra* note 24, at 400–03; Rantanen & Jack, *supra* note 8, at 315–16; MERGES, s*upra* note 19, at 310.

26. Burk, *supra* note 19, at 442 (distinguishing between firm use of patents as a social signal and as an economic signal).

27. Jeanne Fromer, *Expressive Incentives in Intellectual Property,* 98 VA. L. REV. 1745, 1771–72 (2012) (describing relation of invention to selfhood, and arguing that individuals need both pecuniary and expressive incentives to create); Silbey, *supra* note 21, at 455 (noting that "recognition of being an inventor" leads to "good feelings of acclaim and commendation" even if they do not file for a patent to achieve this feeling).

invention.[28] Jason Rantanen and Sarah Jack have argued that it is the "specific abstraction and formality" of patents that makes them "high-quality credential[s]."[29] The ability of patents to act as credentials is crucially dependent on the process of their creation, that is, on the patent system.[30] The processes of the patent office, reinforced by the courts, make U.S. patents into documents that identify both an invention and an inventor.[31] While this statement may seem obvious, the fact that U.S. patents are high-quality credentials of the inventiveness of inventor-patentees was not inevitable but rather the result of choices made between 1790 and 1836 that established the modern U.S. patent system.[32]

III. CRAFTING A PATENT SYSTEM

When the Framers added the power "to promote the progress of . . . [the] useful arts" to the draft Constitution in 1787, the addition to the text passed without debate.[33] The men at the Constitutional Convention were familiar with the patent systems of Great Britain, its North American colonies, and the states.[34] This delegation of power to Congress was not intended to inaugurate something new but rather to nationalize an existing practice. The first Patent Act, passed in 1790, was also uncontroversial.[35] The initial patent system, which designated the Secretary of State, the Secretary of War, and the Attorney General to review and decide on each patent application, rapidly proved too

28. Rantanen & Jack, *supra* note 8, at 324–25 (using degrees to explain functions of credentials); *see also* Hubbard, *supra* note 24, at 400 (arguing patents are credentials "like a degree").

29. Rantanen & Jack, *supra* note 8, at 317–18.

30. *Id.* at 322–29, 338–40; Hubbard, *supra* note 24, at 398–401.

31. Rantanen & Jack, *supra* note 8, at 341–42; Hubbard, *supra* note 24, at 400.

32. Rantanen & Jack, *supra* note 8, at 330, 332–39 (reviewing aspects of U.S. patents and the process of obtaining them that support credentialing function, in the context of unchanging "core idea" of patents since 1790).

33. BRUCE W. BUGBEE, GENESIS OF AMERICAN PATENT AND COPYRIGHT LAW 1 (1967) (capitalization modernized); EDWARD C. WALTERSCHEID, THE NATURE OF THE INTELLECTUAL PROPERTY CLAUSE: A STUDY IN HISTORICAL PERSPECTIVE 107 (2002).

34. *See* BUGBEE, *supra* note 33, at 2–3 (identifying European, colonial, and state intellectual property protection as "precedent upon which the founders of 1787 and the lawmakers of 1790 could draw"); OREN BRACHA, OWNING IDEAS: THE INTELLECTUAL ORIGINS OF AMERICAN INTELLECTUAL PROPERTY, 1790–1909 12 (2016) (describing Americans as "immersed" in English, colonial, and state patent regimes).

35. *See* EDWARD C. WALTERSCHEID, TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION, 1787–1836 109–43 (1998) (detailing steps in passage of bill).

burdensome to administer.[36] Congress switched to a simple registration system with a new act in 1793 and then, after three decades of experience and administrative experimentation, passed the Patent Act of 1836, which created the contours of the modern patent system.[37] With each change, the United States both borrowed from and rejected aspects of familiar models, crafting a patent system that ultimately was unique in its breadth of access and emphasis on the creative achievement of the named inventor.

A. Patent System Models

Government protection for inventions in British North America occurred in the context of British patent practice. While not the first polity to offer exclusive limited term rights to inventors, by the seventeenth century Great Britain had an established tradition of *letters patent* for inventions.[38] Unlike the United States, however, Great Britain had no patent statute until 1852.[39] Instead, its system survived as an exception to the Statute of Monopolies of 1624 that outlawed all other royal grants of monopoly.[40] Patents were a grant of royal favor.[41] Colonial and state patent practice in British North America followed this model, with patents for invention granted as special bills by legislatures, which responded to petitions from residents who might be inventors or, as had long been encouraged in Britain, importers of a technology developed abroad.[42] No colony or state had a patent office or any means of disseminating the text of patents, or even of

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36. Swanson, *Making Patents*, *supra* note 14, at 782–83, 792, 794 (reviewing complaints by bureaucrats); WALTERSCHEID, TO PROMOTE THE PROGRESS, *supra* note 35, at 195–222 (detailing legislative history of the Patent Act of 1793).

37. Patent Act of 1793, ch. 11, 1 Stat. 318 (repealed 1836); Patent Act of 1836, ch. 357, 5 Stat. 117; Swanson, *Making Patents*, *supra* note 14, at 794–804, 807 (detailing administration of registration system and implementation of examination system).

38. BUGBEE, *supra* note 33, at 14–15, 17–40 (tracing early patents to Renaissance Italy, and detailing English letters patent and patents for invention); BRACHA, *supra* note 34, at 15–25 (tracing English origins of American patent practice). *See generally* CHRISTINE MACLEOD, INVENTING THE INDUSTRIAL REVOLUTION: THE ENGLISH PATENT SYSTEM, 1660–1800 (1988) (providing seventeenth- and eighteenth-century history of English patent system).

39. B. ZORINA KHAN, THE DEMOCRATIZATION OF INVENTION: PATENTS AND COPYRIGHTS IN AMERICAN ECONOMIC DEVELOPMENT, 1790–1920 33 (2005); SEAN BOTTOMLEY, THE BRITISH PATENT SYSTEM DURING THE INDUSTRIAL REVOLUTION 1700–1852 33 (2014).

40. Statute of Monopolies 1624, 21 Jac. c. 3 (Gr. Brit.); BUGBEE, *supra* note 33, at 38–40; MACLEOD, INVENTING THE INDUSTRIAL REVOLUTION, *supra* note 38, at 15.

41. BRACHA, *supra* note 34, at 16, 21 (describing the "ad hoc discretionary" issuance of patents).

42. *Id.* at 25–26, 28–30.

making copies available for public inspection, and only South Carolina passed legislation to regularize the process.[43]

While the newly independent United States was setting up its patent system, the British system continued to evolve, becoming more routinized and less discretionary. What resulted, by the nineteenth century, was convoluted and expensive. Before 1852, there was no British patent office; a patent application proceeded through ten stages, handled by seven offices.[44] Cumulative fees for England were $585, about four times per capita income.[45] Additional fees were needed to protect an invention in Scotland and Ireland and to add a co-inventor, resulting in fee totals that could reach $1,700.[46] There was no examination that certified that the applicant was the first or true inventor, and patents were granted to non-inventors who imported a new technology.[47] Those who wished to read specifications of issued patents needed to travel to London or pay a fee to subscribe to privately published periodicals.[48] The result was a patent system skewed toward those with access to wealth and power who patented capital-intensive technologies.[49]

France, too, offered exclusive rights to inventions beginning in the eighteenth century.[50] Like Britain, France had high fees and a registration system, albeit with "informal and unofficial"

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43. *See id.* at 25–31 (analyzing colonial and state patent grants as "sporadic" and "ad hoc"); BUGBEE, *supra* note 33, at 57–83, 84–103 (reviewing patent grants by colonies and states).

44. *See* KHAN, *supra* note 39, at 32; BOTTOMLEY, *supra* note 39, at 33–34, 36–39.

45. KHAN, *supra* note 39, at 31 (converting the fees to U.S. currency for comparative purposes); BOTTOMLEY, *supra* note 39, at 61 (noting that "official fees" were £95, with an additional £40 to prepare and file a specification).

46. KHAN, *supra* note 39, at 31; BOTTOMLEY, *supra* note 39, at 61–62.

47. KHAN, *supra* note 39, at 31. *But see* BOTTOMLEY, *supra* note 39, at 54–57 (noting that a significant minority of patents were subject to examination in the form of a caveat opposition proceeding before grant). Great Britain implemented some aspects of examination in 1883 and mandated U.S.-style examination for novelty in 1902. KHAN, *supra* note 39 at 38; The Patents Act of 1902, 2 Edw. 7 c. 34, § 1 (UK) (repealed 1907).

48. BOTTOMLEY, *supra* note 39, at 185–86, 188–97.

49. KHAN, *supra* note 39, at 29.

50. *Id.* at 39–43. Although, unlike the British patent law, French patent law was not a direct model for colonial patent practice, I include France as an available model because, like the United States, it passed patent laws in the eighteenth century and because there is evidence that Americans paid attention to the French patent system. *See, e.g.*, *French Patents*, THE FRANKLIN JOURNAL, AND AMERICAN MECHANICS' MAGAZINE, Aug. 1826, at 88, 88; *French Patents*, THE FRANKLIN JOURNAL, AND AMERICAN MECHANICS' MAGAZINE, Nov. 1826, at 306, 306–08; *Society for Promotion of Internal Improvements*, THE FRANKLIN JOURNAL, AND AMERICAN MECHANICS' MAGAZINE, Feb. 1826, at 71, 71–73. Other European countries also implemented patent systems in the nineteenth century. MACHLUP, *supra* at 3–4 (noting laws protecting inventor's rights passed in twelve European nations between 1810 and 1843).

examination, making patents both expensive and less valuable as rights.[51] As in Britain, the government did not invest in printing or publicizing patent specifications, and access to a manuscript copy was both difficult and restricted until 1902.[52] Americans considering previous North American and European models would have noted that these existing systems were expensive and difficult to access, opaque in both process and results. They resulted in a relatively small number of issued patents, and those patents were of limited worth, subject to overturn by the courts. Yet by the late eighteenth century, Great Britain had become a leader in industrialization, widely copied and envied for its new mills and factories that were transforming the manufacture of consumer goods.[53] A system like that of Britain, therefore, might suffice to incentivize the progress of the useful arts.

B. American Exceptionalism

Despite these models and British industrial success, Congress, over time, designed a system that was distinct in its cheapness, accessibility, and transparency. It also implemented the world's first modern patent examination system, using administrative innovations like full-time patent examiners, that became, within decades, a model for European patent systems.[54] Examination increased the commercial value of patents and also their quality as credentials, certifying both the invention and the inventor.[55]

At the outset, despite the pressing need of the new United States for funds, Congress instituted a patent system with low fees. In 1790, patent applicants needed only to pay an upfront fee

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51. Jérôme Baudry, *Examining Inventions, Shaping Property: The Savants and the French Patent System*, 57 HIST. SCI. 62, 67–68 (2019) (noting that while French law did not mandate examination from 1793 to 1968, informal examination was conducted by a committee of savants from 1796 into the twentieth century); KHAN, *supra* note 39, at 39, 43.

52. KHAN, *supra* note 39, at 45, 58–59.

53. KASSON, *supra* note 12, at 21–24, 26–27 (detailing British inventions associated with its industrialization, which led Thomas Jefferson to moderate his opposition to manufactures and led other Americans to seek to copy them).

54. KHAN, *supra* note 39, at 52–53, 298; *see also* BOTTOMLEY, *supra* note 39, at 9 (describing the U.S. patent system as the "most sophisticated . . . in the world" in 1851).

55. B. Zorina Khan & Kenneth L. Sokoloff, *History Lessons: The Early Development of Intellectual Property Institutions in the United States*, J. ECON. PERSPS., Summer 2001, at 233, 236, 239 (arguing that an increase in patent assignments after examination began demonstrated increased market value); Rantanen & Jack, *supra* note 8, at 340, 350, 381 (arguing that examination of patent applications increases the quality of patents as credentials).

of fifty cents, followed by a per-word charge to write the patent along with other small fees, making the total charge for an issued patent about $4–$5, or about one-hundredth of the cost in Great Britain.[56] With the Patent Act of 1793, the United States implemented a single charge of $30, much higher but still less than 10% of the British cost.[57] Even when Congress created a formal patent office with full-time employees and instituted the modern practice of examination, requiring many more employees, it kept fees at $30.[58] This low charge was a deliberate difference. In Britain, high fees acted as a screening mechanism in lieu of examination, discouraging those uncertain whether their invention was worth the cost, and they also greatly reduced the number of patent applications.[59] In contrast, the United States welcomed all comers. One did not need to be in the wealthy elite to seek a patent. As economic historian B. Zorina Khan has noted, the U.S. system was "consciously designed to stimulate participation in invention across a wide spectrum of the population."[60]

The United States also promoted the accessibility of patents by centralizing application processing in one office and allowing applications by mail after 1793.[61] Postage was waived for the application itself and, while making a patent model (required until 1880) could be expensive, the inventor could deposit the model at collection sites around the country for free transport to the patent office.[62] By its bureaucratic choices, Congress deliberately encouraged broad participation in the patent system. According to the incentive theory, Congress was thus also encouraging wide participation in invention.

These deliberate decisions to foster participation in technology creation were aimed squarely at U.S. citizens.[63] The

56. Patent Act of 1790, ch. 7, § 7, 1 Stat. 109, 112 (repealed 1793); KENNETH W. DOBYNS, THE PATENT OFFICE PONY: A HISTORY OF THE EARLY PATENT OFFICE 31 (2d ed. 2016). For British costs, see *supra* note 45 and accompanying text.

57. Patent Act of 1793, ch. 11, § 11, 1 Stat. 318, 323 (repealed 1836); *supra* note 45 and accompanying text.

58. Patent Act of 1836, ch. 357, §§ 1, 2, 7, 9, 5 Stat. 117, 117–19, 121.

59. KHAN, *supra* note 39, at 31; BOTTOMLEY, *supra* note 39, at 62–63.

60. KHAN, *supra* note 39, at 29.

61. Swanson, *Making Patents*, *supra* note 14, at 786–87, 796 (describing pre-1793 practice of asking applicants to appear before the board).

62. KHAN, *supra* note 39, at 59 (describing means of application); *see* H.E. Paine, *Amendments of Rules 30, 31, and 55*, 17 OFF. GAZETTE U.S. PAT. OFF. 455, 455 (1880).

63. KHAN, *supra* note 39, at 57 (reviewing shifting rules on citizenship of patent applicants described in this paragraph, and noting that in 1861, the United States dropped its discriminatory fee schedule).

Patent Act of 1793 limited patents to U.S. citizens.[64] Congress only gradually and grudgingly lifted this prohibition. In 1800, resident aliens could apply after living in the United States for two years.[65] By 1832, resident aliens no longer had to wait two years, but they had to declare an intention to become citizens and bring the invention into public use within one year of patenting, a working requirement not imposed on U.S. citizens.[66] It was not until 1836 that nonresident aliens could seek U.S. patents without residency or working requirements, but only if they paid a fee of $300 ($500 for citizens of Great Britain).[67] Americans were intent upon fostering the inventiveness of Americans, not foreigners.

While promoting accessibility to its citizens, the United States also developed doctrines that made U.S. patents uniquely strong credentials of inventorship. Despite the initial assumptions of men as powerful as President George Washington and Secretary of Treasury Alexander Hamilton that patents would be available to importers as they had been in the colonies and in England, the United States refused to endorse patents of importation, restricting patents to "first and true inventor[s]."[68] To receive a patent, the applicant had to have originated the invention themselves, i.e., be "true," and be the first in the world to invent the claimed technology, i.e., be "first."[69] This seemingly contrary choice—refusing an approach that Britain had used successfully to encourage new technologies—made U.S. patents into documents that identified inventors as well as inventions.[70]

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64. Patent Act of 1793, ch. 11, § 1, 1 Stat. 318, 318 (repealed 1836).

65. Patent Act of 1800, ch. 25, § 1, 2 Stat. 37, 37–38 (repealed 1836).

66. Patent Act of 1832, ch. 203, 4 Stat. 577 (repealed 1836).

67. Patent Act of 1836, ch. 357, §§ 6, 9, 5 Stat. 117, 119, 121.

68. Patent Act of 1790, ch. 7, § 5, 1 Stat. 109, 111 (repealed 1793); Patent Act of 1793 § 3; 35 U.S.C. § 115(b); Kara W. Swanson, *Centering Black Women Inventors: Passing and the Patent Archive,* 25 STAN. TECH. L. REV. 305, 324–25 (2022) (describing how Washington and Hamilton, as well as Secretary of State Thomas Jefferson, promoted patents of importation); David L. Schwartz & Max Rogers, *Inventorless Inventions? The Constitutional Conundrum of AI-Produced Inventions*, 35 HARV. J.L. & TECH. 531, 546–48 (2022) (arguing that "inventors" in the Constitution includes non-originators).

69. Patent Act of 1790 §§ 5–6.

70. WALTERSCHEID, NATURE OF THE INTELLECTUAL PROPERTY CLAUSE, *supra* note 33, at 310 (describing the U.S. patent system as the first to preclude patents of importation, even as the United States was seeking to import European technology). Note that this restrictive interpretation was contested. Swanson, *Centering Black Women Inventors*, *supra* note 68, at 322–28 (describing early U.S. patents of importation and practice of assignment by patent that resulted in non-inventors identified as true inventors). Note also that the America Invents Act of 2011 modified the interpretation of "first," while the requirement of "true" remains. *See, e.g.*, Joshua D. Sarnoff, *Derivation and Prior Art Problems with the New Patent Act*, PATENTLY-O PAT. L.J., 2011, at 12, 13–14 (reviewing

Subsequent bureaucratic and legal changes bolstered the power of U.S. patents to certify the mental ability of inventor-patentees. Beginning in 1836, the United States required *ex ante* review of patent applications by examiners charged with comparing the application to the prior art to make sure the inventor was true and first.[71] This investment of time and resources into patents is a key aspect of the "formality" that supports their role as credentials.[72] Because examination considers both inventor and invention, the process increases the value of patents as proof that an inventor-patentee has the ability to originate an invention, showing they have done more than "an ordinary mechanic" in conceiving and reducing to practice a patentable invention.[73]

These choices were neither required nor even suggested by the need to promote the progress of useful arts. The exclusion of patents of importation seemed to do the opposite, while the use of examination rather than high fees as a means of increasing the quality of resulting patents was a much more expensive approach than that chosen by other countries, including the United States' chief rival in industrialization, Great Britain. While by the centennial of the patent system, the United States proudly claimed its unique patent system as "highly promotive" of its remarkable industrialization, as these choices were put into place and the U.S. patent system began to operate in its present form after 1836, it was not at all clear that such success would result.[74]

Finally, the United States also moved early and in multiple ways to disseminate information about patents. Copies of patents were available in Washington, D.C., for viewing without a fee,

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changes under new act and the continuing focus on true inventor requirement); Joe Matal, *A Guide to the Legislative History of the America Invents Act: Part I of II*, 21 FED. CIR. BAR J. 435, 496 (2012) (explaining legislative purpose of derivation proceedings to ensure true inventor).

71. Patent Act of 1836 § 7.

72. Rantanen & Jack, *supra* note 8, at 317.

73. Hotchkiss v. Greenwood, 52 U.S. (11 How.) 248, 265 (1851) (setting out distinction between invention and the changes made by an ordinary mechanic); *see also* BRACHA, *supra* note 34, at 223–29 (reviewing history of inventor/mechanic distinction in U.S. caselaw, now usually termed the "non-obvious" requirement); 35 U.S.C. § 103.

74. Exec. Comm. of the Pat. Centennial Celebration, *Opening Address by the President of the United States*, *in* PROCEEDINGS AND ADDRESSES, CELEBRATION OF THE BEGINNING OF THE SECOND CENTURY OF THE AMERICAN PATENT SYSTEM AT WASHINGTON CITY, D.C. APRIL 8, 9, 10, 1891 23 (1892); *see also* Charles Eliot Mitchell, *Birth and Growth of the American Patent System*, *in* PROCEEDINGS AND ADDRESSES, CELEBRATION OF THE BEGINNING OF THE SECOND CENTURY OF THE AMERICAN PATENT SYSTEM AT WASHINGTON CITY, D.C. APRIL 8, 9, 10, 1891 43, 54 (collecting testimonials in support of idea that the U.S. patent system is the reason for the United States' "ingenuity and invention").

formal application, or justification and would be sent by mail upon request and payment of a modest per-word copying fee.[75] Before the United States committed sufficient resources to have patents printed and published, it allowed private publishers to do so.[76] These choices were consciously made in the face of stiff protest by early-nineteenth-century patent administrator William Thornton, who was concerned that circulating patent information would facilitate infringement and thus injure inventor-patentees.[77] Rather than prioritize the concern of patentees who feared loss of commercialization revenue and/or the need to engage in patent litigation to eliminate copiers, Congress repeatedly prioritized getting information about patented inventions into as many hands as possible. After 1836, Congress paid to have many copies of the patent office annual report, listing all issued patents, printed and distributed throughout the United States.[78] Congress also mandated the creation of what became known as the patent office "museum," a grand display of patent models within the Patent Office Building intended to teach visitors about the inventiveness of Americans and, in the words of Senator John Ruggles, author of the Patent Act of 1836, encourage the "dormant genius" of Americans by "promoting a taste for . . . the useful arts."[79] Such circulation of information not only invited participation in invention and patenting but also spread a message that Americans were an inventive people.

Although the results of these choices were not known to Congress in advance, some effects were almost immediately apparent. By 1810, the United States had a per capita patenting rate higher than the United Kingdom, a disparity that remained

75. Patent Act of 1790, ch. 7, § 3, 1 Stat. 109, 111 (repealed 1793); Patent Act of 1793, ch. 11, § 11, 1 Stat. 318, 323 (repealed 1836); W.M. Pinkney, *Delivering Copies of Specifications of Patents*, *in* 1 OFF. OP. ATT'YS GEN. 171, 171 (1812) (reiterating unpublished 1809 opinion directing production of copies on request). *But see* Swanson, *Making Patents*, *supra* note 14, at 802 (noting refusal of patent bureaucrat William Thornton to provide copies upon request).

76. WALTERSCHEID, TO PROMOTE THE PROGRESS, *supra* note 35, at 302–03 (reviewing the result of a request by the Franklin Institute to publish patents in its journal); Swanson, *Making Patents*, *supra* note 14, at 802.

77. WALTERSCHEID, TO PROMOTE THE PROGRESS, *supra* note 35, at 283–302 (reviewing Thornton's repeated objections to making patent information readily available from 1809 to 1826); Swanson, *Making* Patents, *supra* note 14, at 801–02 (analyzing Thornton's motivations).

78. *See* DOBYNS, *supra* note 56, at 148 (noting "great demand" for copies).

79. Patent Act of 1836, ch. 357, § 20, 5 Stat. 125; S. REP. NO. 24-239 (1836); CHARLES J. ROBERTSON, TEMPLE OF INVENTION: HISTORY OF A NATIONAL LANDMARK 33 (2006) (describing "museum" in patent office as a "major tourist destination").

throughout most of the nineteenth century.[80] U.S. citizens living in both rural and urban areas participated in patenting. People from a diverse set of occupations participated in patenting, including those without formal technical training. Rather than a few so-called great inventors, the system fostered many lesser inventors, with over 50% of U.S. inventor-patentees receiving only one patent.[81]

While it is tempting to consider the number of patents as a proxy for the rate of technological change, it is not. More U.S. patents *per capita* did not necessarily mean that the United States was innovating at a faster rate than Great Britain. Most patents in the twenty-first century are never commercialized or licensed, and the U.S. patent system, in its very accessibility, was designed to produce more of such "worthless patents" than previous systems.[82] Patents may be worthless as technoeconomic tools, however, and still have value as credentials. And as Congress kept patent fees low for U.S. citizens, thereby incentivizing broad participation in the patent system, the United States itself began to mobilize patents as credentials, not for individual purposes but as a group credential.

By the mid-nineteenth century, Congress and the patent office used the quantity of patents granted to U.S. citizens, untethered from their content or market effect, to argue that Americans were an inventive people. Senator Ruggles proudly proclaimed in 1836 that since 1815, the United States had issued twice the number of patents of England or France.[83] These patents, he argued, "d[id] honor to the Government and the country."[84] As tangible credentials of inventorship, circulating publicly, patents had become constitutive of the "imagined community" that was the United States, identifying inventiveness as a national characteristic.[85] Whether Congress had intentionally

80. KHAN, *supra* note 39, at 35, 62.

81. *Id.* at 59, 62–63.

82. Kimberly A. Moore, *Worthless Patents*, 20 BERK. TECH. L.J. 1521, 1521–26 (2005) (defining worthless patents as those that are not maintained and thus cannot be commercialized or licensed, and documenting their numbers).

83. S. REP. NO. 24-239 (1836).

84. *Id.*

85. BENEDICT ANDERSON, IMAGINED COMMUNITIES: REFLECTIONS ON THE ORIGINS AND SPREAD OF NATIONALISM 6, 25 (2006) (defining nations as "imagined political communit[ies]," and highlighting the role of shared printed reading material in fostering that imagining); *see also* CHRISTINE MACLEOD, HEROES OF INVENTION: TECHNOLOGY, LIBERALISM AND BRITISH IDENTITY 1750–1914 2–4 (2007) (exploring the role of British

bolstered patents as credentials in order to make this national claim is difficult to trace, but Senator Ruggles boosted it by arranging for 3,000 copies of the report containing his claims to be distributed nationally.[86]

Having identified the unique qualities of the U.S. patent system as established by 1836, we now turn to the Republic of Texas and the Confederate States of America to examine what they believed was worth copying from the U.S. patent system. In doing so, we uncover what those new countries intended to accomplish when they implemented and maintained a patent system.

IV. IMITATIVE DEMOCRACIES AND PATENTS

A. *Republic of Texas*

In March 1836, while their army was fighting Mexico and the Alamo was under siege, a group of men met in convention to found the Republic of Texas and draft its constitution.[87] The majority of the delegates were white Anglophone immigrants from the United States.[88] The constitution they produced reflected their embrace of the U.S. model of democratic republicanism as well as their views about how the U.S. Constitution should be updated to reflect fifty years of experience.[89] Most prominently, the Texans settled then-disputed questions in the United States by constitutionally limiting citizenship to whites only and prohibiting any legislative emancipation of slaves.[90] The Texas constitution established a

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patents in bolstering British national identity in the age of empire); Sapna Kumar, *Innovation Nationalism*, 51 CONN. L. REV. 205, 225–29 (2019) (arguing that contemporary U.S. patents can be tools of nationalism).

86. S. REP. NO. 24-239 (1836).

87. Rupert N. Richardson, *Framing the Constitution of the Republic of Texas,* 31 SW. HIST. Q. 191, 191–92, 198 (1928); STANLEY SIEGEL, A POLITICAL HISTORY OF THE TEXAS REPUBLIC 1836–1845 30–32 (1973); *see also* PAUL D. LACK, THE TEXAS REVOLUTIONARY EXPERIENCE: A POLITICAL AND SOCIAL HISTORY 1835–1836 75–95 (1992) (detailing events of the convention and constitution, and describing the convention as occurring in a time of "division and disorder" and "prolonged crisis").

88. Richardson, *supra* note 87, at 196 (describing delegates as including three Spanish-Americans among Anglo-Americans); Ralph W. Steen, *Convention of 1836*, HANDBOOK OF TEXAS ONLINE, https://www.tshaonline.org/handbook/entries/convention-of-1836 [https://perma.cc/A6Q5-7RUF] (Aug. 3, 2020) (listing delegates and their birthplaces).

89. Richardson, *supra* note 87, at 209 (explaining that the constitution was a "composite" of the U.S. Constitution and various state constitutions).

90. CONSTITUTION OF THE REPUBLIC OF TEXAS (1836), at Gen. Provisions §§ 6, 9, 10, *reprinted in* 1 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 1078, 1079–81 (Austin, Gammel Book Co. 1898).

government by, for, and of white people built on a permanent foundation of racial slavery.

Even amid the rush of war—the delegates were eager to conclude their business so that they could return to battle or flee with their families and slaves from the advancing Mexican troops—the Texans took time to redraft the enumerated congressional powers listed in Article I of the U.S. Constitution.[91] One of these, added by amendment and without discussion, was the power to "grant . . . patents and secure to . . . inventors the exclusive use thereof for a limited time."[92] The Texans replaced the general grant in the U.S. Constitution descriptive of ends ("to promote the progress") with an explicit grant of power to pursue the means the United States had chosen to reach that end, patents.[93] Despite their haste to establish a government while anticipating an invading army, Texans ensured that their government could grant patents.

Although Texans wrote a constitution that established the newly independent territory as a democratic republic, they also expected that their country would be extremely short-lived, merely an intermediate stage before admission to the United States as a state. In September 1836, Texas residents voted simultaneously to elect their first president, Sam Houston, and in support of a resolution to petition the United States for annexation.[94] It was only after Texas withdrew its unsuccessful petition in the fall of 1838 that the government turned seriously to nation-building.[95] As part of its renewed commitment to the future of the Republic of Texas, its congress swiftly drafted and passed "An Act Securing

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91. H.P.N. Gammel, *Journals of the Convention of the Free, Sovereign, and Independent People of Texas*, *in* GENERAL CONVENTION, ASSEMBLED MARCH 9, 1836 (1898); SIEGEL, *supra* note 87, at 34; LACK, *supra* note 87, at 98 (noting "hasty" adjournment followed by "panic"); *cf.* Richardson, *supra* note 87, at 209 (arguing that word changes were sometimes "to no apparent advantage").

92. CONSTITUTION OF THE REPUBLIC OF TEXAS (1836), Art. 2, § 3, *reprinted in* 1 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 1072, 1072 (Austin, Gammel Book Co. 1898).

93. *Compare* U.S. CONST. art. 1, § 8, cl. 8 (stating that Congress will promote progress by securing inventors with exclusive rights to their discoveries), *with* CONSTITUTION OF THE REPUBLIC OF TEXAS (1836), Art. 2, § 3, *reprinted in* 1 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 1072, 1072 (Austin, Gammel Book Co. 1898).

94. SIEGEL, *supra* note 87, at 47, 54; *Joint Resolution for Sending a Minister to the United States of America*, *reprinted in* 1 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 1089–90 (Austin, Gammel Book Co. 1898) (recounting vote in favor of annexation).

95. SIEGEL, *supra* note 87, at 90–91, 104–05.

Patent Rights to Inventors," which then-President Mirabeau Lamar signed on January 28, 1839.[96]

The Republic of Texas was in dire straits. According to one historian, "[t]he national treasury was empty, the land devastated, and the frontier harassed by Indians."[97] To succeed as a nation, it needed to rebuild an economy ravaged by war. A local newspaper editor had argued in October 1838 that "[w]e are much in want of . . . labor-saving machines . . . in order to enable us to compete successfully with other countries."[98] It was not surprising that as it contemplated its national future, Texas set up a patent system, intending thereby to foster innovation and economic growth. In doing so, however, Texans made choices, not all of which were the obvious best means of reaching those goals.

Since the Texas Revolution, both Texas and U.S. residents had been petitioning the Texas legislature for patents, the ad hoc approach used previously by the British colonies and the states. By passing a patent act, Texans were making the choice to have a patent *system*, anticipating a steady flow of applications in a growing country, better processed by bureaucrats than legislators. The new law limited Texas patents to actual inventors; Texas would not offer patents of importation as incentive to bring new technologies into the country.[99] The legislators modeled the Texas patent act on the U.S. Patent Act of 1793, creating a registration system like that used in the United States until 1836.[100] Despite the existence of a new model of patent examination across the border, Texas chose the less resource-intensive approach to processing applications, appointing the chief clerk of the State Department to add processing patent applications to his duties.[101] Like the United States when it quickly ended its initial foray into examination in 1793, the Texas government was limited in funds

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96. 2 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 109–11 (Austin, Gammel Book Co. 1898); *see also* Andrew Forest Muir, *Patents and Copyrights in the Republic of Texas*, 12 J.S. HIST. 204, 210–11 (1946) (detailing the legislative history of the Act).

97. SIEGEL, *supra* note 87, at 56–57.

98. Muir, *supra* note 96, at 208 (quoting MATAGORDA BULL., Oct. 18, 1838).

99. Act approved Jan. 28, 1839, 3rd Cong., R.S., §§ 3, 5, 1839 Repub. Tex. Laws 109, 109–10, *reprinted in* 2 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 109–10 (Austin, Gammel Book Co. 1898) (requiring applicant to swear that he believes the invention "originated with himself," and denying rights to "persons who are not really original inventors or improvers").

100. *Compare id.* §§ 2, 7, *with* Patent Act of 1793, ch. 11, §§ 1, 4, 1 Stat. 318, 318–20, 322 (repealed 1836).

101. Act approved Jan. 28, 1839, 3rd Cong., R.S., § 7, 1839 Repub. Tex. Laws 109, 109–10, *reprinted in* 2 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 109–10 (Austin, Gammel Book Co. 1898).

and small. Unlike the early United States, though, Texas had a third choice: free riding.

The same newspaper editor suggested that because "our citizens [are] too much engaged in other pursuits" to invent, the speediest way of bringing needed "mechanic arts" into Texas was simply "to grant patents to [any U.S. patentee]" who sought one, thus obtaining the "benefit" of the U.S. examination system "without the 'great expense and trouble.'"[102] Like granting patents of importation, this approach would spur the importation of technology already proven valuable elsewhere. Rejecting this proposal, the Texas legislature instead created a system that required would-be patentees to submit all the proofs required in the United States: "a description, model or drawing," "full written instructions as to the most suitable materials, manner of constructing, and rendering useful such improvement," and an "oath" that the invention "originated with" the claimant.[103] U.S. patentees would have to reapply in Texas. But they need pay only $30, the same low fee as in the United States.[104] Texas needed revenue, but it too prioritized accessibility of patents to its citizens over its treasury.

Texans did not copy all aspects of the U.S. registration system. The Texas patent system was financially accessible but geographically much more restrictive. While the United States facilitated applications from a distance, in Texas, no applications by mail or via an agent were accepted. Texas required that applicants appear before its Secretary of State to take the oath of inventorship.[105] Further, the applicant needed to be a citizen of Texas or legally declare their intention to become one.[106] While an inventor-patentee was allowed to leave the country after this ceremony, to maintain a patent for the fourteen-year term, they either had to continue to live in Texas or designate an agent within the state to manage the patent rights, a residence requirement also not part of U.S. law after 1836.[107] As a new country, Texas turned to a version of patent law recently discarded in the United States, limiting patents to those physically present in the country

102. Muir, *supra* note 96, at 208–09 (quoting MATAGORDA BULL., Oct. 18, 1838).

103. Act approved Jan. 28, 1839, 3rd Cong., R.S., §§ 2–3, 1839 Repub. Tex. Laws 109, *reprinted in* 2 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 109 (Austin, Gammel Book Co. 1898).

104. *Id.* § 4.

105. *Id.* § 3.

106. *Id.* § 1.

107. *Id.* § 4.

and willing to become citizens. While the United States by 1836 allowed nonresident aliens to obtain patents, albeit subject to higher fees, Texas prioritized the residence and citizenship of the inventor over the introduction of the invention.

Cumulatively, these requirements imposed multiple barriers to importing *inventions* into Texas, in favor of a system that brought *inventors* into Texas. Seeking to encourage white settlement, Texas legislators saw a patent system as an opportunity, like cheap Texas land, to incentivize "foreigners to come here."[108] The offer of intellectual property, however, was designed to lure a particular type of settler, one who could invent. Foreigners would come, join the polity as citizens, "and introduce their inventions."[109] Having knowledge of a new technology was not sufficient. The Texas patent system welcomed inventive would-be citizens, not simply those arriving with knowledge of someone else's idea.

This choice to prioritize inventors over inventions was deliberate and distinguished Texas from the Republic of Mexico, also newly independent and anxious to build its postcolonial economy. The Mexican republic granted patents of importation.[110] Further, Mexico welcomed non-Mexicans to apply for patents by mail and retain their citizenship, with the result that foreigners received the majority of Mexican patents during the nineteenth century.[111] While Mexico used its patent system to import technology, Texas rapidly found itself turning away new technologies. The clerk reported after six months that "[f]requent applications [for patents] have been made by persons residing in the United States, through an agent here . . . but have been refused until the applicant should appear in person."[112]

Texas combined this emphasis on inventors with policies to encourage the circulation of information about Texas patents,

108. Muir, *supra* note 96, at 208 (quoting MATAGORDA BULL., Oct. 18, 1838); *see also* ALICE L. BAUMGARTNER, SOUTH TO FREEDOM: RUNAWAY SLAVES TO MEXICO AND THE ROAD TO THE CIVIL WAR 32, 44 (2020) (comparing Stephen F. Austin's proposal to charge 12.5 cents per acre in Texas with the rate of $50 an acre in the United States).

109. Muir, *supra* note 96, at 208 (quoting MATAGORDA BULL., Oct. 18, 1838).

110. EDWARD BEATTY, TECHNOLOGY AND THE SEARCH FOR PROGRESS IN MODERN MEXICO 12, 104 (2015) (arguing that Mexico relied primarily on patents of importation and it was not until the patent law of 1890 that Mexico sought to encourage the inventiveness of Mexicans).

111. *Id.* at 64.

112. NATHANIEL AMORY, DEP'T OF STATE, REPORT OF THE SECRETARY OF STATE: NOVEMBER, 1839 Document D (Nov. 6, 1839), *reprinted in* JOURNALS OF THE FOURTH CONGRESS OF THE REPUBLIC OF TEXAS 1839–1840, REPORTS AND RELIEF LAWS 30 (Harriet Smither ed., 1929).

incorporating some aspects of the U.S. Patent Act of 1836. Its statute designated a patent office as a bureau of the state department.[113] This office was to collect all "specimens, mo[]lds, models and devices, of all new inventions or discoveries," which were to be "considered as forming part of the national archives."[114] Although Texas did not have the funds, yet, to build a Patent Office Building with a museum, its legislature designated the patent office as a place where information about invention would be publicly available, copying the American approach to circulating patent information.

Like the United States, the Republic of Texas was limiting patents to those who originated inventions and establishing a system intended to foster increasing numbers of those inventive individuals in its population. Texas patents were credentials identifying inventors. Without the U.S. examination system, Texas patents were less high-quality credentials, but just as the United States had shifted from registration to examination as the country grew, Texas considered shifting to an examination system. The Texas legislature almost immediately began to consider other forms of a patent system, with multiple proposals to amend or repeal the first patent act.[115] Within a few years, the Secretary of State drafted a new patent act, modeled after the U.S. Patent Act of 1836.[116] In addition to a patent examiner, his draft included a requirement of an annual published patent list, including descriptions, which would use print to circulate information about Texas inventions, and the appointment of agents to receive applications throughout the Republic, eliminating the need to travel to the capital.[117] The revised system would thus increase the strength of patents as credentials of inventiveness and also the dissemination of those credentials throughout the Texas population. Like the United States, Texas wanted to establish and claim an inventive population. The Secretary's plan, however, was

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113. Act approved Jan. 28, 1839, 3rd Cong., R.S., § 7, 1839 Repub. Tex. Laws 109, *reprinted in* 2 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 109 (Austin, Gammel Book Co. 1898); *see also* Swanson, *Making Patents*, *supra* note 14, at 796 (explaining how William Thornton had become the first full-time patent clerk within the state department in the United States in 1802, even though no clerk was statutorily authorized until 1836).

114. Act approved Jan. 28, 1839, 3rd Cong., R.S., § 7, 1839 Repub. Tex. Laws 110, *reprinted in* 2 H.P.N. Gammel, THE LAWS OF TEXAS 1822–1897, at 110 (Austin, Gammel Book Co. 1898) (spelling modernized).

115. *See* Muir, *supra* note 96, at 213–14 (detailing proposals). Unfortunately, the text of these bills has not survived. *Id.* at 218.

116. *Id.* at 219.

117. *Id.* at 219–20.

overtaken by a second—successful—push for annexation in 1846.[118]

During its seven years of existence, the Texas patent system remained mostly aspirational.[119] The Republic issued at least sixteen patents, although the records are incomplete.[120] There is little evidence that any of these, for technologies such as brick making, sawmills, and cotton gins, shifted the course of Texas technological or economic history.[121] The legal history of the Texas patent system, however, reveals the ways in which Texans sought to accomplish additional purposes by establishing and maintaining their patent system.

B. The Confederate States of America

The Confederate States of America, like the Republic of Texas, was founded by white male former residents of the United States who looked to the United States as a model and also sought to improve upon it, again most notably by ensuring the enduring legality of racial slavery in the new republic. When Jefferson Davis and other Southerners resigned their seats in the U.S. Congress to assume offices in the Confederacy in 1861, they took with them their experiences of the U.S. patent system, now twenty-five years into the examination era, their memories of the grand Patent Office Building and its museum, and their knowledge that U.S. citizens were patenting at a higher per capita rate than the British.[122] The Confederacy immediately established a patent system that was a near-perfect copy of that of the United States.[123]

118. *Id.* at 220.

119. *Id.* at 212.

120. *Id.* at 218, 221 (noting failure of the office to make annual reports after 1841 or to keep systematic records).

121. *Id.* at 212, 222 (describing and evaluating some of the Texas patents).

122. Davis, for example, had served as Senator of Mississippi from 1847 to 1850, and again from 1857 until January 1861, when he resigned after Mississippi's secession, along with the senators from Florida and Alabama, and, while in office, had sought unsuccessfully to aid his brother in patenting a propeller created by an enslaved inventor. WILLIAM C. DAVIS, "A GOVERNMENT OF OUR OWN": THE MAKING OF THE CONFEDERACY 13–14 (1994) (describing how Davis, then-Senator of Mississippi, and other Southerners in the U.S. Congress resigned and returned to the South after secession); PATRICIA CARTER SLUBY, THE INVENTIVE SPIRIT OF AFRICAN AMERICANS: PATENTED INGENUITY 32–33 (2004) (describing Davis's pre-war interaction with the U.S. patent system).

123. *See* H. JACKSON KNIGHT, CONFEDERATE INVENTION: THE STORY OF THE CONFEDERATE STATES PATENT OFFICE AND ITS INVENTORS 28, 32 (2011); *see also* DOBYNS, *supra* note 56, at 221–25 (brief outline of Confederate patent office); Jane Elizabeth Newton, *A Forgotten Chapter of Confederate History*, J. PAT. OFF. SOC'Y, June 1930, at 248, 248 (describing Confederate patent laws as "practically transcripts of the then existing

As the seceding states organized themselves while they convened a Constitutional Convention, a Provisional Congress established committees in February 1861 to deal with matters so urgent they needed to be considered even before the polity was fully constituted: foreign affairs, finance, and the military.[124] The politicians anticipated war with the United States. Yet, like the Texans, they prioritized patents. On only the fifth day of the Provisional Congress, it established a Committee on Patents.[125] That committee reported a bill to establish a patent office, and while the bill was postponed, the Provisional Congress created a procedure for Confederate citizens to file caveats, formal descriptions of inventions intended to preclude patenting by others.[126] The Confederates were eager to reap all the perceived advantages of the U.S. patent system.

On April 29, 1861, President Jefferson Davis formally announced ratification of the Confederate Constitution to a country at war.[127] Confederate troops had fired on Fort Sumter earlier in the month, and in response, U.S. President Abraham Lincoln had declared war against the seceding states.[128] The constitution included the same delegation of power to Congress as in the U.S. Constitution: to "promote the progress of . . . useful arts."[129] In his address, Davis discussed the pressing needs of the new nation, including international recognition, the incorporation of additional states into the Confederacy as more states seceded, and the urgent question of "the supply of the Treasury."[130] Like Texas in its first weeks of existence, the Confederacy was fighting on the battlefield for its very survival and it was broke. Astonishingly, Davis also chose to discuss patents at this crucial moment. Davis requested "immediate legislation . . . on the

United States statutes"); Max W. Tucker, *The Patent Office of the Confederacy*, J. PAT. OFF. SOC'Y, Aug. 1921, at 596, 596 (describing the Constitution of the Confederate States as having "a patent system almost identical with our own").

124. 1 JOURNAL OF THE CONGRESS OF THE CONFEDERATE STATES OF AMERICA, 1861–1865, *reprinted in* S. DOC. NO. 58-234, at 40–41 (1904) [hereinafter CONFEDERATE STATES JOURNAL].

125. *Id.* at 40, 44.

126. *Id.* at 98; *see also* KNIGHT, *supra* note 123, at 21.

127. CONFEDERATE STATES JOURNAL, *supra* note 124, at 160; DAVIS, *supra* note 122, at 339–41 (describing the reading of President Davis's message to Congress and a packed chamber).

128. CONFEDERATE STATES JOURNAL, *supra* note 124, at 160; DAVIS, *supra* note 122, at 314, 320.

129. CONST. OF THE CONFEDERATE STATES OF AM., art. I, § 8, cl. 8.

130. CONFEDERATE STATES JOURNAL, *supra* note 124, at 166–67.

subject of patent rights."[131] He did so at the urging of Attorney General Judah Benjamin, who was already receiving about seventy patent caveats per month.[132] There was, Davis stated, a "necessity for the prompt organization of a bureau of patents."[133]

Congress picked up the previously postponed patent bill and considered it carefully, with eight legislators proposing minor amendments.[134] The act was modeled on the then-existing U.S. patent laws, creating a patent office staffed by a commissioner, chief clerk, and examiner.[135] As in the United States, Confederate patents would be high-quality credentials of both inventors and inventions, available only to "original" inventors.[136] The Confederacy also chose to make those credentials broadly accessible. Applicants could apply by mail and take the oath of inventorship and citizenship "before any person authorized by law to administer oaths."[137] The fee was only $20, lower than that of the United States.[138] Despite the desperate need to supply the Treasury, the Confederate patent system would not be used to generate revenue.

Although in May 1861, the Confederacy lacked even a capitol building, the Confederacy aspired to its own patent museum, where the inventiveness of its citizens would be on public display.[139] Like in the United States, the Confederate Congress ordered the patent commissioner to classify and arrange models and specimens "in such rooms or galleries as may be provided for the purpose, in suitable cases . . . and in such manner as shall be conducive to a beneficial and favorable display . . . open during suitable hours for public inspection."[140] The act also made provision for the annual printing and distribution of 600 copies of the patents issued in the preceding year.[141] Information about Confederate patents was to flow freely, and the public should be well informed

131. *Id.* at 167.
132. *Id.* at 85, 167.
133. *Id.* at 167.
134. *Id.* at 230–33, 239–41; *see also* KNIGHT, *supra* note 123, at 32–33, 36–37, 39–47.
135. Confederate Patent Act of May 21, 1861, ch. 46, 1861 Stat. of the Provisional Gov't of the Confederate States of Am. §§ 1–2.
136. *Id.* § 6.
137. *Id.*
138. *Id.* § 40.
139. *See* KNIGHT, *supra* note 123, at 49 (noting that the Confederate patent act was passed while the provisional government was meeting in Montgomery, Alabama).
140. Confederate Patent Act § 16.
141. *Id.* §§ 23, 25.

about the number and location of inventor-patentees in their midst.

Like the Republic of Texas had done, the Confederacy also added unique features to its patent system. As Davis highlighted in his ratification address, the Confederacy was desperately seeking foreign recognition.[142] This national goal was reflected in the new patent statute. The Confederacy (like the United States after 1836) would allow foreigners to obtain patents without traveling to Richmond or declaring an intention to become a citizen.[143] But the Confederacy added one more requirement: all inventors had to take the applicant's oath of inventorship before an official of a country that "recognized the independence of the Confederate States, and shall be at the time in amity with them."[144] When the patent law passed, no country recognized the Confederacy as an independent nation, so Confederate patents were effectively limited to its own citizens.[145] The Confederacy was offering the possibility of commercializing inventions within its borders as an additional incentive to the Europeans it hoped to gain as allies.

The Confederacy also enacted its own version of the suggestion of the Texas editor, giving Confederate patent rights to any citizen who was the inventor-patentee or assignee of a U.S. patent. They needed to file a full application and pay the fee, but they could skip examination. These patents would remain in effect in the Confederacy for their unexpired U.S. term.[146] This provision did not, however, promote the introduction of new technologies but merely ensured that Southern inventors did not lose the rights they already had to exclude others from their inventions throughout the now-seceded states. By precluding U.S. citizens from doing the same, the Confederacy left the patented inventions

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142. DAVIS, *supra* note 122, at 199 (noting that President Davis and others viewed foreign recognition and support as necessary for independence); HOWARD JONES, BLUE & GRAY DIPLOMACY: A HISTORY OF UNION AND CONFEDERATE FOREIGN RELATIONS 11 (2010) (identifying foreign recognition as the Confederacy's "chief objective in foreign affairs").

143. Confederate Patent Act § 6 (patents available to "any person" upon oath "of what country he is a citizen"); *supra* note 67 and accompanying text.

144. Confederate Patent Act § 31.

145. JONES, *supra* note 142, at 45, 321 (noting that by June 1861, both France and Britain, the chief targets of Confederate efforts, had refused to recognize the Confederacy and instead declared neutrality in the conflict, and the Confederacy failed to ever achieve any formal recognition).

146. Confederate Patent Act §§ 49, 51 (providing also that the Confederacy would similarly recognize U.S. patents issued to "subjects of foreign countries" as long as they were not an "alien enemy"); KNIGHT, *supra* note 123, at 118–19 (describing 1862 amendment that made it easier for Confederate inventors to revive U.S. patents).

of Northern inventors open to use in the South without any obligation to pay license fees or fear of infringement suits.[147] In addition to using patents to seek allies, the Confederacy used them to punish enemies.

Collectively, these policies made Confederate patents credentials of Confederate inventiveness. There was one way, however, in which the Confederacy, unlike either the United States or Texas, permitted patent grants to non-inventors.

In 1858, the U.S. Attorney General issued an opinion that enslavers could not receive patents for inventions of their enslaved workers, because only the true inventor was entitled to a patent under U.S. law.[148] This restriction prevented Joseph Davis, brother of President Davis, from patenting an improved steamboat propeller invented by his slave, the talented Black man, Benjamin T. Montgomery.[149] The Confederacy addressed what enslavers considered a "monstrous" deprivation of their rights to monetize the creativity of their human property by including a provision in its patent law that allowed an enslaver to take the applicant's oath, swearing that his or her slave was the original inventor.[150] If the invention was determined to be patentable, the enslaver would receive the patent and all rights as the owner of the true inventor.[151] This provision would require Confederates to swear to the patentable inventions of Black people, accomplishments that contradicted the ideology of racial hierarchy they used to justify slavery.[152] It also would dilute the ability of Confederate patents to act as credentials of inventorship by granting the status of inventor-patentee to non-inventors. The white Confederate legislators, however, were willing to set aside these potential drawbacks in order maximize their ability to extract profit from the institution of slavery.

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147. Note that *Scientific American* (based in New York) alleged that Confederates rushed to patent these inventions, enacting a form of patents of importation in technical violation of the law. KNIGHT, *supra* note 123, at 22 (quoting and interpreting *Patents in the Seceded States*, SCI. AM., May 18, 1861, at 307).

148. Invention of a Slave, 9 Op. Att'ys Gen. 171–72 (1858).

149. Henry E. Baker, *The Negro in the Field of Invention*, 2 J. NEGRO HIST. 21, 24 (1917); *see also* PORTIA P. JAMES, THE REAL MCCOY: AFRICAN-AMERICAN INVENTION AND INNOVATION, 1619–1930 52–53 (1989).

150. Letter from Oscar J.E. Stuart to Hon. Jacob Thompson, Sec'y of the Interior (Aug. 25, 1857), *reprinted in* John Boyle, *Patents and Civil Rights in 1857–8*, 42 J. PAT. OFF. SOC'Y 789, 792–94 (1960) (describing the Commissioner of Patents's denial of a patent to a slave owner as "monstrous"); Confederate Patent Act § 50.

151. Confederate Patent Act § 50.

152. *See* Kara W. Swanson, *Race and Selective Legal Memory: Reflections on* Invention of a Slave*,* 120 COLUM. L. REV. 1077, 1087 (2020) (discussing this contradiction).

There is currently no known surviving evidence that this provision was used.[153] It is perhaps not surprising; enslavers, like all Confederates, had much to occupy themselves during the four long years of war. In the spring of 1861, however, the Confederates organized for battle with optimism about a swift resolution of the war in their favor, and like Texans in 1839, they organized their patent office imagining a future as a stable republic.[154] Rufus R. Rhodes of Mississippi, formerly a U.S. patent examiner, was appointed Commissioner of Patents.[155] Rhodes set up the patent office in a rented building in Richmond, Virginia. Although the space was shared with the bustling war department, Rhodes was able to preserve a "large hall" for the exhibition of patent models, as ordered by the patent act.[156] He even managed to get cabinets with glass doors to display the models.[157] Imitating the U.S. patent office, Rhodes published a pamphlet of "rules and directions" for getting a Confederate patent, a means of increasing accessibility by disseminating information about the patent act and office procedures.[158]

Rhodes also copied the United States in using issued patents to prove and celebrate the inventiveness of Confederate citizens. In his first annual report to Congress, in January 1862, Rhodes claimed that patent applications showed that "[c]onclusions which the ablest scientific men of the world have toiled for years to attain . . . have been reached by Southern men as by a single intuitive perception."[159] Further, he explained that this ability was widespread throughout the populace: "Nor is this praiseworthy desire [to invent and aid the country] confined to citizens of any particular profession or pursuit. It prevails every where."[160] The next year, Rhodes repeated his claim that "the Southern people

153. KNIGHT, *supra* note 123, at 236–335 (collecting biographical profiles of Confederate patentees).

154. Newton, *supra* note 123, at 248 (noting that patent law indicated intent "to build for posterity").

155. KNIGHT, *supra* note 123, at 50.

156. CONFEDERATE STATES PATENT OFFICE, REPORT OF THE COMMISSIONER OF PATENTS 8 (1862) [hereinafter PATENT OFFICE REPORT 1862]; *see also* AN OFFICIAL GUIDE OF THE CONFEDERATE GOVERNMENT: FROM 1861 TO 1865 AT RICHMOND 13; KNIGHT, *supra* note 123, at 51.

157. PATENT OFFICE REPORT 1862, *supra* note 156, at 8.

158. *Compare* RULES AND DIRECTIONS FOR PROCEEDINGS IN THE CONFEDERATE STATES PATENT OFFICE 3–6 (1861) (explaining how to apply for a patent in the Confederate States), *with* PATENT OFFICE, PATENTS (1811), *reprinted in* 6 J. PAT. OFF. SOC'Y 97, 98 (1923) (explaining how to apply for a patent in the United States).

159. PATENT OFFICE REPORT 1862, *supra* note 156, at 3, 5.

160. *Id.*

are the equals of any other race in the world" and argued that "they [will] quickly transcend Yankee craft and ingenuity in the boasted department of invention."[161]

Despite Rhodes's claims, the number of patents issued to Confederate inventors declined.[162] As the Civil War ground on and the Confederacy faced continued pressure to supply the Treasury in order to support its military, its Congress considered changing from examination of applications to the less expensive approach of simple registration.[163] Perhaps swayed by Rhodes's impassioned defense of the existing system, the Confederate Congress did not make the change but instead made a series of minor adjustments, passing amendments to the patent act in January and September 1862 and twice in April 1863.[164] This continued effort to optimize the patent system underscored the perceived importance of the office as a cornerstone of the enduring nation that the legislators hoped to sustain. Even as patent applications decreased in number and the military fortunes of the Confederacy fell, Congress granted Rhodes a salary increase in early 1864 and again in February 1865.[165] Until Richmond was evacuated by the Confederate government in March 1865, Rhodes continued to issue patents to Confederate citizens, for a total of 275 patents.[166]

The commitment of Confederate leaders to their patent system was unwavering even as their patent system was perversely expensive in comparison to other options, a diversion of resources away from the immediate needs of fighting and maintaining a functioning polity. Comparing the Confederate patent system to the Republic of Texas' more modest patent system three decades earlier, we can see in both countries a mismatch among short-term technoeconomic results, resources invested, and the chosen contours of the patent system. Needing money, each kept patent fees low, choosing wide accessibility over revenue. The Confederacy began by investing government funds in patent examination and a patent museum while the smaller Republic of Texas (later one state within the Confederacy) planned

161. CONFEDERATE STATES PATENT OFFICE, REPORT OF THE COMMISSIONER OF PATENTS 5 (1863) [hereinafter PATENT OFFICE REPORT 1863].

162. KNIGHT, *supra* note 123, at 143–44, 150–51.

163. CONFEDERATE STATES JOURNAL, *supra* note 124, at 486–87.

164. PATENT OFFICE REPORT 1863, *supra* note 161, at 3; KNIGHT, *supra* note 123, at 119, 123, 148–49.

165. KNIGHT, *supra* note 123, at 152, 181.

166. *Id.* at 181 (noting the 275 patents, including 271 utility patents, three design patents, and one reissue patent).

for a future in which it too would adopt these features. Neither country managed to foster a burst of technological innovation or increased industrialization, but each remained committed to a patent system that prioritized the identification, fostering, and celebration of inventive citizens over the importation of new technologies. This comparative history, demonstrating how imitative democracies founded by former U.S. citizens copied aspects of the U.S. patent system and the changes they added, returns us to the question—what did these nation-builders intend when they created and implemented patent systems?—and points us to an answer.

V. USEFUL CITIZENS

These two examples demonstrate that when former U.S. citizens planned an improved, U.S.-style democratic republic in the nineteenth century, they prioritized a patent system as part of their nation-building. Almost immediately, and despite the pressures of war, Texas and the Confederacy devoted time and resources to patent law and practice. Their larger project of nation-building distinguishes the origins of these patent systems from European and colonial systems. When granting patents, Great Britain, France, and the British North American colonies were not attempting to establish a radical new form of government but rather to shore up existing governments and serve imperial ends. Comparing the patent systems in the Republic of Texas and the Confederacy emphasizes that the *political* context for patents was significantly different in countries that were self-consciously trying to create a polity with a new relationship of citizens to the state. It also serves to highlight that the early United States, in the years between 1787, when the "promote the progress" clause was written into the Constitution, and 1836, when it finalized the contours of its current patent system, was also such a country, experimenting with patent law as it strove to operationalize a new political order.

This context created distinctive national implications for the meanings of patents, in addition to whatever extraconstitutional uses they might have offered individuals.[167] By 1836, the combination of inventor-centric doctrines and the examination system in the United States had, perhaps fortuitously, made U.S.

167. This comparative legal history does not encompass an analysis of the social context and meaning of patents for individual inventor-patentees in the three republics.

patents credentials that each inventor-patentee was, in fact, an inventor of an invention. That is, each was a government certification, issued after examination by highly qualified "scientific men," that the named inventor had originated a new and useful idea.[168] Inventor-patentees in the United States were proven to possess a particular quality of mind: inventiveness. Inventiveness was a form of originality distinguished from nonpatentable imitation or the tinkering of an "ordinary mechanic."[169] Inventors, as that term was defined by patent law, were original thinkers. Further, the accessibility of the U.S. patent system made such credentials broadly available. Anyone, or at least any white person, was invited to participate in invention and patenting and by the dissemination of information about U.S. patents, including the patent office displays, encouraged to think that they, like so many fellow citizens, had the "dormant genius" to do so.[170] The patent system was a means of fostering an inventive citizenry.

By copying these features, and adding variations that tied inventor-patentees even more closely to the status of "citizen," resident within the territory of the new nation, the founders of the Republic of Texas and the Confederacy copied this credentialing power. That they were willing do so even though such a patent system was more costly to administer and discouraged importation of technology demonstrates that attracting and fostering inventive citizens was part of what they intended by creating and implementing patent systems. The U.S. experience illustrated that patent systems in start-up republics could have such roles, existing alongside technoeconomic purposes. Texans and Confederates tolerated an apparent mismatch between the form of their patent system and technoeconomic goals because they believed, along with the U.S. citizens among whom they used

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168. Robert C. Post, *"Liberalizers" Versus "Scientific Men" in the Antebellum Patent Office,* 17 TECH. & CULTURE 24, 30–32 (1976) (identifying the term "scientific men" used to describe early patent examiners and noting the "impressive conclave of scientific talent" in patent examiner jobs in 1840s–1850s).

169. Hotchkiss v. Greenwood, 52 U.S. (11 How.) 248, 265 (1851).

170. S. REP. NO. 24-239 (1836). Before Invention of a Slave, 9 Op. Att'ys Gen. 171 (1858), there was no explicit legal bar to participation by non-whites in the patent system in the United States. Yet, before passage of the Fourteenth Amendment, the concept of birthright citizenship was contested and unclear, with many white people arguing that Black Americans were not citizens, a position ratified by the Supreme Court in 1857. *See* MARTHA S. JONES, BIRTHRIGHT CITIZENS: A HISTORY OF RACE AND RIGHTS IN ANTEBELLUM AMERICA 26, 129–131 (2018). These arguments did not completely exclude Black Americans from the U.S. patent system but discouraged participation. *See* Swanson, *Centering Black Women Inventors*, *supra* note 68, at 342–43, 351–52.

to live, that inventive citizens were useful citizens, that is, men with the ability to perform the necessary work of democratic self-governance. When launching a new republic, a patent system designed to encourage useful citizens was foundational not just for technoeconomic success but also for political success.

A. The Need for Useful Citizens

From the perspective of this comparative history, which focuses our attention on the shared political context of three patent systems, we can return to the question of what U.S. leaders thought they were doing as they shaped the world's first modern patent system.

The new United States was not only concerned about its ability to establish a firm economic footing but also with the need to develop a functioning government. The operation of the three branches of government, executive, legislative and judicial, depended on the abilities of the citizens who filled them.[171] Because of this dependence, the qualities of U.S. citizens were a matter of great concern and debate, with emphasis on the need for political actors to think independently, forming their own opinions and making their own choices as they performed civic duties, the most common and widespread of which was voting.[172]

The attention that the U.S. Congress paid to the patent system as it launched and relaunched this means of promoting the progress of the useful arts was nothing in comparison to the attention that state legislators lavished on the question of who should vote and how their votes should result in the selection of office holders.[173] The history of the franchise in the United States is a history of constant change and reevaluation of whom those in power perceived to have the necessary ability to vote. The earliest measure of ability was property ownership, bright-line tests that limited the franchise to those who owned a minimum amount of real and/or personal property, indicating their stake in society and their ability to support themselves independently, thought to

171. *See, e.g.*, LEONARD D. WHITE, THE FEDERALISTS: A STUDY IN ADMINISTRATIVE HISTORY vii, 10 (1948) (noting that the first generation of U.S. politicians and bureaucrats engaged in "[m]uch hard thinking . . . about the public business," knowing that they were establishing precedent as they did their jobs, including establishing "standards for selection of officers and employees").

172. *See* ALEXANDER KEYSSAR, THE RIGHT TO VOTE: THE CONTESTED HISTORY OF DEMOCRACY IN THE UNITED STATES 5, 10 (2000).

173. *Id.* at 15–24, 28–33, 340–48.

support independence of thought.[174] This circumscribed electorate, however, rapidly crumbled, as Revolutionary War veterans pressed their worthiness for civic participation based on their military service.[175] Rather than switch to birthright citizenship, however, those in power turned to what were seen as natural, biologically mandated categories that served as proxies for ability, using racial and gender identity to ensure that those with full citizenship rights had the necessary originality of thought to exercise civic responsibilities.[176] In the same decades as Congress created a patent system optimized to credential U.S. citizens as inventive, the United States, slowly, state by state, shifted from a limited franchise, usually tied to property ownership, to a broader franchise defined by race and gender that invited almost all white men to vote and also to be office holders and jury members.[177]

Patents as credentials of inventiveness also served as credentials of the ability to participate in self-governance, proof of the ability to think independently and have the quality of mind needed to exercise the franchise, hold office, and serve on juries. Further, in developing an accessible patent system, what Khan has called "the democratization of invention," the United States was able to use patents as a group credential, their growing numbers an indication that U.S. citizens were, collectively, an inventive people, broadly possessed of the independence of thought needed to keep the government functioning.[178] Patents as incentives to invent also became incentives to foster this quality of mind—a goal Congress wrote into law when it mandated the exhibits in the Patent Office Building. The U.S. patent system not only promoted technological innovation and economic progress but also promoted the qualities that made U.S. residents useful citizens for the business of government. The wide distribution of inventor-patentees across the United States, issued to both urban and rural men and those of varied backgrounds, was accompanied by a growing message, spread by the patent office museum, patent office reports, and the popular press, that invention was an activity available to all. This confluence helped convince

174. *Id.* at 5, 9–10.

175. *Id.* at 14–18.

176. LAURA E. FREE, SUFFRAGE RECONSTRUCTED: GENDER, RACE, AND VOTING RIGHTS IN THE CIVIL WAR ERA 9–11, 26–27 (2015) (tracing the shift in perceived qualification for voting rights from property to service to identity).

177. *Id.* at 9–10, 15–16, 18, 21, 27, 32; KEYSSAR, *supra* note 172, at 28–30, 32, 36–38, 51, 53.

178. KHAN, *supra* note 39, at 6, 12.

Americans that they were a uniquely inventive people and as inventive people, they were useful citizens, that is, men able to participate in the tasks of self-governance. U.S. citizens believed that the world's first modern patent system was foundational to the world's first modern democratic republic.

The strength of this belief is seen in the actions of the founders of the Republic of Texas and the Confederacy. Anxious to have their democratic republics succeed, they chose a U.S.-style patent system because it supported those political ends. In contrast, in Great Britain, both the patent system and the franchise were deliberately restricted. Those in power believed that both the ability to invent and the ability to lead were rare. Sir Henry Sumner Maine, a British legal scholar, argued in 1885 that England's industrialization had been advanced by its avoidance of popular government: "[I]f . . . there had been a very widely extended franchise and a very large electoral body in this country . . . [t]he threshing-machine, the power-loom, the spinning-jenny, and possibly the steam-engine, would have been prohibited."[179] Maine was referencing a belief that the ignorant laboring masses, who did not participate in technology creation, feared and opposed innovation.[180] Far from suggesting that inventive citizens were needed to support the polity, Maine rejected popular government as unstable. British political theory prized government by an elite few and was content to imagine inventive ability to be the possession of only scattered individuals of genius, rather than of the masses.[181] American political theory, as developed by the U.S. Founding Fathers, and applied in modified form in Texas and the Confederacy, required recognition of the "dormant genius" of everyman, as well as his participation in self-government.

179. Sir Henry Sumner Maine, *The Nature of Democracy, in* POPULAR GOVERNMENT: FOUR ESSAYS 98 (Henry Holt & Co. 1886) (1885); *see also* KHAN, *supra* note 39, at 28. I am indebted to Zorina Khan for this quote. Khan developed the argument that the U.S. patent system was more democratic than those of Europe, and this part draws upon her foundational work, albeit to make a different argument. *See id.* at 28–65. Khan uses her research to argue that "democracy [is] related to social and economic progress" and that a more "democratic" patent system was more successful supporting industrial capitalism in the long nineteenth century. *Id.* at 29. I am arguing that U.S. residents believed that, having chosen a democratic system as the best political system, an inventive citizenry would support the country's stability and success.

180. *See* YORK, *supra* note 12, at 6 (arguing that colonists in British North America did not "seriously appreciate[]" invention until 1790, when U.S. attitudes toward technology and invention began to shift).

181. *See generally* MACLEOD, HEROES OF INVENTION, *supra* note 85 (analyzing British heroization of a few inventors as exceptional men).

B. The Useful Citizen and the White Republic

The comparison to the Republic of Texas and the Confederate States of America also highlights how a patent system that fostered useful citizens could be used to support the restriction of what legal historian Barbara Welke has called "legal personhood" to white men.[182] As noted above, in the United States the use of patents to certify and foster the collective inventiveness of U.S. citizens developed alongside a turn to racial and gender identity as markers of those with ability to assume full citizenship duties. The vast majority of U.S. inventor-patentees were white men, so much so that the few white women and Black men and women who participated in the patent system were either overlooked entirely or considered rare anomalies.[183] Patents thus seemed to prove a widespread belief among Americans that white women and Black women and men could not invent but were limited to imitation.[184] Patents could be used as proof that the ability to be useful citizens was linked to race and sex and therefore that civic participation was also appropriately restricted to white men only.[185]

Both the Republic of Texas and the Confederacy, in their constitutions, laws, and government, sought to create republics that restricted citizenship to white residents and, like the United States, relegated white women to partial legal personhood, recognized as citizens but unable to participate in government as voters, jury members, or office holders.[186] Although none of the

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182. BARBARA YOUNG WELKE, LAW AND THE BORDERS OF BELONGING IN THE LONG NINETEENTH CENTURY UNITED STATES 3, 134–36 (2010).

183. U.S. DEP'T OF LABOR, WOMEN'S CONTRIBUTIONS IN THE FIELD OF INVENTION: A STUDY OF THE RECORDS OF THE UNITED STATES PATENT OFFICE 2 (1923) ("[T]he contribution of women [to the flow of inventions through the patent office] entirely escapes observation."); HENRY E. BAKER, THE COLORED INVENTOR: A RECORD OF FIFTY YEARS 3 (1913) (recounting that the concept of Black inventors was viewed as a "joke," quoting a Tennessee attorney); *see also* Swanson, *Centering Black Women Inventors*, *supra* note 68, at 374 (arguing that race and gender passing in the patent system has systematically overrepresented white men in patent records).

184. *See* Kara W. Swanson, *Inventing the Woman Voter: Suffrage, Ability, and Patents*, 19 J. GILDED AGE & PROGRESSIVE ERA 559, 560–61, 564–65 (2020) (providing examples of the belief that women could not invent); Swanson, *Race and Selective Legal Memory*, *supra* note 152, at 1111–12 (discussing the belief that Black Americans could not invent); Rantanen & Jack, *supra* note 8, at 390 (noting that a lack of patents can be used as "false justification for a lack of natural ability").

185. *See* Rantanen & Jack, *supra* note 8, at 382–88 (discussing other limitations and costs of using patents as credentials).

186. Mary L. Scheer, *Unequal Citizens: Women, Rights, and Myth in the Texas Constitution of 1836*, *in* TEXAN IDENTITIES: MOVING BEYOND MYTH, MEMORY, AND FALLACY IN TEXAS HISTORY 69–70 (Light Townsend Cummins & Mary L. Scheer eds., 2016)

United States, Texas, or the Confederacy included explicit race or gender bars to their patent systems, the issued patents of each country confirmed the assumption that inventive ability was restricted to white men.[187] The useful citizens that Texas and the Confederacy sought to attract and retain were white men, who, it was assumed, would arrive accompanied by white women and enslaved people who would contribute their productive and reproductive labor to the new country but were not expected to participate in its governance.[188] The patent systems of each country reinforced the decisions of their creators to restrict governance to white men, affirming inventiveness as a race- and gender-linked quality and thus the belief that the useful citizen was white and male.

VI. CONCLUSION

Although the Republic of Texas and the Confederacy were each short-lived, the beliefs that inspired their patent systems continued. In 1889, for example, the U.S. writer Samuel Clemens (pen name Mark Twain) had his fictional protagonist, the inventive Hank Morgan, prioritize a patent office as he sought to modernize England in Clemens's pro-democracy satire, *A Connecticut Yankee in King Arthur's Court*: "[T]he very first official thing I did, in my administration—and it was on the very first day of it, too—was to start a patent office."[189] King Arthur's patent office, like that of the United States, would aid both the

(describing Texas women as "disenfranchised, unequal citizens" despite an arguable legal claim to full citizenship); ANNE FIROR SCOTT, THE SOUTHERN LADY: FROM PEDESTAL TO POLITICS 1830–1930 170 (1970); WELKE, *supra* note 182, at 77 (noting "women's stunted citizenship" in the United States up to and beyond the Civil War); Elizabeth D. Katz, *Sex, Suffrage, and State Constitutional Law: Women's Legal Right to Hold Public Office*, 33 YALE J.L. & FEMINISM 110, 112, 121, 136, 186 (2022) (documenting efforts of women to obtain the right to hold office from 1840s through 1940s).

187. *See, e.g.*, Muir, *supra* note 96, at 206, 208–10, 212, 214, 216 (describing all known applicants for Texas patents and patentees as men); KNIGHT, *supra* note 123, at 236–335 (describing all but two Confederate inventor-patentees who can be identified as male). Note that each of these countries, by requiring patent applicants to declare citizenship, created an implicit racial bar against enslaved Black persons, who are unable to claim citizenship. This bar, in the United States, was argued to encompass all Black Americans. *See* Swanson, *Centering Black Women Inventors*, *supra* note 68, at 350–51; *see also* Confederate Patent Act of May 21, 1861, ch. 46, 1861 Stat. of the Provisional Gov't of the Confederate States of Am. § 50 (describing how enslavers could patent inventions by enslaved persons).

188. *See, e.g.*, Paul Lack, *Introduction* to THE DIARY OF WILLIAM FAIRFAX GRAY FROM VIRGINIA TO TEXAS, 1835–1837 xxiii–xxiv (Paul Lack ed., 1997) (describing how one white man immigrated to Texas with his wife, six children, and six enslaved servants).

189. MARK TWAIN, A CONNECTICUT YANKEE IN KING ARTHUR'S COURT xv–xvii, 72 (Bernard L. Stein ed., Univ. of Cal. Press 1979) (1889).

progress of industrialization, one of Morgan's chief goals, and support Morgan's efforts to replace feudal power structures, because "a country without a patent office and good patent laws was just a crab, and couldn't travel any way but sideways or backwards."[190] Through the notion of the useful citizen, an original thinker, the progress of useful arts and the progress of democracy were linked in the American imagination.

The U.S. patent system has been surprisingly resilient since 1836, persisting in its mid-nineteenth-century form, even after wholesale reenactment in 1952 and significant amendment in 2011.[191] Once we recognize the sociopolitical role of patents as certifying national inventiveness, and thereby a useful citizenry, this stability is easier to understand. This extraconstitutional role of the U.S. patent system, revealed in the choices of nineteenth-century imitative republics and embedded in the national imagination, has supported a continued emphasis on an inventor-centric, high-volume patent system, despite the steady drumbeat of criticism from a technoeconomic perspective.

In different eras, this belief has been mobilized differently. For example, because nineteenth-century white male Americans understood their inventiveness to be proof of their ability to be full citizens, groups excluded from legal personhood in the United States, such as white women and Black women and men, increasingly turned to patents in the late nineteenth and early twentieth centuries to show their worthiness to participate in the civic responsibilities of self-governance. As group credentials, patents could reinforce exclusion, but as credentials formally available to all without regard to race or gender identity, they could also offer the possibility of inclusion—a possibility seized by activists that I have analyzed elsewhere.[192]

In more recent decades, as explored by Sapna Kumar, the United States has used patents granted to its citizens to claim to be an "innovative" country, a claim it can make because of the ways it shaped its patent system in the nineteenth century.[193] The

190. *Id.*

191. Mark A. Lemley, *The Surprising Resilience of the Patent System*, 95 TEX. L. REV. 1, 3, 13–14 (2016); Greg Reilly, *Our 19th Century Patent System*, 7 IP THEORY, no. 2, 2018, at 1, 2–3, 13–15 (analyzing the patent system as "remarkably stable" since the mid-nineteenth century).

192. *See, e.g.*, Swanson, *Inventing the Woman Voter*, *supra* note 184, at 560; Swanson, *Race and Selective Legal Memory*, *supra* note 152, at 1082.

193. Kumar, *supra* note 85, at 208–10 (arguing that the United States in recent decades "actively promoted a national identity of innovativeness and tied it to . . . patents").

terminology has shifted from claims of "dormant genius," but it is the long history of understanding patents as proof of a national quality that makes such nationalist arguments familiar and convincing.[194] This mobilization has been used to support shifting international trade policies, both those linking free trade to strong patent rights and those combining claims to U.S. innovativeness with nativist rhetoric in support of protectionist tariffs.[195] This form of "innovation nationalism" deploys patents as national credentials to technoeconomic ends.[196]

The link between patents and U.S. national identity can also be mobilized in areas of national policy beyond questions of trade and markets. Recent immigration debates, for example, reveal the continued power of the useful citizen ideal, as inventiveness has been used as a means of proving the ability to assume all citizenship rights and responsibilities. As U.S. politicians argue about who may enter the United States and seek to become a naturalized citizen, scholars have turned to patenting rates among immigrants to inform the discussion.[197] Such data is presumed relevant because of the unspoken assumption that if those who come to the United States from other countries bring inventive abilities, they have potential to be useful citizens. Because the United States continues to view itself as an inventive nation, telling both its own citizens and the world at large that its members are uniquely inventive, patents as credentials continue to matter. Just as in the nineteenth century, the use of patents as group credentials can be either exclusive or inclusive, an important lesson to consider as the USPTO works to increase diversity of participation in the patent system.[198] Although the United States is no longer a start-up republic, it continues to value useful citizens and to identify them via its patent system.

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194. *Cf.* Kumar, *supra* note 85, at 228 (arguing that changes in patent law beginning in the 1980s supported a "new component of U.S. national identity—technological innovativeness").

195. *Id.* at 232, 237–45.

196. *See id.*

197. *See, e.g.*, Ufuk Akcigit et al., *Immigration and the Rise of American Ingenuity*, 107 AM. ECON. REV. PAPERS & PROC. 327, 327–28 (2017) (offering an analysis of immigrant inventors from 1880 to 1940 as "evidence of the impact of immigrants on US innovation"); Shai Bernstein et al., *The Contribution of High-Skilled Immigrants to Innovation in the United States* 1–2, 27 (Stan. Bus. Sch., Working Paper No. 3748, 2018), https://www.gsb.stanford.edu/faculty-research/working-papers/contribution-high-skilled-immigrants-innovation-united-states (using patents issued from 1976 to 2012 to measure immigrants' contributions to innovation) [https://perma.cc/S2EE-ZP6P].

198. Iançu & Peter, *supra* note 1, at 6.