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Patents as Credentials

Jason Rantanen

University of Iowa College of Law, jason-rantanen@uiowa.edu

Sarah E. Jack

University of Iowa College of Law

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Patents as Credentials

Jason Rantanen*

Sarah E. Jack**

Abstract

The conventional explanation for why people seek patents draws on a simple economic rationale. Patents, the usual story goes, provide a financial reward: the ability to engage in supracompetitive pricing by excluding others from practicing the claimed technology. People are drawn to file for patents because that is how these economic rewards are secured. While scholars have proposed variations on the basic exclusionary mechanism, and there is a general acknowledgement that patents can affect a firm's reputation, the actual mechanisms of patents' effect on individuals—human beings—remains relatively uncharted.

In this Article we offer a concrete theory and framework for understanding the relationship between patents and individuals in terms other than the lure of supracompetitive pricing. Our framework focuses on the idea of patents as credentials: formal abstractions of a person's inventive nature. By acting as bounded and identifiable indicators, patents serve purposes beyond the strictly exclusionary. One purpose is to satisfy social or self-worth needs. The formalization of invention through a patent allows those human beings who want to be recognized by society as inventors to be so recognized, thus fulfilling an innate human desire. A second

* Professor and Ferguson—Carlson Fellow in Law; Director of the Innovation, Business and Law Program, University of Iowa College of Law. Thanks to David Bills, David Brown, Dan Burk, Jon Carlson, Paula Degrandis, Stella Elias, Justin Hughes, Peter Lee, Mark Lemley, Lisa Larrimore Ouellette, Mark Osiel, Anya Prince, Daniel Reed, Joshua Sarnoff, Sarah Seo, Jacob Sherkow, Jessica Silbey, Sean Sullivan, Kara Swanson, June Tai, Brett Winborn, Saurabh Vishnubhakat, and the participants in the 2017 Patent Conference and the 2018 Loyola-Los Angeles IP and Information Law Speaker Series for helpful comments and feedback on earlier drafts. Thanks also to University of Iowa librarian Amy Koopman for research assistance.

** Judicial Law Clerk, U.S. District Court for the District of Delaware; University of Iowa College of Law, J.D.

purpose is economic—but not because of the power to exclude. Instead, as the literature has recognized on the firm level, viewing patents as credentials acknowledges their role as economic signals, indicating particular characteristics possessed by the recipient.

Considered in these terms, patents serving as credentials are all around us, from resumes and curriculum vitae to framed patents in offices. But these examples only scratch the surface of the role of patents as credentials in our society. By using the formal lens of patents as credentials, we demonstrate that there are reasons why individuals seek patents beyond the lure of supracompetitive pricing.

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I. Introduction

Law students are taught to think of patents as the cold tools of business: mechanisms by which firms compete and control, attack and defend. The value of patents flows from the power they grant their owner to exclude others from making or using a new technology. The economic might of patents is at the heart of both great industrial battles that affect the fate of humankind¹ and smaller disputes between a wide cast of players. All of the patent cases that law students read, and virtually all of the scholarly commentary of their professors, revolve around the right to exclude offered by patents.

The conventional story of patents, the story that all students of patent law learn by heart, draws on a simple economic rationale. Patents provide a financial benefit: the ability to engage in supracompetitive pricing by excluding others from practicing the claimed technology.² People are drawn to file for patents because that is how the economic rewards are secured.³ A large body of

1. See generally CHRISTOPHER BEAUCHAMP, *INVENTED BY LAW: ALEXANDER GRAHAM BELL AND THE PATENT THAT CHANGED AMERICA* (Harvard Univ. Press 2015) (using the Bell patent claiming telephonic communication as an example).

2. See WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 295 (2003) (“One reason patent protection can be more valuable than copyright protection is that a patent protects against any duplication of the patented invention rather than merely forbidding the copying of it.”).

3. See, e.g., *id.* at 294 (“The conventional rationale for granting legal protection to inventions . . . is the difficulty that a producer may encounter in trying to recover his fixed costs of research and development when the product or process that embodies a new invention is readily copiable.”).

scholarship on patents and patent law has explored variations on this basic economic incentive to patent.⁴

But the real story of why people seek patents is more complex, as scholars recognize.⁵ Clarissa Long, for example, explained that firms may patent as a form of economic signaling—to show others that they possess certain characteristics.⁶ More recently, Dan Burk drew on the “new institutional” school of sociology to argue that organizational patenting is driven to some extent by a narrative “as to what is socially acceptable or desirable,” rather than being a neo-classical rational response to an economic incentive.⁷ Surveys of businesses’ motivations for patenting indicate that reputation is a major driver, particularly among firms seeking to build their

4. See, e.g., Stuart J.H. Graham et al., *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey*, 24 BERKELEY TECH. L.J. 1255, 1261 (2009) (studying the competitive and economic incentives start-ups have for seeking patents); Robert P. Merges, *Philosophical Foundations of IP Law: The Law and Economics Paradigm*, in 1 RESEARCH HANDBOOK ON THE ECONOMICS OF INTELLECTUAL PROPERTY LAW (Peter S. Menell et al. ed., forthcoming 2019) (describing how the utilitarian theory of intellectual property and using a cost-benefit analysis fits well with economics but noting alternative theories of intellectual property can also be understood from a law and economics perspective); Theresa Veer & Florian Jell, *Contributing to Markets for Technology? A Comparison of Patent Filing Motives of Individual Inventors, Small Companies and Universities*, 32 TECHNOVATION 513, 515 (2012) (studying the motivation of applicants to the European Patent office).

5. See, e.g., Dan L. Burk, *On the Sociology of Patenting*, 101 MINN. L. REV. 421, 442 (2016); Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 627 (2002) (challenging the convention that a patent’s value only comes from exclusivity).

6. See Long, *supra* note 5, at 646 (explaining how investors may believe patents or research and development rates will correspond to future value of the company).

7. See Burk, *supra* note 5, at 442 (developing an alternate explanation for why individuals choose to seek a patent that fits two positions: on the one hand, inventors may seek patents because the credential is part of a social role; on the other, inventors may seek patents because patents increase future economic opportunities and provide self-validation).

identity and status.⁸ Some literature suggests that firms may patent as a way to reward their employees.⁹

When it comes to the reasons why individuals—human beings—are driven to patent, however, the literature is sparser. There is unquestionably a generalized understanding that patents provide some form of reputational benefit, but the mechanism has proven elusive.¹⁰ In *The Eureka Myth*, Jessica Silbey emphasizes the importance of reputation to creators but concludes that patent law is misaligned with creators' interest in reputation.¹¹ Jeanne Fromer's work observes that certain "expressive incentives" that recognize a creator's moral rights can complement the usual utilitarian view of patents.¹² She identifies attribution as one incentive that can promote inventorship; the unstated corollary is that inventors will seek patents to establish that attribution.¹³ In another recent article, Will Hubbard discusses "inventing norms,"

8. See generally Knut Blind et al., *Motives to Patent: Empirical Evidence from Germany*, 35 RES. POL'Y 655 (2006) (reviewing surveys examining small firms' motivations to patent and conducting its own survey of those motivations in German); Graham et al., *supra* note 4, at 1264 (surveying high technology firms' motivations for patenting); Veer & Jell, *supra* note 4, at 515 (reporting on data from the 2006 European Patent Office questionnaire).

9. See Blind, *supra* note 8, at 670 ("There is obviously a converging trend among sectors regarding the use of patents to motivate employees and to measure performance."); Catherine L. Fisk, *Credit Where It's Due: The Law and Norms of Attribution*, 95 GEO. L.J. 49, 54 (2006) (describing attribution systems in business).

10. See JESSICA SILBEY, *THE EUREKA MYTH: CREATORS, INNOVATORS, AND EVERYDAY INTELLECTUAL PROPERTY* 149–83 (Stanford Univ. Press 2015) (offering an example of the recognition of reputation as a driver for creators, as well as the slipperiness of that concept).

11. See *id.* at 149–53 (stating that within intellectual property law trademark is best suited to address reputation, while copyright and patent law are less pertinent to regulating reputation).

12. See Jeanne C. Fromer, *Expressive Incentives in Intellectual Property*, 98 VA. L. REV. 1745, 1747 (2012) ("The law's careful use of expressive incentives can bolster the utilitarian inducement to create valuable intellectual property.").

13. See *id.* at 1790–94 (explaining how and why a work's attribution to its creator "can bolster an author's or inventor's reputation [and] concretize[] the personhood interest creators have in viewing their creations as strong components of their self-concept"); see also Stephanie Plamondon Bair, *The Psychology of Patent Protection*, 48 CONN. L. REV. 297, 320 (2015) (suggesting attribution is "a powerful motivator of knowledge sharing because of the promise of enhanced feelings of competency . . . that it offers").

which he defines as the societal norms that promote invention.¹⁴ His primary analysis focuses on what causes individuals to invent,¹⁵ but in the course of his analysis Hubbard refers to patents as credentials (much like a degree) that may be used to signal to friends and family that the inventor on the patent is worthy of respect.¹⁶ Similarly, in his opus on non-utilitarian rationales for intellectual property, Robert Merges alludes to the idea that intellectual property rights in general serve as some kind of credential to creators.¹⁷ He describes the rights as a type of reward for the bravery of releasing intellectual property to the world.¹⁸ Merges also discusses the inventor's pseudo moral right to be listed as an inventor.¹⁹ This idea of a "moral right to credit"²⁰ has received support from several courts.²¹

14. See William Hubbard, *Inventing Norms*, 44 CONN. L. REV. 369, 373 (2011) (comparing social norms to inventing norms, "which are social attitudes of approval for successful invention").

15. See *id.* at 369 (arguing that, in addition to economic motivations, "inventors are . . . motivated by social norms, that is, shared normative beliefs favoring certain actions while disfavoring others").

16. See *id.* at 400 ("Patents are also important in professional circles, and patentees often treat issued patents as a credential-like a degree."). Dan Burk's concept of patents as "boundary objects" raises similar themes. See Dan L. Burk, *Patent Silences*, 69 VAND. L. REV. 1603, 1606 (2016) (defining boundary objects as "artifacts that have sufficiently definite meaning to be useful in disparate social worlds, but which simultaneously are sufficiently ambiguous to become objects of collaboration between such disparate social worlds").

17. See ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY 311 (2011) ("IP gives [creators] a reason to believe that some day, for some of them anyway, a real career could be made by doing what they are best at.>").

18. See *id.* at 310–11 (noting that "IP rights represent an important token of respect and recognition for those souls brave enough to launch their creations . . .").

19. See *id.* at 158 ("The moral right to credit exists in patent law as well. An inventor has a right to have his name on a patent.>").

20. *Id.*

21. See *Czarnik v. Illumina, Inc.*, 437 F. Supp. 2d 252, 256 (D. Del. 2006) (concluding that the plaintiff had standing to correct inventorship because "he ha[d] suffered harm to his reputation and standing in the scientific community"); see also *Chou v. Univ. of Chi.*, 254 F.3d 1347, 1359 (Fed. Cir. 2001) ("[B]eing considered an inventor of important subject matter is a mark of success in one's field . . . Pecuniary consequences may well flow from being designated as an inventor.>").

This Article adds to the existing literature by articulating a concrete theory and framework for understanding the relationship between patents and individuals that builds on Hubbard and Merges's idea of patents functioning as credentials. This theory and framework is situated within the doctrinal structure of patent law, and the formal concept of patents as credentials has implications for patent law's own future.

We emphasize that the idea of "patents as credentials" is not merely a rhetorical substitute for the generalized understanding that patents provide a reputational benefit. This would not move the ball beyond what Silbey, Frommer, Hubbard, and Merges have already articulated. Instead, we argue that the real mechanism of patents' reputational effect is not merely some generalized benefit—perhaps articulated through the rhetoric of "credential"—but rather the specific abstraction and formality of a patent. Put another way, it is precisely because of the artificiality of patents that they are able to function as a mechanism to enhance one's reputation.²²

Just as this Article uses the formalized abstraction of credentials to understand the reputational effect of patents, so too do patents provide a formalized abstraction of the contributions and characteristics of a human being. In other words, we are using a social construct to analyze something that is itself a social construct.²³ Viewed in these terms, the reason why this Article is titled "Patents as Credentials" rather than "Patents as Reputation" is because a central theme of this Article is that formalization matters—after all, formalization is why, as this Article intends to show, patents are such powerful mechanisms of reputation and self-fulfillment. The formal lens of credentials offers important insights into the non-exclusionary role of patents.

22. This, we think, is perhaps a way out of what Silbey perceives as a disconnect between intellectual property rights (or at least, patents) and reputation: while reputation may be too slippery to own, one can possess certain elements from which one's reputation is formed. *See* SILBEY, *supra* note 10, at 181 ("Reputation is hard to 'own' in the way that property (or IP) might be owned and defined.").

23. *Infra* Part IV; *see* Fisk, *supra* note 9, at 1135 ("Patent law thus adopted the Romantic notion of the individual as the inventor or originator of an idea, and turned it into a legal category that supported a whole system of property rights, thus turning a legal category back into a social fact.").

At its core, our explanation of the patent credential is simple: some human beings want to be recognized by society as inventors. But, claiming to be an inventor without evidence is unlikely to persuade the masses—or even, perhaps, friends. Patents serve as powerful evidence that an individual is an inventor.²⁴ Just as a doctoral degree in history might indicate that one is a historian or an award from a community organization might be seen as a bona fide certification of one's commitment to public interest, obtaining a patent shows that the person named on its face is a real-life, government-certified inventor.²⁵ Regardless of whether a particular patent conveys an economically valuable measure of exclusion, the inventorship recognition alone may drive some individuals to seek patents. Intertwined with this formal recognition is the element of self-validation that patents provide.²⁶ In a way, obtaining a patent is similar to passing a test—a mechanism of external recognition of achievement that adds to one's own identity.

The power of patents as credentials is one that is based on the core attributes of patents themselves. Perhaps most prominently, patents have powerful social recognition.²⁷ They indicate—perhaps even define—the existence of an invention. The individual or individuals named as inventors on the patent are, *ipso facto*, inventors. Patents possess a deep-rooted, historical veracity. With a patent, one can draw upon the likes of Morse, Edison, and Bell. Legally, only a true inventor may receive a patent.²⁸

Beyond their social meaning, patents exhibit the attributes of a high-quality credential. They are issued by an entity that

24. See Hubbard, *supra* note 14, at 401 (arguing that one reason Thomas Edison is considered America's most prolific inventor is because he was named an inventor on over 1,000 patents).

25. See *id.* (explaining that patents help identify persons worthy of respect and esteem by communicating information regarding an invention's attributes).

26. *C.f.* Bair, *supra* note 13, at 310 (explaining that the aims of personality theory, which is "primarily concerned with validating the personhood of creators through their works," may be achieved by ensuring a creator receives credit for her work).

27. *Infra* Part IV.A.

28. *Infra* Part IV.B.2.a.

possesses substantial legitimacy.²⁹ There is the informational content of the credential, provided through direct certification as well as signaling and filtering. And while the basic requirements to obtain a patent are simple enough for everyone to understand (even a child),³⁰ the facts that satisfy these requirements are often quite complex and require a high level of substantive technical knowledge to understand and analyze under the legal requirements—hence the necessity for relying on the credential.³¹ Whether the facts satisfy the requirements is a determination made by an Examiner employed by a central Patent Office.³² The Examiner assesses and measures whether each application really claims a new and fully disclosed invention—in other words, that the self-proclaimed inventor really is in possession of an invention. In this way, patents may be even better than a degree from a fancy institution: they bear the government’s own seal, proclaiming one to be a real inventor. A real red ribbon.³³

The value of this ribbon is more than just economic, although it can be that. As with a traditional academic credential, a patent may raise an individual in the eyes of an employer—an economic function that may be the individual version of Clarissa Long’s

29. See Hubbard, *supra* note 14, at 399 (“Because a patent issues only after administrative examination, the patent indicates with at least modest credibility that [the] requirements for patentability have been met and thus identifies the patentee as the creator of a meaningful new invention.”).

30. *Infra* Part IV.B.2.a.

31. See Hubbard, *supra* note 14, at 398 (describing the patent examiners as professionals “with experience and training in the technological field to which the invention relates”).

32. See *id.* at 399 (describing the process by which inventors must convince patent examiners to grant their inventions).

33. Consider the red ribbons of Edward Bellamy’s influential nineteenth century novel *Looking Backward*. See ERNEST FREEBERG, *THE AGE OF EDISON: ELECTRIC LIGHT AND THE INVENTION OF MODERN AMERICA* 153 (2013) (quoting EDWARD BELLAMY, *LOOKING BACKWARD, 2000–1887*, at 226 (1888))

In the socialist utopia depicted in Edward Bellamy’s bestselling novel *Looking Backward, 2000–1887*, the nineteenth century time traveler found that inventive geniuses in the better world of the year 2000 created new ideas simply for the chance to serve mankind, the reward of more time to pursue invention, and the dream of winning the society’s highest reward: the honor of sporting a red ribbon that marked the wearer as a great human benefactor.

Patent Signaling of firms.³⁴ But patents can also have social caché—value beyond the purely monetary: the sweat on the palm of an interviewee as he sees the stack of black patent cubes behind the interviewer,³⁵ the joy of knowing that your friend is an inventor of a patented technology, the warm glow that being recognized as contributing something new to society may bring.³⁶ By serving as credentials, patents provide a measure of societal validation of an individual's contribution, bolstering the recipient's innate sense of self-worth.

Examples of the use of patents as credentials abound throughout society and history. We address patents' appearance in academia, their use as rewards by employers, and their necessity for entry into honorary societies of inventors.³⁷ Ultimately, however, this Article can only scratch the surface of these examples. It suggests, however, that further research on the credentialing function of patents—particularly, empirical research³⁸—is called for.

Some of the normative implications of the credentialing function of patents are clear. For one, if society correctly values practical innovation as a social good—an assumption we are willing to make—then the credentialing function of patents aligns fairly well with recognizing inventors for contributing to that social good. It is not perfect, but given the relative rigor of the examination process, the height of the bar to achieve the credential, and the identity of the issuer, it is probably better than many other credentials at providing evidence for the characteristic for which it stands. Patent credentials may also serve a valuable function by identifying individuals with inventive abilities, thus providing information that will be useful to future employers or business partners.³⁹

34. See generally Long, *supra* note 5.

35. See KEITH CURTIS, AFTER THE SOFTWARE WARS 92 (2016) (recalling the author's interview for a new position within Microsoft and the tinge of jealousy he felt at seeing his interviewer's patents on display in his office).

36. See generally ADAM SMITH, THE THEORY OF MORAL SENTIMENTS (1759) (describing the human desire for approbation).

37. *Infra* Part V.

38. *Infra* Part V.E.

39. See Hubbard, *supra* note 14, at 401 (“[P]atents . . . thereby help identify

That said, there is a dark side of credentials, one that patents are hardly immune to. We acknowledge, as we must, that patent law is not perfect, that overreliance on credentials is problematic, and misunderstanding of the meaning of a patent can lead to ruin for the inventor.⁴⁰ Perhaps even more concerning is that patents—as with other types of credentials—can be mechanisms that preserve existing castes and restrict opportunities for those who lack access to them. The history of patents shows that this criticism has merit, although the story is more complex than a simple power hierarchy. This may be precisely because of the formalized nature of patents—in other words, their function as credentials.

Our normative assessment leads into our final conclusion, one for those who crave a legal payoff from the theory of patents as credentials. If we as a society think that patents do serve a valuable role as credentials—or at least, that their benefits as signals outweigh the costs of credentialism—then we should take that concern into account when evaluating changes to the patent law. Particularly, recent changes to patent law have shifted patents further toward being stark tools of business.⁴¹ Those changes, we suggest, might make sense on one level, but they fail to take into account the effect of altering these symbols' meanings to human beings.

This Article proceeds as follows. We begin by describing the formal construct of a credential in Part II. Part III explains the legal aspects of patents, including their substantive and procedural components. Our central thesis that patents should be understood as credentials—formal abstractions of a person's inventive nature—is argued in Part IV. Part V provides examples of patents serving as credentials across a wide landscape of society. Finally, in Part VI, we assess the idea of patents as credentials from a normative perspective. We close in Part VII with some thoughts on the implications of viewing patents as credentials.

persons worthy of respect and esteem pursuant to inventing norms.”).

40. *Infra* Part VI.

41. *Infra* Part VII.

II. What is a Credential?

This calls for emergency action! That man is a spellbinder.
I want his credentials.⁴²

—Mayor Shinn

A credential is a formalized indicator that a person possesses a particular, otherwise difficult to observe attribute.⁴³ A credential is typically embodied as a literal document or certificate that provides evidence of a person’s identity or qualifications, although the concept of a credential is not limited to its physical incarnation.⁴⁴ A credential provides a mechanism by which uncertainties and issues of trust between parties can be reduced.⁴⁵ “Credentialing seeks to mediate between parties by enabling trusting relationships where doubt, uncertainty, or risk exists.”⁴⁶ The use of credentials “arises where, for any of a variety of structural reasons, a party cannot easily judge for itself on the

42. MEREDITH WILLSON, *THE MUSIC MAN* sc. 5. Tangential to the main plot of *The Music Man* is the mayor and school board’s quest to obtain “Professor” Harold Hill’s credentials. *Id.* They are so focused on the credentials that Hill is forced to resort to an array of shenanigans to distract them. *Id.*

43. See David K. Brown, *The Social Sources of Educational Credentialism: Status Cultures, Labor Markets, and Organizations*, 74 SOC. EDUC. (EXTRA ISSUE) 19, 26–27 (2001) (discussing credentials as “formal rules” in labor market recruitment).

44. See, e.g., *Credential*, THE OXFORD DICTIONARY OF ENGLISH (Catherine Soanes & Angus Stevenson eds., 2d ed. 2003) (“A qualification, achievement, quality, or aspect of a person’s background, especially when used to indicate their suitability for something . . .”); *Credential*, WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE UNABRIDGED (Phillip Babcock Gove ed., 1971) (“[S]omething that gives a title to credit or confidence.”); Tony Buon & Bob Compton, *Credentials, Credentialism and Employee Selection*, 28 ASIA PAC. J. HUM. RESOURCE MGMT. 126, 126 (1990) (“Literally, credentials are letters or certificates that establish the position, authority or identity of the bearer.”); see also David K. Brown, *Credentialing*, in THE BLACKWELL ENCYCLOPEDIA OF SOCIOLOGY 1 (George Ritzer ed., 2016) (“Credentialing is at once a social relationship, a cultural system, and a historical process that entails assurances from a third party that another party in a two-party relationship possesses desirable qualities such as knowledge, technical competence, moral character, and legitimate authority.”).

45. See Brown, *supra* note 43, at 26 (“Degree holders thus hold power over nondegree [sic] holders on the basis of a formal claim to competence or untrustworthiness.”).

46. Brown, *supra* note 44.

substantive uncertainties attendant upon social transactions.”⁴⁷ To put it another way, “[credentials] are tokens of trust used to vouch that people are who they say they are, and have the qualities they claim to have.”⁴⁸

Credentials thus stand for a particular characteristic possessed by an individual. They are “a formal abstraction from substantive matters that claims to be a legitimate representation of some substantive reality, such that one party can trust the credential to be good enough to stand for a substantive scrutiny of whatever the credential represents.”⁴⁹ For example, credentials can indicate what amount and type of education an individual has completed.⁵⁰ But credentials are hardly limited to education.⁵¹ They can be understood in broader terms as “abstractions that stand above the substance of various lived experiences”⁵² or as “means by which social actors can send and receive information under conditions of social uncertainty and anonymity.”⁵³

47. *Id.*

48. SHERYL L. GRANT, WHAT COUNTS AS LEARNING: OPEN DIGITAL BADGES FOR NEW OPPORTUNITIES 10 (2014), https://dmlhub.net/wp-content/uploads/files/WhatCountsAsLearning_Grant.pdf.

49. Brown, *supra* note 44; *see also* DAVID B. BILLS, THE SOCIOLOGY OF EDUCATION AND WORK 76 (2004) (explaining that employers rely on credentials because they are “a cheap, easily observed, and socially acceptable signal that employers can use when they have little other information”); David P. Baker, *Forward and Backward, Horizontal and Vertical: Transformation of Occupational Credentialing in the Schooled Society*, 29 RES. SOC. STRATIFICATION & MOBILITY 5, 6 (2011) (arguing that “educational degrees are fast becoming universally synonymous with human capacity in the occupational structure”); David K. Brown & David B. Bills, *An Overture for the Sociology of Credentialing: Empirical, Theoretical, and Moral Considerations*, 29 RES. SOC. STRATIFICATION & MOBILITY 133, 135 (2011) (“Credentials are sources of power for individual holders insofar as they effectively block substantive judgments about their actual abilities.”).

50. *See* Brown, *supra* note 44; BILLS, *supra* note 49, at 36 (noting that “Americans believe that education and work are intimately related, and that this is how it should be”).

51. *See* Brown & Bills, *supra* note 49, at 134 (“Memberships in various forms of consumption groups undoubtedly provide credentialing powers analogous to educational degrees.”).

52. *Id.*

53. BILLS, *supra* note 49, at 59; *see also* Baker, *supra* note 49, at 5–6 (proposing that “education as an institution provides the logic by which educational credentialing becomes evermore legitimate, more so than from forces

Credentials might also be analogized to data compression, the process of reducing the size of a signal or other information source while still conveying information.⁵⁴ Just as a novel might be distilled to just its plot, characters and symbols, so too can a credential compress a multi-year experience into a diploma. In short, credentials are a mechanism of information transfer that distills complex, often difficult to observe information into a portable, translatable indicator.⁵⁵

Credentials fulfill this information communication function in multiple ways. Perhaps the strongest way is through their role as symbols, full of the meaning society attaches to them.⁵⁶ A credential abstracts an experience, characteristic or set of skills and knowledge into a more symbolic form with its own socially constructed meaning.⁵⁷ For example, “[d]egrees direct people to accept an abstraction (the symbolic, cultural embodiment of the degree itself) as a representation of something else (substantive knowledge, skill, or loyalty).”⁵⁸

Beyond the meaning that society ascribes to the credential, credentials communicate information in and of themselves. For one thing, a credential communicates certain pieces of information directly to its audience.⁵⁹ A particular degree, for example,

outside the institution itself such as the economy and labor market demand”); Brown, *supra* note 44; Sheryl Grant, *Building Collective Belief in Badges: Designing Trust Networks*, in FOUNDATION OF DIGITAL BADGES AND MICRO-CREDENTIALS 97, 103 (Dirk Ifenthaler, et al. eds., 2016). *See generally* STEVEN L. NOCK, THE COSTS OF PRIVACY: SURVEILLANCE AND REPUTATION IN AMERICA (Michael Useem & James D. Wright eds., 1993).

54. *See, e.g.*, DAVID SALOMON, A CONCISE INTRODUCTION TO DATA COMPRESSION 5 (2008).

55. *See, e.g.*, Baker, *supra* note 49, at 12 (“[E]ducational degrees . . . emerge as indicators of development of the individual with widely assumed repercussions for all aspects of the person . . .”).

56. *See* Brown, *supra* note 43, at 26 (discussing Weber’s argument that credentials are a form of social credit that symbolically facilitate exchanges under conditions of social uncertainty).

57. *See id.* (discussing credentials in the context of education and arguing that credentials abstract qualities that are held to persist over time).

58. *Id.*

59. *See* Hubbard, *supra* note 14, at 400 (offering patents as an example of a credential that communicates information even to non-technical audiences who nevertheless understand the significance of the simple fact that a patent has been granted).

indicates that the degree recipient has met the requirements of that degree: she has taken certain classes and met prescribed minimum standards.⁶⁰ A credential can also serve a *screening* function—in other words, to sort out individuals of differing abilities, thereby conveying information to the purchasers of labor.⁶¹ As described by Kenneth Arrow, the function of higher education is not to contribute to cognition or socialization, but rather to filter out those who will produce the greatest economic productivity.⁶² Credentials can also function as economic signals or communications about unobservable characteristics that are less costly for desirable individuals to provide than for others.⁶³ That is, if obtaining an education is less costly for “good” employees than for “bad” employees, investment in obtaining an education is a potential signal that an employer may use to distinguish the good prospective employees from the bad.⁶⁴

One way to think about the information function of credentials is to set it against the backdrop of what sociologist David Bills describes as the “meritocracy” and “credentialism” models of

60. For example, the American Bar Association requires that graduates from accredited law schools complete a minimum set of required classes. *See* ABA STANDARDS AND RULES OF PROCEDURE FOR APPROVAL OF LAW SCHOOLS 16 (AM. BAR ASS'N 2017) (requiring a course in professional responsibility, two courses with a substantial writing component, and a sizeable experiential learning experience). Beyond the minimum requirements, each accredited law school sets its own standards for receiving a J.D. *See, e.g.*, UNIV. OF IOWA COLL. OF LAW, ACADEMIC REQUIREMENTS OVERVIEW 1–2 (2013), https://law.uiowa.edu/sites/law.uiowa.edu/files/curriculum_overview_0.pdf (setting out the school's academic requirements); *Degree Requirements*, UNIV. KAN. SCH. L., <https://law.ku.edu/requiredcourses> (last visited Feb. 19, 2019) (same) (on file with the Washington and Lee Law Review); *J.D. Degree Requirements*, YALE L. SCH., <https://law.yale.edu/study-law-yale/degree-programs/jd-program/jd-degree-requirements> (last visited Feb. 19, 2019) (same) (on file with the Washington and Lee Law Review).

61. *See* Kenneth J. Arrow, *Higher Education as a Filter*, 2 J. PUB. ECON. 193, 194 (1973) (arguing that “higher education serves as a screening device, in that it sorts out individuals of differing abilities”).

62. *See id.*

63. Michael Spence, *Job Market Signaling*, 87 Q.J. ECONOMICS 355, 358 (1973).

64. *See id.* (“It is not difficult to see that a signal will not effectively distinguish one applicant from another, unless the costs of signaling are negatively correlated with productive capability.”).

education and work.⁶⁵ In the meritocracy model, employers desire employees with certain attributes such as knowledge, skill, and work ethic.⁶⁶ Credentials function as strong evidence that an individual possesses the attributes tied to obtaining the credential.⁶⁷ Good credentials thus provide a high signal-to-noise ratio.⁶⁸ On the other hand, in the “credentialism” model, credentials are simply arbitrarily handed out and bear little actual relationship to those attributes necessary to perform a job successfully—or at all.⁶⁹ Credentials thus bear a low (or zero) signal-to-noise ratio; indeed, there may be little informational value of the credentials at all.⁷⁰

Credentials exist on more than a purely economic level, however.⁷¹ As sociologist David Brown observes, “[c]redentialing is at once a social relationship, a cultural system, and a historical process that entails assurances from a third party that another party in a two-party relationship possesses desirable qualities such as knowledge, technical competence, moral character, and legitimate authority.”⁷² Much of the contemporary research on

65. *BILLS*, *supra* note 49, at 37–60.

66. *Id.* at 41–44. Note that none of these characteristics need be conceptualized narrowly. “Skill,” for example, could include such attributes as an ability to write clearly, analyze problems rigorously, or function as part of an interdisciplinary team.

67. *See id.* at 59–60 (discussing Steven Nock’s theory of the relationship between surveillance and reputation, which suggests that “education credentials provide a reason to have confidence in the ability and reliability of strangers”).

68. *See* C.E. Shannon, *A Mathematical Theory of Communication*, 27 *BELL SYS. TECHNICAL J.* 379, 381 (1948) (arguing that the maximum amount of information that can reliably be carried through a signal is limited by the amount of noise in the channel).

69. *See* *BILLS*, *supra* note 49, at 47–55 (suggesting that one way to think about credentialism is as a “sheepskin effect,” which is defined as a “disproportionately large increase[] in returns to schooling after the completion of certain years that usually entail[s] a degree”).

70. *See* Buon & Compton, *supra* note 44, at 130–31 (arguing that criteria such as behavior, skill, knowledge, and attitude are far better indicators of future job performance than credentials, “which may have some limited relevance to the job”).

71. *See* Brown, *supra* note 44, at 1.

72. *Id.*

credentialing seeks to understand the concept within the broader context of economic, social, and cultural themes.⁷³

Unfortunately, the sociological literature provides relatively little description of what makes a credential a good source of information. Some of this thinness may be due to the underlying disagreement over the value of education itself—specifically, whether it increases productivity or not.⁷⁴ The credentialing literature also tends to focus on the dark underside of credentials, looking for worms under the stone rather than trying to figure out why the stone was so heavy and hard to move in the first place.⁷⁵

Although there seems to be no one accepted definition of what distinguishes a high-quality credential from one that is not, the literature does offer a few hints. One aspect of the informational value of a credential lies in the legitimacy of the issuer.⁷⁶ The greater the perceived legitimacy of the issuer to the audience, the greater the value of the credential.⁷⁷ A degree from Harvard may have carried great weight among Boston employers in the 1930s; it carried much less weight among farmers in the dustbowl.⁷⁸ The greater the perceived legitimacy of the issuer—and the broader that perception—the higher the value of the credential.⁷⁹

A second aspect lies in the ability of the audience to understand what the credential stands for—in other words, to comprehend the meaning of the credential, both in terms of its substantive requirements and as an abstraction.⁸⁰ What is the attribute that it is standing for, or the experience that one has

73. *See id.*

74. *See id.* at 2.

75. *Infra* Part VI.

76. *See* BILLS, *supra* note 49, at 49–50 (discussing the differences between credentials issued via accreditation, certification, and licensing).

77. *See id.* at 50 (noting that licensing is the most restrictive form of occupation regulation and that licenses are therefore some of the most valuable credentials).

78. *See* JONATHAN RABAN, *BAD LAND: AN AMERICAN ROMANCE* 217–40 (1996) (describing the plight of homesteaders during the “Dirty Thirties”).

79. *See* BILLS, *supra* note 65, at 50 (explaining that licenses are considered more valuable than certificates because licensing is a more restrictive form of occupational regulation than certification).

80. *See* Brown & Bills, *supra* note 49, at 134 (explaining the abstractions associated with credentials are created for various social purposes).

undergone?⁸¹ For a credential to function, the observers of the credential—the recipients of the information—must recognize it as meaning something.⁸² Some credentials, such as a high school diploma, may have a widely accepted meaning; others, such as digital badges, may only have meaning to certain communities.⁸³

A third aspect of the value of a credential lies in the audience's *need* to rely on the credential rather than direct observation of the attribute or experience.⁸⁴ After all, if the audience can directly observe the relevant characteristic, behavior, or experience, it has no need for a credential.⁸⁵

In summary, the interrelationship of three aspects allows credentials to enable trusting relationships where uncertainty would otherwise exist: (1) the ability of the credential to abstract

81. *See id.* (“Cultural meanings make differences that matter. Credentials may connote different meanings to social actors of all sorts.”). David Salomon explains:

The key to compressing data is the distinction between data and information. Data is how information is represented; it is the physical embodiment of the information. We know that it is possible to use different amounts of data to convey the same information. A good example is a story. A novel that originally occupies 300 pages can be “digested” and compressed to just 30 pages without losing the main outlines of the plot. The same story may be told by one person in 2000 words and by another in 200 words because the former employs unnecessary (or irrelevant) words, thus introducing redundancy into his narrative, while the latter selects only those words that are strictly needed.

SALOMON, *supra* note 54, at 5. Of course, information is necessarily lost during this process. For example, while it may be possible to summarize the plot, characters, and symbols of George Orwell's 1984 in a much shorter pamphlet, one might argue that much of its communicative content is lost in that compression. *See generally* GILBERT BORMAN & FRANK H. THOMPSON JR., CLIFFSNOTES ON ORWELL'S 1984 (1st ed. 1967) (presenting an abridged version of George Orwell's 1984 in pamphlet format).

82. *See* Grant, *supra* note 53, at 97–114.

83. *See id.*

84. *See id.*; Brown, *supra* note 44 (“Credential use arises where, for any of a variety of structural reasons, a party cannot easily judge for itself on the substantive uncertainties attendant upon social transactions.”); Brown, *supra* note 43, at 26 (“Credentials abstract qualities that are held to persist over time, so that substantive inquiry about the retention of knowledge can also be set aside.”).

85. *See* NOCK, *supra* note 53, at 43–44 (arguing that society relies on reputations to justify trust).

or compress information about a characteristic or experience, (2) the need of the audience to rely on a credential rather than direct observation of that characteristic or experience, and (3) the legitimacy of the issuer in determining whether that credential is deserved.

These three criteria, together with the broader social meaning of patents, provide the analytical framework for our examination of patents as credentials.

III. Patents and Their Requirements

The basic concept of a patent is likely familiar to any modern reader. In simplest terms, a patent is a set of exclusive rights granted to an inventor in return for publicly disclosing an invention.⁸⁶ Patent rights are created by the law of individual nations.⁸⁷ Although treaties exist that harmonize the basic requirements to obtain a patent, there is no “worldwide patent.”⁸⁸ In the United States, the authority to issue patents is established by the federal Constitution.⁸⁹ It grants Congress the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”⁹⁰

86. See, e.g., DONALD S. CHISUM, CHISUM ON PATENTS OV-2 (2010) (“A patent confers the right to exclude others from making, using, or selling the claimed invention in the United States for a term of 17 years from the issue date.”).

87. See *id.* (explaining how the Constitution empowered Congress to establish a national patent system in the United States).

88. For example, an inventor may obtain a patent in the United States, a patent in Canada, and a patent in Brazil. While there is a near-universal application mechanism called a PCT application, and several treaties that harmonize the substantive law of the member states, there is no serious current move toward creating a worldwide patent. See Katrina McClatchey, *The European Patent Office and the European Patent: An Open Avenue for Biotechnologists and “Living Inventions”*, 2 OKLA. J.L. & TECH. 25, 25 (2004) (“[A] patent only offers protection within the territorial boundaries of the country that grants the inventor the patent. In other words, there is no such thing as a ‘worldwide’ patent. Therefore, an inventor must file for and obtain a patent in each country where protection is desired.”).

89. U.S. CONST., art. I, § 8, cl. 8.

90. *Id.*

Much has been written about the history of the patent system: how it came to be, how it evolved and changed over the nineteenth and twentieth centuries, and how patent law changed during that time.⁹¹ Suffice it to say that patents in the United States are as old as the nation.⁹² The first patent law was passed on April 10, 1790;⁹³ the first patent issued three months later.⁹⁴ For most of their existence, U.S. patents have been examined and issued by a Patent Office, an agency of the federal government.⁹⁵ While the look of patents has changed over the past two centuries, the core idea—an exclusive right to an invention granted in exchange for revealing how to make and use that invention—has remained the same.⁹⁶ Today, patents are issued by the United States Patent and Trademark Office, an agency of the Department of Commerce.⁹⁷ Each has historically come bearing a gold seal and red ribbon, and

91. See generally BEAUCHAMP, *supra* note 1 (examining the legal battles surrounding Alexander Graham Bell's telephone patent); KENNETH W. DOBYNS, *THE PATENT OFFICE PONY: A HISTORY OF THE EARLY PATENT OFFICE* (1994) (describing the patent system to the end of the nineteenth century); B. ZORINA KHAN, *THE DEMOCRATIZATION OF INVENTION: PATENTS AND COPYRIGHTS IN AMERICAN ECONOMIC DEVELOPMENT, 1790–1920* (2005) (explaining that, historically, the democratic market-orientation of the United States has ensured that patent institutions were calibrated to accommodate changes affecting private and social costs and benefits). For numerous secondary historical sources on patents, patent law, and the patent system, see BEAUCHAMP, *supra* note 1, at 215–60.

92. See CHISUM, *supra* note 86, at OV-3 (noting that Congress enacted the first patent statute in 1790).

93. Act of Apr. 10, 1790, ch. 7, 1 Stat. 109-112 (repealed 1793).

94. U.S. Patent No. X00001 (issued July 31, 1790).

95. Technically, modern patents are issued by the United States Patent and Trademark Office. As this Article is focused on the patent side of things, for stylistic reasons “Patent Office” is used.

96. See CHISUM, *supra* note 86, at OV-3 (explaining that the 1790 and 1793 patent statutes introduced the fundamental concepts, such as “useful art” and “new and useful improvement thereon,” that remain features of United States patent law today).

97. See *About Us*, USPTO, <https://www.uspto.gov/about-us> (last visited February 19, 2019) (“The United States Patent and Trademark Office (USPTO) is the federal agency for granting U.S. patents and registering trademarks.”) (on file with the Washington and Lee Law Review).

is signed by the Director of the United States Patent and Trademark Office.⁹⁸

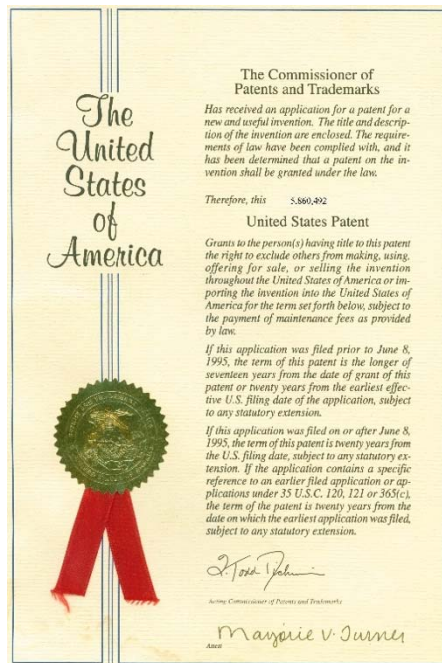


Figure 1: Pre-2018 Cover of a patent.⁹⁹

98. See, e.g., Janet E. Reed, *Publishing and Patenting the Fruits of Academic Research: The Key to a Successful Parallel Track*, 14 *NATURE IMMUNOLOGY* 523, 524 (2013) (providing an image of the cover of a patent). In 2018, the USPTO released a new version of the patent cover: the ribbon is gone but the seal remains. See *USPTO Unveils New Patent Cover Design at South by Southwest (SXSW)*, USPTO (MAR. 11, 2018), <https://www.uspto.gov/about-us/news-updates/uspto-unveils-new-patent-cover-design-south-southwest-sxsw> (last visited Feb. 19, 2019) (“This new design portrays a modern day flair while reflecting the history of patent covers by taking design cues from 19th and early 20th century patent cover designs, mostly through the use of script typography and graphic ornaments.”) (internal quotation marks omitted) (on file with the Washington and Lee Law Review).

99. *Image of Cover of a Patent*, WIKIPEDIA, https://commons.wikimedia.org/wiki/File:US_Patent_cover.jpg (last visited Feb. 19, 2019) (on file with the Washington and Lee Law Review).

The following Parts briefly describe the substantive criteria and process for obtaining a patent. While we recognize that most members of society at large—the receivers of the credential—might not know the patent system at this level of detail, we nonetheless think it is important to describe these criteria so as to weigh the normative value of patents as credentials later on. In other words, if the process is not any good, then we should be skeptical of the credential; if the process seems sound, the credential’s value is more legitimate.¹⁰⁰

A. *The Criteria for Obtaining a Patent*

1. *The Invention*

Beginning with the first Patent Act in 1790,¹⁰¹ Congress drew on its Constitutional power to authorize the issuance of patents provided that the application met substantive criteria set out by statute.¹⁰² Over time, the statutory requirements for obtaining a patent have evolved, but the core criteria—appropriate subject matter, usefulness, newness, and adequacy of disclosure—have remained the same.¹⁰³

The threshold question of what subject matter is eligible for a patent is a surprisingly opaque topic, at least at the legal margins. Indeed, if one were to ask a dozen people on the street about what kind of “stuff” is eligible for a patent, one would likely get a more definite perspective than the legal meaning of “patent eligible subject matter.” Courts and commentators have vigorously

100. *Infra* Part II.

101. Act of Apr. 10, 1790, ch. 7, 1 Stat. 109-112 (repealed 1793).

102. *See id.* (requiring submission of a writing that distinguishes the invention from prior inventions and enables the public to understand the mechanics behind the invention).

103. *Compare id.* (“[G]rantee . . . of each patent shall . . . deliver . . . a specification in writing . . . which specification shall be so particular . . . as not only to distinguish the invention . . . but also to enable [another] . . . to make . . . the same . . . that the public may have the full benefit . . . after the expiration of the patent term . . .”), *with* 35 U.S.C. § 102 (2012) (“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”).

debated the boundaries of patentable subject matter in recent years and a framework for analyzing disputes is slowly beginning to emerge.¹⁰⁴ Historically, however, five broadly defined categories have long stood as the “types” of subject matter that are appropriate for patents: machines, manufactures, compositions of matter, processes and improvements thereto.¹⁰⁵ We can loosely refer to these as “inventions,” subject to the additional requirements below.

To be patentable, an invention must be new.¹⁰⁶ “New” means that an invention must be both novel, that is, not previously disclosed or placed on sale,¹⁰⁷ and nonobvious, that is, a patent may not be obtained “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to

104. See, e.g., Ted G. Dane, *Are the Federal Circuit’s Recent Section 101 Decisions a “Specific Improvement” in Patent Eligibility Law*, 26 FED. CIR. B.J. 331, 375–77 (describing the post-*Alice* landscape of Federal Circuit jurisprudence and proposing possible improvements).

105. See ROBERT C. FABER, *FABER ON MECHANICS OF PATENT CLAIM DRAFTING* § 1–4 (6th ed., 2013) (describing the classes of inventions that may be patented and summarizing recent developments regarding eligible subject matter under 35 U.S.C. § 101).

106. 35 U.S.C. § 102 (2012).

107. See *id.* (“A person shall be entitled to a patent unless . . . the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.”). Until recently, patent law operated under a system whereby prior invention by another could defeat an inventor’s claim to a patent. See Lee Petherbridge & Jason Rantanen, Jay P. Kesan, Debate, *America Invents, More or Less?*, 160 U. PA. L. REV. PENNUMBRA 229, 230 (2012) (“For over two hundred years, American patent law has given priority of right to those who were first in time to an invention.”). The 2011 America Invents Act changed the framework from a “first to invent” system to a “first to file” system. See *id.* at 230–31 (“The best empirical study, which analyzed similar changes in the Canadian patent system and enjoys considerable theoretical support, indicates that such a change may discourage small inventors from inventing and innovating.” (citing David S. Abrams & R. Polk Wagner, *Priority Rules: An Empirical Exploration of First-to-Invent Versus First-to-File* (Univ. of Pa., Inst. for Law & Econ. Research Paper No. 11-29, 2011), <http://ssrn.com/abstract=1883821>)). Despite the change, a patent may still only be awarded for an invention that has not previously been disclosed. See *id.* at 246 (“The AIA-imposed system is not a first-to-file system like that used in other parts of the world. It is more technically a first-to-file or first-to-publicly-disclose system.”).

which the claimed invention pertains.”¹⁰⁸ In most cases, novelty or nonobviousness is at issue.¹⁰⁹

A patentable invention must also be “useful.”¹¹⁰ Court decisions discuss how a proffered invention must be both “operable” and possess “practical” or “real world” utility, which is sometimes defined as meaning a “specific and substantial utility.”¹¹¹ In two areas—biotechnology and chemical compounds—practical utility is taken quite seriously.¹¹² Outside those two areas, however, the usefulness requirement is more of a threshold consideration than a significant barrier to patentability.¹¹³ Notably, “practical” utility under current doctrine can be purely communicative.¹¹⁴

The final requirement of patentability is that of sufficient disclosure.¹¹⁵ The patent’s disclosure serves two purposes. First, it

108. 35 U.S.C. § 103.

109. See CHISUM, *supra* note 86, § 5.07 (summarizing decisions involving nonobviousness); accord Jason Rantanen, *The Federal Circuit’s New Obviousness Jurisprudence: An Empirical Study*, 15 STAN. TECH. L. REV. 709, 729–30 (2013) (finding 389 judicial opinions of the Federal Circuit Court of Appeals that involved nonobviousness determinations in the ten years before the Supreme Court granted certiorari in *KSR v. Teleflex* and the five years after its decision).

110. 35 U.S.C. §§ 101, 112.

111. See *In re Fisher*, 421 F.3d 1365, 1371 (Fed. Cir. 2005) (“An asserted use must show that the claimed invention has a significant and presently available benefit to the public” and “must also show that that claimed invention can be used to provide a well-defined and particular benefit to the public.”).

112. ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW AND POLICY* 223–54 (7th ed. 2017) (discussing utility in the biotechnology and chemical context); MUELLER, *supra* note 110, at 235 (“The utility disputes that do arise tend to involve inventions in the chemical and biotechnological arts.”).

113. See MUELLER, *supra* note 110, at 235 (“In contrast with the novelty and nonobviousness requirements . . . the substantive threshold for satisfying the utility requirement is relatively low.”).

114. An example offered in Janice Mueller’s influential patent law handbook is that of a patent for a “Hat Simulating a Fried Egg,” useful “as an attention-getting item in connection with promotional activities at trade shows, conventions and the like.” *Id.* at 236–38 (quoting U.S. Patent No. 5,457,821). Mueller further observes that “[t]his is more than sufficient to satisfy the utility requirement of 35 U.S.C. § 101.” *Id.* at 238.

115. See Jason Rantanen, *Patent Law’s Disclosure Requirement*, 45 LOY. U. CHI. L.J. 369, 370 (2013) (“Whether it be through doctrinal mechanisms such as enablement or written description, or through other articulations, providing information about the invention in the patent document itself is a foundational

allows the public to learn about the invention, to replicate it, to improve on it, and to avoid granting future patents on it.¹¹⁶ Second, it limits the maximum scope of patent claims by tethering the inventor to what was actually disclosed at the time of the application.¹¹⁷ In other words, for purposes of patent law, an inventor is treated as if she invented only what is disclosed in the patent document itself.¹¹⁸ While patent law allows the exclusive right of a patent to extend to some degree beyond what is disclosed, the disclosure provides an anchor for the inventor's claim.¹¹⁹

2. *The Inventor*

In addition to disclosing an invention, every patent must name the inventor or inventors.¹²⁰ While firms often file for patents on

component of a patent system, a basic axis of patentability.”).

116. *See id.* at 373 (using the example of an inventor's four-legged chair to explain that “a robust disclosure requirement would allow others not just to reproduce the applicant's four-legged chair, but perhaps to develop three-legged chairs, or chairs that fold, or chairs with little writing surfaces attached to them”).

117. *See* Jason Rantanen, *The Malleability of Patent Rights*, 2015 MICH. ST. L. REV. 895, 924 (describing the disclosure requirement as the “main patent law mechanism that ties the underlying invention to the scope of exclusive rights”).

118. *See id.* at 927 (“Simply put, there is no doctrine in patent law that tightly limits the inventor's rights to precisely what she disclosed; at best, there is a bungee cord. One must still stay within the ballpark of the technology, but *where* in the ballpark tends to be the important question.”).

119. *See id.* at 926 (explaining that “the point is that the law on enablement and written description permits claiming beyond what is contained in the patent's technological disclosure”).

120. *See* 35 U.S.C. § 101 (2012) (stating that “[w]hoever invents or discovers . . . may obtain a patent therefor”); *id.* § 111 (“An application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Director.”); *id.* § 115 (“An application for patent that is filed under section 111(a) or commences the national stage under section 371 shall include, or be amended to include, the name of the inventor for any invention claimed in the application.”). Prior to the 2011 America Invents Act, the inventorship requirement was also codified at § 102(f). 35 U.S.C. § 102(f) (2008) (“[A] person shall be entitled to a patent unless . . . he did not himself invent the subject matter sought to be patented.”); *see also* Dennis Crouch, *With 102(f) Eliminated, Is Inventorship Now Codified in 35 U.S.C. 101? Maybe, but Not Restrictions on Patenting Obvious Variants of Derived Information*, PATENTLYO (Oct. 4, 2012), <https://patentlyo.com/patent/2012/10/with-102f-eliminated-is-inventorship-now-codified-in-35-usc-101.html> (last visited Feb. 19, 2019).

behalf of their employees, and may have legal title to the patent, only individuals—human beings—may be named as inventors.¹²¹

The identity of the inventors named on a patent is a determination of law.¹²² Although, as with any legal question, the facts matter.¹²³ A key element of the analysis is *what* the invention is; the answer, as with many parts of patent law, is the claims. One treatise on patent drafting explains: “The starting point for determining inventorship is to define the invention. Until it has been determined what is to be claimed and how that distinguishes over the prior art, it may not be possible to actually identify the inventors.”¹²⁴

Inventorship turns on who the invention originated with—that is, who “conceived” of the invention.¹²⁵ Only a person

(explaining the various views regarding the “real ongoing questions that stem from the elimination of section 102(f)”) (on file with the Washington and Lee Law Review). Note that a patent may be assigned or licensed—ownership is a separate issue from inventorship. 35 U.S.C. § 261.

121. 35 U.S.C. § 100 defines an inventor as “the individual or, if a joint invention, the individuals collectively who invented or discovered the subject matter of the invention.” The common legal meaning of “individual” is “a private or natural person as distinguished from a partnership, corporation, or association.” *Individual*, BLACK’S LAW DICTIONARY (6th ed. 1990). See also Ryan Abbott, *I Think, Therefore I Invent: Creative Computers and the Future of Patent Law*, 57 B.C. L. REV. 1079, 1092–93 (2016) (discussing the legal requirements of an invention). Historically, only human beings have been named as inventors on patents in the United States. See ALAN J. KASPER ET AL., PATENTS AFTER THE AIA: EVOLVING LAW AND PRACTICE, 7-7 to 7-9, 7-13 (discussing the requirement that a human being be listed as an inventor even though in practice the patent may be assigned to a business entity); see also *Univ. of Utah v. Max-Planck-Gesellschaft zu Forderung der Wissenschaften E.V.*, 734 F.3d 1315, 1323 (Fed. Cir. 2013) (“To perform this mental act, inventors must be natural persons and cannot be corporations or sovereigns.”).

122. See, e.g., *Nartron Corp. v. Schukra U.S.A., Inc.*, 558 F.3d 1352, 1356 (Fed. Cir. 2009) (stating that “[i]nventorship is a question of law, which we review without deference”).

123. See *id.* (observing also that “a party alleging non-joinder [on the patent] ‘must meet the heavy burden of proving its case by clear and convincing evidence’” (quoting *Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1358 (Fed. Cir. 2004))).

124. JEFFREY G. SHELDON, HOW TO WRITE A PATENT APPLICATION § 4:3 (2d ed. 2014).

125. See *Univ. of Utah*, 734 F.3d at 1323 (“It is axiomatic that inventors are the individuals that conceive of the invention: ‘Conception is the touchstone of inventorship . . .’” (quoting *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1227–28 (Fed. Cir. 1994))).

who has contributed to the conception of the claimed invention may be named as an inventor.¹²⁶ “Conception,” in turn, refers to the mental aspect of the inventing process—“the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.”¹²⁷ In other words, merely thinking of a general idea is not enough.

Although there are sometimes hard questions in patent law when it comes to the identity of joint inventors, patent law theoretically allows for little flexibility in their identification.¹²⁸ The general rule is that each named inventor must have contributed to the conception of the invention, as defined by the claims, and all those who participated in the conception of the invention must be named.¹²⁹ While that contribution may not be “insignificant in quality, when that contribution is measured against the dimension of the full invention,” inventors are named for entire patents, not just for a single claim.¹³⁰ Since patents have multiple claims, and contribution to only one claim (or a part of a claim) is all that is necessary to be an inventor on the patent, an “inventor” on a patent may be a person who conceived of the most “inventive” aspect or a person who conceived of a relatively minor component.¹³¹ In the eyes of the law, both are inventors.

126. See, e.g., CHISUM, *supra* note 86, § 2.01, at 2–3 (stating that the requirement for inventorship “bars issuance of a patent for a conception derived from any source or person other than the person or persons named as the inventorship entity”).

127. *Univ. of Utah*, 734 F.3d at 1323 (quoting *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1227–28 (Fed. Cir. 1994)).

128. See, e.g., CHISUM, *supra* note 86, § 2.02, at 2–7 (“It is frequently difficult to determine who has in fact contributed to the conception of a given invention because the contribution must consist of more than suggesting a desired result or following instructions of another.”).

129. See *Bd. of Trs. v. Roche Molecular Sys.*, 563 U.S. 776, 785 (2011) (“[P]recedents confirm the general rule that rights in an invention belong to the inventor.”).

130. *Nartron Corp. v. Schukra U.S.A., Inc.*, 558 F.3d 1352, 1357 (Fed. Cir. 2009) (quoting *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1351 (Fed. Cir. 1998)).

131. See *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998) (“[A] co-inventor need not make a contribution to every claim of a patent.”).

B. The Process of Obtaining a Patent

The initial step in the process of obtaining of a patent—called “patent prosecution”—is drafting a patent application.¹³² The application must include, among other things, a description of the invention and a claim or claims.¹³³ The claims are a critical part of the patent application because they demarcate the boundaries of what the inventor is claiming she invented.¹³⁴ After the inventor is satisfied with the content of her application she sends it to the Patent Office along with a filing fee.¹³⁵ As of September 2018 the average wait time between filing an application and receiving an initial response from the examiner assigned to the application was about 16 months.¹³⁶

After reviewing the application, the examiner will typically issue an “office action” containing the examiner’s decision on whether to allow the claims.¹³⁷ If the claims are rejected, the Office Action specifies why they are not being allowed.¹³⁸ An examiner’s rejection can be based on overbroad claims, a defective

132. See MUELLER, *supra* note 110, at 42 (describing patent prosecution as “the process of preparing and filing a patent application . . . and thereafter interacting with the agency in order to obtain a U.S. patent” which “typically involves a multi-year negotiation”).

133. See 37 C.F.R. § 1.51 (2013) (providing a list of requirements for a patent application).

134. See Brian Farkas, *Just How Broad Will My Patent Protection Be?*, NOLO, <https://www.nolo.com/legal-encyclopedia/just-how-broad-will-my-patent-protection-be.html> (last visited Feb. 19, 2019) (“Patent claims establish the boundaries or scope of an invention. They are the standard by which patent rights are measured.”) (on file with the Washington and Lee Law Review).

135. See *USPTO Fee Schedule*, USPTO, <https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule> (last updated Oct. 1, 2018) (last visited Feb. 19, 2019) (listing the various charges associated with patent filings) (on file with the Washington and Lee Law Review). Note that all individual inventors qualify for a discounted rate as “small entities” under 37 C.F.R § 1.27 (2018) and some qualify for a further discount as “micro entities” under 37 C.F.R § 1.29 (2018).

136. *Data Visualization Center: February 2019 Patents Data, at a Glance*, USPTO, <https://www.uspto.gov/dashboards/patents/main.dashxml> (last visited Mar. 10, 2019) (on file with the Washington and Lee Law Review).

137. See DAVID PRESSMAN, *PATENT IT YOURSELF* 340 (15th ed. 2011) (explaining that the “first Office Action” (OA) . . . consists of forms and a letter from the examiner in charge of your application”).

138. See *id.* (stating that an application will rarely be allowed in the first OA).

specification, prior art that the examiner has identified to show the invention is not novel or nonobvious, or “various other objections.”¹³⁹ The inventor or her attorney will respond to the office action by amending claims to satisfy the examiner or arguing that the examiner has misunderstood or misconstrued a piece of prior art.¹⁴⁰ Once the inventor has responded to the first office action she can expect to wait another several months for a response.¹⁴¹ This process can go on until the examiner allows the claims, the applicant gives up, or the applicant appeals.¹⁴² On average the entire prosecution process, from filing to patent grant, takes about 24 months.¹⁴³

IV. Patents as Credentials

The core thesis of this Article is that patents are credentials—formal abstractions of a person’s inventive nature. Underlying patents as a credential are intertwined notions of artificiality and reality. Patents provide a reputational effect because they are defined units that distill a person’s life experiences into a quantifiable form. The reputational effect of patents, then, turns on two aspects: society’s general perception of patents and the formal mechanisms that authenticate the credential.¹⁴⁴

This Part begins with an examination of the social meaning of a patent. Just as a PhD or an award for philanthropy says something about the recipient, so too does society perceive patents as saying something about the persons named on them as inventors. We then construct the idea of patents as credentials in formal terms: the legitimacy of the issuer, the informational content of the credential itself, and the need of the audience to rely

139. *Id.*

140. *See id.* at 341 (“Your response must take whatever action is necessary to overcome the objections and rejections listed in the OA.”).

141. *See id.* (“About two to six months after you file your first amendment, you’ll receive a second OA from the PTO . . .”).

142. *See id.* at 398 (summarizing the many steps that might be necessary during the application prosecution process).

143. *Data Visualization Center, supra* note 136.

144. *Supra* Part II.

on a patent rather than a direct examination of the underlying evidence of invention.

A. *The Social Meaning of a Patent*

A salient aspect of patents is the near-universal core meaning ascribed to them.¹⁴⁵ Patents are widely associated with invention, new technological developments, and breakthroughs.¹⁴⁶ They represent practical innovation rather than scientific discoveries or creative expression.¹⁴⁷ Obtaining a patent means that the subject matter described therein is an invention; that it is something useful, novel, and nonobvious that its creator has given to the public.¹⁴⁸ Only an invention is deserving of a patent, and one who obtains a patent is thus an inventor.¹⁴⁹ Or in Carolyn Cooper's words, "Of course, we recognize that not all inventions received patents. Still, all patents were, by definition, for inventions."¹⁵⁰

A full exploration of the social meaning of patents—and of what it means to be an inventor—deserves a much more extensive treatment than is possible in this Article.¹⁵¹ It would be foolish to

145. See JOSEPH ROSSMAN, *THE PSYCHOLOGY OF THE INVENTOR* 235 (1931) ("[I]n spite of the fact that it is very difficult to define invention, the average college group has a very definite conception of invention which agrees very remarkably with the views of the Court . . .").

146. See *id.* at 9 ("The outstanding feature of all inventions is that they give something which has not existed before.")

147. See, e.g., Pamela O. Long, *Invention, Authorship, "Intellectual Property," and the Origin of Patents: Notes Toward a Conceptual History*, 32 *TECH. & CULTURE* 846, 848 (1991) ("The positive valuation of craft knowledge and material invention is a basic precondition for the development of intellectual property attitudes with regard to them.")

148. See discussion *supra* Part III.A.1.

149. See discussion *supra* Part III.A.2.

150. Carolyn C. Cooper, *Social Construction of Invention through Patent Management: Thomas Blanchard's Woodworking Machinery*, 32 *TECH. & CULTURE* 960, 960 (1991).

151. For examples of historical works on inventors, see generally BEAUCHAMP, *supra* note 1; HAROLD EVANS, *THEY MADE AMERICA* (2004); FREEBERG, *supra* note 33; CHRISTINE MACLEOD, *HEROES OF INVENTION: TECHNOLOGY, LIBERALISM AND BRITISH IDENTITY, 1750–1914* (2007); DAVID G. MCCULLOUGH, *THE WRIGHT BROTHERS* (2015). Less directly studied is the social meaning of patents. See BEAUCHAMP, *supra* note 1, at 6 ("[T]he historical law of patents remains in many ways unmapped, and its connection to the broader setting of legal and political

pretend that the *only* social meaning of patents is the one described below; the idea of patents is hardly linked solely to the glory of invention. A theme throughout American history and before is that of patents as oppressive tools of big business.¹⁵² Herbert Hovenkamp, Oren Bracha, and many others have written about the role of patents as tools of monopolists.¹⁵³ There are the sewing machine patent wars,¹⁵⁴ the litigation explosions,¹⁵⁵ and, of course, the patent trolls.¹⁵⁶

That said, a consistent theme that emerges from the use of patents in society is that while there are variations in societal views of patents—and sometimes tensions with those variations—there is nonetheless a powerful core, one that stretches across individual facts and circumstances and typically emerges dominant among other themes: that of the patent as identifying an invention, created by an inventor.¹⁵⁷ With that in mind, a few examples will suffice to establish that society understands that a patent identifies an invention; that it is a proxy for practical innovation conceived by a human; and that patent

institutions unclear.”).

152. See MERGES & DUFFY, *supra* note 112, at 12.

153. See, e.g., HERBERT HOVENKAMP, *THE OPENING OF AMERICAN LAW: NEOCLASSICAL LEGAL THOUGHT, 1870–1970*, at 188–204 (2015) (describing historical development of and laws related to intellectual property monopolies); OREN BRACHA, *OWNING IDEAS: THE INTELLECTUAL ORIGINS OF AMERICAN INTELLECTUAL PROPERTY, 1790–1909*, at 273–84 (2016) (describing the way in which patents were used as a tool by business leaders who were pursuing economic stabilization and corporate stability).

154. See Adam Mossoff, *The Rise and Fall of the First American Patent Thicket: The Sewing Machine War of the 1850s*, 53 ARIZ. L. REV. 165, 168 (2011) (“The sewing machine was the result of numerous incremental and complementary inventive contributions, which led to a morass of patent infringement litigation given overlapping patent claims to the final commercial product.”).

155. See Christopher Beauchamp, *The First Patent Litigation Explosion*, 125 YALE L.J. 848, 848 (2016) (stating that “at its height, the litigation explosion produced a political backlash that threatened to sweep away the patent system as we know it”).

156. See BRACHA, *supra* note 153, at 315 (“The resurgence of various industrial strategies for the use of patents gave rise to new discontent over ‘patent thickets’ and ‘patent trolls,’ not unlike the older ones.”).

157. See, e.g., MUELLER, *supra* note 110, at 1 (describing patents as “a powerful form of IP protection that conveys the right to exclude all others from unauthorized imitation or use of a patented invention”).

inventors are held up as occupying a special place in the advancement of the Republic.¹⁵⁸

From the earliest days of the young United States, patents were associated with inventions and practical innovation.¹⁵⁹ One of the first new laws passed by Congress was the Patent Act of 1790, which authorized the grant of patents to those persons who “invented or discovered any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used”¹⁶⁰ In other words, an invention.

Patent law treatises, unsurprisingly, drew a close link between patent and invention. *Walker on Patents*, a prominent nineteenth century treatise, observed that “patents are grantable for nothing but inventions. It is also the law that they can be granted only to those who invented the inventions they respectively cover, or to the assignees or legal representatives of those persons.”¹⁶¹ And, in the author’s view, patent inventors were quite special indeed.

The right of property which an inventor has in his invention, is excelled in point of dignity, by no other property right whatever. It is equalled in point of dignity, only by the rights which authors have in their copyrighted books. The inventor is not the pampered favorite or beneficiary of the government, or of the nation. The benefits which he confers, are greater than those which he receives Their labor is the most dignified and the most honorable of all labor; and the resulting property is most perfectly theirs.¹⁶²

An emerging periodical literature during the nineteenth century further illustrates the early days of the American public’s

158. See, e.g., Cooper, *supra* note 150, at 960–61 (“He was able to make a career of inventing because the society in which he lived—the 19th-century United States—gave him material reward as well as fame for his acts of invention From this we can infer that these societies have generally approved of invention and intended to encourage it.”).

159. Note that “patents” have a long history prior to the creation of the United States, and not one necessarily confined to technological innovation. For a history of patent law see, for example, BEAUCHAMP, *supra* note 1, at 13–34; MERGES & DUFFY, *supra* note 112, at 3–19.

160. Patent Act of 1790, ch. 7, 1 Stat. 109–112 (repealed 1793).

161. ALBERT H. WALKER, TEXT-BOOK OF THE PATENT LAWS § 44, at 31 (1883).

162. *Id.* § 152, at 102–03.

link between patents, inventors and invention.¹⁶³ *Scientific American*, launched in 1845, provides a particularly prominent example.¹⁶⁴ Patents played a major role in *Scientific American* where patent lists constituted a “chief feature” during the nineteenth century.¹⁶⁵ But nineteenth century periodicals that focused on patents and inventions were hardly limited to *Scientific American*, as Frank Luther Mott observed; this period was one of “amazing fecundity in invention,” in which “a number of periodicals were devoted to mechanics and patents.”¹⁶⁶ Each of these periodicals placed inventors, and their patents, up on high.

From these nineteenth century beginnings emerged an understanding of patents as defining what was an invention. Steven Lubar writes about the early years of the patent system, a period in which inventors “bemoaned the lack of enthusiasm for invention” and “complained bitterly about the patent system and about the public’s low regard for patents and patentees.”¹⁶⁷ As the nineteenth century progressed, however, Americans came to believe that technological advances were central to American economic success.¹⁶⁸ With that changing belief came a sharper focus on the role of the patent system. Great courtroom battles and Supreme Court debates took place, from the arguments of Daniel

163. For example, the first issue of *Scientific American*, published in 1845, contained a list of agricultural patents issued in 1844; subsequent issues reported in more depth on recently patented inventions. See, e.g., *Recent Inventions*, 45 SCI. AM. 416, 418 (1881) (reporting on recent inventions and describing their usefulness).

164. See FRANK LUTHER MOTT, A HISTORY OF AMERICAN MAGAZINES, VOLUME II: 1850–1865, at 316–24 (1938) (describing the development of *Scientific American* and the way it “had a significance—at least for its first sixty or seventy years—unapproached in kind and effect by any other periodical”).

165. *Id.* at 323. Mott observes that *Scientific American*’s focus on patents began to dwindle in the twentieth century, and its scope broadened to focus on popular science generally. It is also worth noting that practitioners of patent law had a supporting interest in *Scientific American*. See BRACHA, *supra* note 153, at 212–13 (noting that “[t]he science and technology magazine that was launched in 1845 was owned by the Munn & Co. patent agency”).

166. MOTT, *supra* note 164, at 80.

167. Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 TECH. & CULTURE 932, 936 (1991).

168. See FREEBERG, *supra* note 33, at 140 (describing the “new aristocracy of practical intellect”); *id.* at 158 (“In the late nineteenth century, Americans read accounts of new inventions in almost every issue of their newspapers.”).

Webster against those of Rufus Choate in “The Great India Rubber Case”¹⁶⁹ to the *Telephone Cases*¹⁷⁰ culminating in a Supreme Court opinion that takes up an entire volume of the United States Reporter.¹⁷¹ Throughout this period of technological ascendancy, patents and inventions were tightly intertwined¹⁷²—so much so that Joseph Rossman, Chemical Engineer, Patent Examiner, and Editor of the Journal of the Patent Office Society, began his 1931 book *The Psychology of the Inventor* with a tribute to inventors, inventions and patents:

The profound alteration in our physical environment, especially during the last hundred years, has been effected to a large extent by our inventors. It is generally acknowledged that the entire progress of the human race from primitive times to its present level has been made possible by the inventor of physical devices. As an innovator and leader, the inventor performs one of the most important functions in society, for he holds the key to further progress.¹⁷³

There is a strong argument that the modern concept of invention itself was constructed through patent law, much of it during the nineteenth century.¹⁷⁴ Historian Carolyn C. Cooper, for example, uses the story of Thomas Blanchard’s woodworking

169. See Lubar, *supra* note 167, at 956 (describing that the case “held the attention of inventors not only because of its importance for patent law but also as a courtroom drama”).

170. *Dolbear v. Am. Bell Tel. Co.*, 126 U.S. 1 (1888).

171. See BEAUCHAMP, *supra* note 1, at 58 (describing the many ways the *Telephone Cases* was “legally and commercially momentous”).

172. For examples of historical scholarship that closely associates invention and patents, see generally BEAUCHAMP, *supra* note 1; FREEBERG, *supra* note 33; Long, *supra* note 147; Lubar, *supra* note 167.

173. ROSSMAN, *supra* note 145, at v.

174. Like every concept, the notion of “invention” can be traced yet further backward; in this case, finding predicate steps in the development of Western notions of individuality, authorship, and medieval urbanism. See, e.g., Long, *supra* note 147, at 869–70 (“Medieval cities and the market economies that developed within and among them provided the essential context for the emergence of a fully developed concept of intellectual property.”). See generally SCIENTIFIC AUTHORSHIP: CREDIT AND INTELLECTUAL PROPERTY IN SCIENCE (Mario Biagioli & Peter Galison, eds., 2003) (exploring the development of scientific authorship throughout history).

machinery to illustrate how the meaning of invention was constructed both in individual cases and more broadly.

Invention in the United States in the 19th century was to a significant degree socially constructed through patent management. By social construction of invention I mean not only the social shaping of *specific* inventions but also, at a deeper level, the determining of the very rules by which people defined ‘newness’ in inventions. Since originality is the defining characteristic of any invention, the gradual social formation of decision rules for originality was tantamount to defining invention itself.¹⁷⁵

Making a similar claim, Christopher Beauchamp writes, “The popular and scholarly literature about who ‘really’ invented the telephone misses a broader point: that the question itself is a legal artifact.”¹⁷⁶ Fundamentally,

“Who invented the telephone?” was a question defined by law. Legal rules shaped not only the standards of proof but also the terms of inquiry: defining what it *meant* to be a first and true inventor and prescribing the ways that a would-be great inventor needed to describe his achievements in order to gain a patent of maximum breadth.¹⁷⁷

Ultimately, it was the patent that defined the inventor of these revolutionary new technologies.

By the middle of the twentieth century the notion of “inventor” as exceptional, and its linkage to patents, was strongly engrained within the popular psyche, as Justice Douglas’s concurring opinion from *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*¹⁷⁸ illustrates:

The invention, to justify a patent, had to serve the ends of science—to push back the frontiers of chemistry, physics, and the like; to make a distinctive contribution to scientific

175. Cooper, *supra* note 150, at 960.

176. BEAUCHAMP, *supra* note 1, at 4; *see also* Kara Swanson, ‘Great Men,’ *Law, and the Social Construction of Technology*, 43 *LAW & SOC. INQUIRY* 1093, 1097–98 (2018) (reviewing BEAUCHAMP and examining the complex nature of inventor-myth stories).

177. BEAUCHAMP, *supra* note 1, at 5.

178. 340 U.S. 147 (1950).

knowledge. That is why through the years the opinions of the Court commonly have taken “inventive genius” as the test.¹⁷⁹

Justice Douglas’s concurrence demonstrates both the idealistic view of patents as only available for great, pioneering inventions, and the less laudatory view (in his eyes) that patents were being issued for “gadgets,” the work of a mere mechanic.¹⁸⁰ Yet, inherent in both views is the idea of the patent-holding inventor as a person who makes new combinations and devices, whether they be paradigm-shifting or modestly new and useful improvements.¹⁸¹

Popular culture often draws upon the shared social meaning of patents as associated with, or reflecting, invention. Thus, the first official thing that Mark Twain’s engineer-narrator in *A Connecticut Yankee in King Arthur’s Court* did upon becoming the chief minister was “to start a patent office; for I knew that a country without a patent office and good patent laws was just a crab, and couldn’t travel any way but sideways or backwards.”¹⁸²

The use of patents in popular media highlights the strength and acceptance of their core meaning.¹⁸³ Popular media sometimes employs jokes that revolve around patents or constructs absurd plots involving patents.¹⁸⁴ While these portrayals are sometimes

179. *Id.* at 154 (Douglas, J., concurring); see also *Cuno Eng’g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941) (“[T]he new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling.”).

180. See *Great Atlantic*, 340 U.S. at 155 (“The Constitution never sanctioned the patenting of gadgets. Patents serve a higher end—the advancement of science. . . . [I]t has to be of such quality and distinction that masters of the scientific field in which it falls will recognize it as an advance.”).

181. Christopher Beauchamp offers another example of the linkage between patent and invention during the first half of the twentieth century in his description of the 1936 centennial of the U.S. Patent Office, in which speakers “lauded the leading inventions of the day and celebrated a patent system that had ‘served as a model for the world and made possible unified, coordinated progress toward happier living for all peoples.’” BEAUCHAMP, *supra* note 1, at 205.

182. MARK TWAIN, *A CONNECTICUT YANKEE IN KING ARTHUR’S COURT* 107 (1996).

183. For a comprehensive survey of patent attorneys in mass entertainment forms of popular media, see generally Robert M. Jarvis, *The Patent Attorney in Popular Culture*, 98 J. PAT. & TRADEMARK OFF. SOC’Y 469 (2016).

184. For an example of humor and patents, see *The Big Bang Theory: The Application Deterioration* (Chuck Lorre Productions broadcast Mar. 10, 2016), in

inaccurate,¹⁸⁵ the jokes and plots wouldn't work if there weren't a strong social understanding of the connection between patents and invention. Thus, the episode of *The Simpsons* in which Homer Simpson takes up inventing and ultimately develops a patent-worthy invention is funny in part precisely because Homer is not what society would consider an "inventor" and his "invention"—an automatic hammer—does not serve to change this perception.¹⁸⁶

The social link between invention and patents has hardly gone unnoticed by legal scholars. Mark Lemley's article *The Myth of the Sole Inventor* is premised on the idea that there is a widely held belief in the "individual inventor" idea.¹⁸⁷ "Any elementary school student can recite a number of canonical American invention stories. . . . Patent law is built around these canonical tales."¹⁸⁸ Indeed, "the very theory of patent law is based on the idea that a lone genius can solve problems that stump the experts, and that the lone genius will do so only if properly incited by the lure of a patent."¹⁸⁹ Embracing the idea of myth, Dan Burk describes the symbolic function of patents for businesses: "acquisition of patents appears strongly ceremonial, demonstrating organizational adherence to prevalent narratives of innovation, competition, and success."¹⁹⁰ And in *Inventing Norms*, Will Hubbard describes ways in which patent law shapes social norms about invention, such as

which three of the principal characters conceive of an invention and seek to patent it.

185. See James Daily, *Orphan Black*, L. & MULTIVERSE (May 1, 2014), <http://lawandthemultiverse.com/2014/05/01/orphan-black/#more-2592> (last visited Feb. 19, 2019) (discussing the use of patents in the television series *Orphan Black*) (on file with the Washington and Lee Law Review).

186. *The Simpsons: The Wizard of Evergreen Terrace* (Fox Network broadcast Sept. 20, 1998).

187. See Mark A. Lemley, *The Myth of the Sole Inventor*, 110 MICH. L. REV. 709, 709 (2012) ("The theory of patent law is based on the idea that a lone genius can solve problems that stump the experts, and that the lone genius will do so only if properly incited. But the canonical story of the lone genius inventor is largely a myth.").

188. *Id.* at 710.

189. *Id.*; see also Jessica Silbey, *The Mythical Beginnings of Intellectual Property*, 15 GEO. MASON L. REV. 319, 323–27 (2008) (describing the "origin myth" of patent law).

190. Burk, *supra* note 5, at 442.

by “identifying meaningful inventions” or helping to “ensure that the correct inventor is credited with any invention.”¹⁹¹

So potent is the association of patents with invention and innovation, that a robust social sciences literature has emerged that uses patents and patent citation data as measures of inventive activity.¹⁹² Economists routinely use patent metrics in testing theories and assessing the evidence supporting historical claims about technological progress and innovation generally.¹⁹³ Clarisa Long summarizes: “Econometric models of firm productivity often create a patent production function in which patenting is a dependent variable and inventive output by the firm is an independent variable.”¹⁹⁴ The link is not indisputable or perfect, but the existence of these studies illustrates its presence.

None of this is to suggest that the social meaning of patents should be seen as a monolithic, homogenous construct; as recognized at the outset of this section, it is not. In particular, the *audience* matters.¹⁹⁵ Each of the sources described above can be seen as speaking or reflecting different possible audiences. A patent might have a specific meaning in one community, and a different meaning in another. And yet, the central point is that there is enough commonality of the social meaning of a patent for it to have a widely-recognized effect; more so than many other cultural structures. Taken together, there are enough pixels to form a distinct image in which patents are strongly associated with

191. Hubbard, *supra* note 14, at 398, 400.

192. See, e.g., Adam B. Jaffe & Gaétan de Rassenfosse, *Patent Citation Data in Social Science Research: Overview and Best Practices*, 68 J. ASS'N INFO. SCI. & TECH. 1360, 1366–68 (2017) (reviewing literature on use of patent citation data); Petra Moser, *Patents and Innovation in Economic History*, 8 ANN. REV. ECON. 241, 244 (2016) (observing that “patent counts have become the standard proxy for innovation” and cautioning that it is important to keep in mind that “patents are an ‘imperfect, fallible measure’ of the ‘net accretion of economically valuable knowledge” (quoting Zvi Griliches, *Patent Statistics as Economic Indicators: A Survey*, 28 J. ECON. LIT. 1661, 1670 (1990)).

193. Moser, *supra* note 192, at 244. For a classic example of this literature, see Zvi Griliches, *Patent Statistics as Economic Indicators: A Survey*, 28 J. ECON. LIT. 1661, 1670 (1990).

194. Long, *supra* note 5, at 651.

195. See Mark D. Janis & Timothy R. Holbrook, *Patent Law's Audience*, 97 MINN. L. REV. 72, 75 (2012) (arguing that patent law could operate more effectively if it “incorporated a more realistic conception of its audience”).

inventions and practical innovations. It is this core meaning that allows an individual named on a patent to show the world that “I am an inventor.”¹⁹⁶

B. Legitimacy, Information, and Necessity

How have patents become such powerful social artifacts? In the following analysis, we apply our model of credentials to patents. This analysis illuminates how, through their role as formalized abstractions, patents have come to serve as mechanisms of reputation.

1. The Legitimacy of the Issuer

Who issues patents? The answer is the Federal Government,¹⁹⁷ traditionally an entity with a high degree of legitimacy. It makes the laws, after all. And the Patent Office is one of the most legitimate government agencies, with a heritage going back almost to the first days of the country. As described in Part III, examiners in the Patent Office follow extensive procedures to ensure that the requirements of patentability are met. Every patent ever issued—except for some of the early patents destroyed in the Patent Office fire of 1836—is available for public search and review.¹⁹⁸ Patent examiners are not perfect, but no examination is perfect either. In short, it is difficult to find another issuer of credentials, public or private, with the widespread recognition and legitimacy of the Patent Office.

Two aspects of the Patent Office are worth mentioning. Since U.S. patents, unlike many other types of credentials, are issued by

196. See John Seabrook, *The Flash of Genius*, NEW YORKER (Jan. 11, 1993), <http://www.newyorker.com/magazine/1993/01/11/the-flash-of-genius> (last visited Feb. 19, 2019) (“I want you to understand that I am wearing a little badge here, and that badge says that I am an inventor, and it says I am a net contributor to society.”) (on file with the Washington and Lee Law Review).

197. See *General Information Concerning Patents*, USPTO, <https://www.uspto.gov/patents-getting-started/general-information-concerning-patents> (last visited Feb. 19, 2019) (stating that the USPTO issues all patents in the United States) (on file with the Washington and Lee Law Review).

198. See *id.* (stating that the USPTO maintains a search room for public use).

a single entity, whose modern formal name is the United States Patent and Trademark Office,¹⁹⁹ the only way to get a United States patent is through that entity.²⁰⁰ Contrast this with educational credentials—such as high school diplomas, college degrees, or a Ph.D. in marine biology—that are issued by an array of different institutions, each with their own reputation and identity. The audience of a patent need not evaluate the relative weight of different issuers of a patent. This unity enhances the legitimacy of the issuer of a credential. The same Patent Office that issued Thomas Edison’s patent on the incandescent lamp issues all other patents.

In addition, the consequences of defying the obligations imposed by statutory patent law and the rules of the Patent Office during prosecution help maintain its legitimacy. These obligations flow from the doctrine of inequitable conduct, which sharply punishes applicants who behave inappropriately during patent prosecution.²⁰¹ “To prevail on the defense of inequitable conduct, the accused infringer must prove that the applicant misrepresented or omitted material information with the specific intent to deceive the PTO.”²⁰² Although the Federal Circuit has raised the thresholds for both materiality and intent in recent years,²⁰³ the doctrine remains potent. This is particularly true given the consequence of an inequitable finding, which is to render

199. That said, other countries have their own patent offices, and it is possible to envision a world in which different countries’ patent offices compete in the same way that academic institutions compete. The comparative social meaning of patents is a subject that is certainly worth further investigation.

200. See *supra* note 197 and accompanying texts (noting that only the USPTO issues patents on behalf of the United States government).

201. See Jason Rantanen & Lee Petherbridge, *Therasense v. Becton Dickinson: A First Impression*, 14 YALE J.L. & TECH. 226, 228 (2012) (describing inequitable conduct as “a judicially created doctrine developed to punish patent applicants who behave inappropriately during patent prosecution, the ex parte process of patent creation.”); see also Long, *supra* note 5, at 668–70 (describing the role that the inequitable conduct doctrine plays in the process of patent signaling).

202. *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276, 1287 (Fed. Cir. 2011) (en banc).

203. See *id.* at 1290 (“This court now tightens the standards for finding both intent and materiality in order to redirect a doctrine that has been overused to the detriment of the public.”).

the entire patent unenforceable and generally leads to an award of attorneys' fees against the party asserting the patent.²⁰⁴ Antitrust claims are also possible.²⁰⁵ Furthermore, patent attorneys who breach their duty of candor to the Patent Office may be subject to discipline, including losing their license to practice before the office.²⁰⁶ All of these mechanisms encourage fair dealing by the applicant.

2. *The Information Communicated by a Patent*

The social meaning of patents is one thing, but what about the quality of the information that is actually provided? Patents, it turns out, fit well into notions of direct communication of the bearer's achievement of certain criteria, signaling, and sorting.

a. *Direct Communication of Information*

As Clarisa Long observes, "In the most straightforward instance, obtaining a patent on an invention communicates information about the invention to the public at low cost. Individual patents can contain a wealth of otherwise unobtainable information about the invention and are often quite lengthy."²⁰⁷ These disclosures can both provide information about the technical content of the invention,²⁰⁸ as well as nontechnical information

204. See *id.* at 1288 ("Unlike validity defenses, which are claim specific, see 35 U.S.C. § 288, inequitable conduct regarding any single claim renders the entire patent unenforceable."); Jeffrey D. Mills, *Patent Litigation Two Years after Octane Fitness: How to Enhance the Prospect of Recovering Attorneys' Fees*, 45 *AIPLA Q.J.* 27, 52 (2017) (observing that "inequitable conduct has been long recognized as a sufficient basis, by itself, for declaring a case exceptional and awarding fees.").

205. See Herbert Hovenkamp, *Antitrust and the Patent System: A Reexamination*, 76 *OHIO ST. L.J.* 467, 549–52 (2015) (describing circumstances in which *Walker Process* fraud might be alleged (citing *Walker Process Equip., Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172, 174–80 (1965))).

206. See Tamsen Valoir & David Hricik, *Patents and Trademarks: The Duty of Good Faith*, 89 *J. PAT. & TRADEMARK OFF. SOC'Y* 287, 293 (2007) (describing the consequences of violating the duty of candor).

207. Long, *supra* note 5, at 647.

208. For an overview of the purposes served by patent law's disclosure

about the invention and its inventors.²⁰⁹ Put simply, patents codify information.²¹⁰ Of course, these disclosures are hardly perfect; an extensive literature has catalogued the information that is not provided by the disclosures, and the incentives to reveal as little as necessary.²¹¹ Worse perhaps, patents—especially the claims—are often written in “patentese,” which Sean Seymore defines as “the specialized language that patents are written in.”²¹² But, for those patents that are written clearly and logically²¹³ or for those readers

requirement, see Rantanen, *supra* note 115, at 370. For an in-depth discussion of the disclosures of patents, see J. Jonas Anderson, *Secret Inventions*, 26 BERKELEY TECH. L.J. 917, 940–46 (2011) (noting that disclosure is the principal benefit the public receives from the patent system); Jeanne Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 544–60 (2008) (analyzing the theory of patents and the current role of patents in research); Timothy Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123, 131 (2006) (“[T]he primary function of the patent system is to promote public welfare through the disclosure of new inventions.”); Lisa Larrimore Ouellette, *Do Patents Disclose Useful Information*, 25 HARV. J.L. & TECH. 545, 554–61 (2012) (reviewing disclosure as a compelling justification for patents); Sean Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621, 627 (2010) (critiquing the current form of the patent, including the current disclosure framework).

209. See J. Jonas Anderson, *Nontechnical Disclosure*, 69 VAND. L. REV. 1573, 1590–97 (2016) (“Nontechnical disclosure is the ability of a patent to disclose information that is not related to the traditional disclosure goal of teaching.”).

210. See Dan L. Burk, *The Role of Patent Law in Knowledge Codification*, 23 BERKELEY TECH. L.J. 1009, 1017 (2008) (discussing the role of patents in knowledge codification).

211. See *supra* note 208 and accompanying text (discussing patent law’s disclosure requirement); see also Burk, *supra* note 16, at 1610 (describing the various silences resulting from disclosure); *id.* at 1014–16 (discussing the concept of “tacit knowledge”).

212. See Seymore, *supra* note 208, at 634 (noting that “patentese stretches the disclosure”); see also *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1563 (Fed. Cir. 1995) (Nies, J., dissenting) (“We have made the infringement analysis so convoluted it is impossible for most district court judges untrained in ‘patentese’ to follow, much less jurors.”), *rev’d*, 520 U.S. 17 (1997).

213. See Janice M. Mueller, *Crafting Patents for the Twenty-First Century: Maximize Patent Strength and Avoid Prosecution History Estoppel in a Post-Markman/Hilton Davis World*, 79 J. PAT. & TRADEMARK OFF. SOCIETY 499, 503 (1997)

Although the phrase “reader-friendly” as applied to “patents” may at first seem trite, if not borderline heretical, “reader-friendliness” has now become an essential benchmark for patent drafters. The sophisticated patent attorney will strive to make the job of judge and jury easier by crafting a clearly-written, logically laid-out patent document.

that can understand “patentese,” a patent can function like a set of CliffsNotes for the technology, allowing the reader to quickly get up to speed on what the inventor has actually done. In legal terms, what the inventor was in possession of at the time of filing.²¹⁴

In addition to the actual content of the patent itself, the *criteria* necessary to obtain a patent helps communicate information about the credential. By issuing a patent, the Patent Office certifies that the invention claimed meets these criteria.²¹⁵ With a patent, those basic criteria are mostly easy to understand and convey. To be deserving of a patent, an invention must be novel, it must be useful, and it must be nonobvious.²¹⁶ These criteria are so simple, they can be conveyed in a children’s book. Take, for example, the book *Inventions: That Could Have Changed The World . . . But Didn’t!*²¹⁷ Its shtick is that it describes inventions that are interesting and creative, but which were largely commercial flops. Things like a parachute hat for escaping from a tall building. Early on in the book, the author describes what the inventions are, where they come from, and tells the reader about patents. Here’s an excerpt that illustrates how easy it is to convey the basic criteria of a patent:

Not all patents are approved. In fact, in order for your invention to receive a patent, it has to pass three tests. Test #1: Is it novel?

214. See *Ariad Pharms. Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1345 (Fed. Cir. 2010) (en banc)

A description of the claimed invention allows the United States Patent and Trademark Office (“PTO”) to examine applications effectively; courts to understand the invention, determine compliance with the statute, and to construe the claims; and the public to understand and improve upon the invention and to avoid the claimed boundaries of the patentee’s exclusive rights.

215. See *supra* note 197 (“The examination of the application consists of a study of the application for compliance with the legal requirements If the examiner’s decision on patentability is favorable, a patent is granted.”).

216. 35 U.S.C. §§ 102, 103 (2012). The exception may be patentable subject matter—an issue that in the last few years has entered a crisis state among patent attorneys.

217. See generally JOE RHATIGAN, *INVENTIONS: THAT COULD HAVE CHANGED THE WORLD . . . BUT DIDN’T!* (2015).

In other words, is it new or does it have a new part that another inventor hasn't already thought of?

Test #2: Is it useful? Does your invention have a practical use and can someone actually create it?

Test #3: Is it inventive? This means that your invention isn't obvious and couldn't have been thought of by just anyone with basic knowledge about the subject.²¹⁸

Patents also readily communicate who the inventor is. A simple, yet powerful way that a patent communicates that the person named on it is an inventor is by stating it right on the top of the patent itself. Figure 1²¹⁹ is a reproduction of the top portion of U.S. Patent No. 8,000,000. It is readily apparent who the inventors of this visual prosthesis are: Robert J. Greenberg, Kelly H. McClure, and Arup Roy.



US008000000B2

(12) United States Patent Greenberg et al.	(10) Patent No.: US 8,000,000 B2
	(45) Date of Patent: *Aug. 16, 2011
<hr/>	
(54) VISUAL PROSTHESIS	4,837,049 A 6/1989 Byers et al.
(75) Inventors: Robert J. Greenberg , Los Angeles, CA	5,109,844 A 5/1992 de Juan, Jr. et al.
(US); Kelly H. McClure , Simi Valley,	5,215,088 A 6/1993 Normann et al.
CA (US); Arup Roy , Valencia, CA (US)	5,569,307 A * 10/1996 Schulman et al. 607/56
	5,935,155 A 8/1999 Hunsyuan et al.
(73) Assignee: Second Sight Medical Products, Inc. ,	6,400,989 B1 6/2002 Eckmiller
Sylmar, CA (US)	6,458,157 B1 * 10/2002 Suaning 623.6.63
	7,818,061 B1 * 10/2010 Palmer 607/32
(*) Notice: Subject to any disclaimer, the term of this	2005/0078846 A1 * 4/2005 Single 381/326
patent is extended or adjusted under 35	2006/0247754 A1 11/2006 Greenberg et al.
U.S.C. 154(b) by 206 days.	
This patent is subject to a terminal dis-	FOREIGN PATENT DOCUMENTS
	WO WO 02/40095 A1 5/2002
	OTHER PUBLICATIONS

Older patents emphasized the inventors' names to an even greater extent, as Orville and Wilbur Wright's patent on a "Flying-machine" illustrates in Figure 2.²²⁰

218. *Id.* at 8.

219. U.S. Patent No. 8,000,000 B2 (issued Aug. 16, 2011).

220. U.S. Patent No. 821,393 (issued May 22, 1906).

UNITED STATES PATENT OFFICE.

ORVILLE WRIGHT AND WILBUR WRIGHT, OF DAYTON, OHIO.

FLYING-MACHINE.

No. 821,393.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed March 23, 1903. Serial No. 149,220.

To all whom it may concern:

Be it known that we, ORVILLE WRIGHT and WILBUR WRIGHT, citizens of the United States, residing in the city of Dayton, county of Montgomery, and State of Ohio, have invented certain new and useful Improvements in Flying-Machines, of which the following is a specification.

ous disturbing forces which tend to shift the machine from the position which it should occupy to obtain the desired results. It is the chief object of our invention to provide means for remedying this difficulty, and we will now proceed to describe the construction by means of which these results are accomplished.

Battles over the ownership of patents are classic stories in American society and culture, often invoking themes of the underdog, or reaping what one has sown, or of monopoly and competition. A strong thread of the true inventor's natural rights entitlement to a patent runs through these stories.²²¹ Consider the inventorship battles of O'Reilly versus Morse;²²² of Bell versus Gray;²²³ of Edison versus Westinghouse;²²⁴ of the Wright Brothers,²²⁵ or, more recently, of Doudna versus Zhang over CRISPR.²²⁶ These inventorship battles captured the public eye. History records the winner of the patent as the inventor; the loser is relegated to counter-narratives at best. In this way, patents

221. See, e.g., Mossoff, *supra* note 154 (describing the mass of patent infringement claims involved in the invention of the sewing machine).

222. See O'Reilly v. Morse, 56 U.S. 62, 63 (1854) (deciding the true inventor of the electro-magnetic telegraph).

223. See BEAUCHAMP, *supra* note 1 (describing Bell's battle to claim his patent).

224. See Consolidated Electric Light Co. v. McKeesport Light Co., 159 U.S. 465 (1895) (deciding the rightful inventor of an electric light); FREEBERG, *supra* note 33 (describing Edison's race to file his patent). The story of Edison's patent fights forms the heart of Graham Moore's legal thriller, *The Last Days of Night* (2016), soon to be a major motion picture.

225. See MCCULLOUGH, *supra* note 151 (describing the Wright Brothers' patent litigation).

226. See Jacob S. Sherkow, *Inventive Steps: The CRISPR Patent Dispute and Scientific Progress*, 18 EMBO REP. 1047, 1047-50 (2017) (discussing the litigation surrounding the CRISPR patent and its implications in the field of molecular biology).

build the historical record. Want to know who invented the *X*? Just look it up—the inventor is clearly indicated. Indeed, the author of *The Psychology of the Inventor* observed that this feature was what made it so advantageous to use patents as the mechanism for identifying the inventors he studied: “The great advantage in limiting the study to patentees arises from their accessibility through the records of the Patent Office. The patentee can be readily identified with a definite invention which has received the approval of the Government.”²²⁷

b. Patents as Signals

In addition to compressing information about the invention that the inventor has received a patent for, patents provide information about the bearer in more complex ways.

The concept of patents as signals of firm attributes that are not easily discernible is the subject of an extensive description and analysis in Clarisa Long’s 2002 article *Patent Signals*.²²⁸ The essence of Long’s theory is that “Intellectual property [and patents in particular] can serve as a signal of less readily measurable attributes.”²²⁹ Long elaborates on the signaling function of a firm’s patents:

Under numerous explorations in signaling theory, parties signal positive attributes by engaging in costly behavior that parties without positive attributes would find hard to mimic. Just as a firm may use conspicuous consumption of advertising as a means of conveying a message about itself, so firms may also use conspicuous consumption of patents as a means of displaying desirable qualities. At the very least, if a firm were to obtain far more or fewer patents than similarly situated firms—particularly competitors in the same industry—its conspicuousness would communicate some sort of information to the market.²³⁰

227. See ROSSMAN, *supra* note 145 (studying the motivations and psychology of the patentee).

228. Long, *supra* note 5.

229. *Id.* at 646.

230. *Id.* at 648–49.

Long also suggests that patents may be an effective signal of low future discount rates because “obtaining patents may be a signal of the firm’s willingness to invest in making credible statements, because patentees can suffer costs if the information in the patent turns out to be inaccurate.”²³¹

Long’s model provides a way for investors to distinguish between “innovative firms”—those that “have a portfolio of research projects that managers believe will have a high expected payoff on average”—and “boring firms”—those that “have a portfolio of research projects that they believe will have low expected payoffs.”²³² Assuming that information is asymmetric (that is, investors don’t know whether they are investing in innovative or boring firms, but the firms know what type of firm they are), there is no way for investors to distinguish between the two types. Long theorizes that patents provide a way for innovative firms to signal their innovative characteristic.²³³ Patents can do so if the behavior—obtaining the patent—“imposes substantial monetary or reputation costs if the signal is inaccurate.”²³⁴ Patents, Long argues, meet these criteria: the consequences of intentional misrepresentations in a patent application are severe; in addition, it may be less costly, in theory, for innovative firms to meet the criteria necessary to obtain patents than for boring firms to do so.²³⁵

Although proposed in the context of firms and capital markets, Long’s theory of patent signaling is applicable to individual inventors as well, although with a bit of a twist.²³⁶ Patents present administrative challenges and expenses to obtain. Only true

231. *Id.* at 649.

232. *Id.* at 655.

233. *See id.* at 656 (“[I]nnovative firms will have an incentive to disclose the superior nature of their research results so that they can appear more attractive to investors.”).

234. *Id.* at 657.

235. *See id.* at 657–58

Innovative firms desiring to maximize firm value have the incentive to seek patents, and therefore to signal accurately, if their cost . . . of doing so is less than the change in value an innovative firm would experience by being labeled a boring firm . . . [A] signal can still produce a separation between innovative and boring firms when it is not costly to send the signal but costly to send it falsely.

236. Long, *supra* note 5.

inventors—or those who think that the patent is valuable—may be willing to undertake these expenses. The value of a patent as a signal of economic worth of the individual may cause individuals to seek patents even if the exclusionary value is relatively low. The desire for approbation may also push individuals to seek patents.

Of course, if the process is such that it is equally easy for a non-inventor to obtain a patent as it is an inventor, then the signal is of limited value. But just as it may be less costly for an innovative firm to obtain patents, it may be less costly for an inventor who has already invented to obtain a patent for her invention. To put it another way, the costs of signaling one's inventiveness through a patent are lower for a person who has created an invention—sparked by whatever reasons for inventing she is driven by²³⁷—than for one who has not. And just as obtaining patents may be less costly for Long's "innovative" firms than for "boring" firms, it may be less costly for the naturally inventive than for the person who lacks that characteristic.²³⁸

c. Patents as Filters

Just as patents may function as signals of an individuals' tendency towards inventiveness, or at least of the creation of an invention, so too may patents function as filters that select for those who possess a particular characteristic.²³⁹ In this sense, patents function less as costly indicators of a characteristic and more as a straightforward selection mechanism. The dirt is sifted through the pan and gold is left on top. Here, the gold are those inventions that possess the necessary characteristics, along with those individuals who possess the ingenuity necessary to invent.

Consider, for example, the doctrine of non-obviousness. The doctrine "measures whether subject matter claimed to be patentable is a sufficient technological advance over existing art to

237. An extensive literature discusses reasons why creators create and inventors invent for reasons other than the monetary reward of a patent. *See supra* notes 35–36, 43 and accompanying text.

238. Long, *supra* note 5, and accompanying text.

239. *See* Merges, *infra* note 241, at 17 (describing the factual inquiries taken to determine the validity of a patent).

warrant the grant of a patent.”²⁴⁰ In theory, at least, this statutory test “serves a gatekeeping function; it seeks to reward inventions that, viewed prospectively, have a low probability of success.”²⁴¹ But a patent is not merely a reward for investing in the chase; it is only obtainable for the capture of the invention—to the victor go the spoils.²⁴² Patent law thus grants patents to those who have succeeded at producing an invention that at the end of the day—after assessing the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art—is nonobvious.²⁴³

What the patenting process does, then, is filter out those results that are not inventions from those that are. In so doing, it also filters out those who are not inventors from those that are. And although patent law specifically instructs that “the manner in which the invention was made” cannot negate patentability,²⁴⁴ it’s not as if the underlying characteristics of the inventor and the circumstances of invention have no effect at all. If that were so, the world would be a much more homogenous place.²⁴⁵

3. *The Necessity of Relying on the Credential*

The mechanisms described above explain how a patent can provide information about the bearer. But why rely on such compressions and even more complex mechanisms? After all, isn’t it better to read Herman Melville’s *Moby Dick* itself than the CliffsNotes? Or worse, to rely on the fact that someone is named

240. Lee Petherbridge & Jason Rantanen, *In Memoriam Best Mode*, 64 STAN. L. REV. ONLINE 125, 127 (2012).

241. Robert Merges, *Uncertainty and the Standard of Patentability*, 7 HIGH TECH. L.J. 1, 2 (1992).

242. See Lemley, *supra* note 187, at 749 (describing the racing theory of patent law).

243. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

244. 35 U.S.C. § 103 (2018).

245. None of this should be taken to suggest that patent examination is a perfect filter; that is hardly so. See, e.g., Mark Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1528 (2001) (“The law should not ignore the fact that a patent application has been examined, but it seems clear we give that examination process far too much weight.”). But, more on this in Part V.

an inventor without even closely examining the patent? The short answer—as it is with many credentials—is that direct observation of the experience is typically difficult, if not impossible.

While the basic criteria that must be satisfied to obtain a patent are simple enough to understand,²⁴⁶ they can be awfully hard to assess in light of the technical and often highly detailed subject matter of the invention. Furthermore, they are evaluated through a rigorous examination process.²⁴⁷ This is where use of a person with expertise to determine whether those criteria are satisfied comes into play. The nuances of patent law can be complicated, but it's the technical questions of patentability that often makes the subject impenetrable. Examiners with an understanding of the field are tasked with figuring out whether the invention meets the criteria for a patent.²⁴⁸ Of course, they're not perfect, but perfection isn't the point. A reasonable assessment of whether the facts of the invention meet the criteria for patentability is what matters. In other words, it isn't easy to know whether something is an invention or someone is an inventor. The audience must mostly rely on the proxy—the credential—of a patent.

While the patent can provide information about the invention, as described above, that disclosure is not complete. And while some individuals may be able to examine the contents of the patent, and assess the quality of the inventor's contribution, most people cannot. Even though patents disclose the invention, they do so in their own language, a hybrid of technical and legal terminology—a characteristic that Timothy Holbrook refers to as the “Janus-like nature” of patents²⁴⁹—and Sean Seymore and others describe as

246. 35 U.S.C. §§ 101–03, 112 (2012).

247. *See id.* § 131 (stating that the “[d]irector shall cause an examination to be made of the application and the alleged new invention”).

248. *See General Information, supra* note 197 (“The work of examining applications for patents is divided among a number of examining technology centers (TCs), each TC having jurisdiction over certain assigned fields of technology.”).

249. Timothy R. Holbrook, *Patents, Presumptions, and Public Notice*, 86 IND. L.J. 779, 781 (2011). “Janus” is a figure of ancient Roman mythology that is typically depicted as having two faces. *Janus*, ENCYCLOPEDIA BRITANNICA, <https://www.britannica.com/topic/Janus-Roman-god> (last visited Feb. 19, 2019) (on file with the Washington and Lee Law Review). For difficulties with the

“patentese.”²⁵⁰ As most patent doctrines revolve around the touchstone of the “person of ordinary skill in the art,”²⁵¹ patents are necessarily written for those of skill in the art; they are not designed to be understandable to those outside that club.²⁵² Rather, it is largely the non-technical disclosures—application date, patent name, assignee—that are accessible to the general audience.²⁵³ And the identity of the inventor is one such non-technical disclosure. Thus, the patent itself more easily conveys to society who the inventor is than the specific details of the invention. The public can easily understand the patent as indicating the identity of an inventor, even where it might be impossible without extensive training in that field to evaluate the inventive contribution described in the patent.

If the inventive contribution described in the patent is difficult for the public to appreciate, the more generalized intellectual contribution of the inventor may be even more so—especially where that generalized contribution is supported by little or no evidence. David and Partha describe the difficulty of evaluating scientific discoveries, a concept that transfers to inventions to some degree:

approachability of patent law generally, *see* Janis & Holbrook, *supra* note 195.

250. Seymore, *supra* note 208, at 633; Mueller, *supra* note 213, at 503; Hilton Davis Chem. Co. v. Warner-Jenkinson Co., 62 F.3d 1512, 1563 (Fed. Cir. 1995) (Nies, J., dissenting) (“We have made the infringement analysis so convoluted it is impossible for most district court judges untrained in ‘patentese’ to follow, much less jurors.”), *rev’d*, 520 U.S. 17 (1997).

251. A term often shortened to “POSITA” or “PHOSITA.” For a discussion of the role of the PHOSITA in patent law doctrine, *see* Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885, 889–96 (2004) (discussing the role of PHOSITA in judicial decisions); Holbrook, *supra* note 249, at 781 (“In almost every area of patent law, the court or jury should view the issues from the perspective of the PHOSITA, not that of a lawyer or layperson.”); Greg Reilly, *Rethinking the PHOSITA in Patent Litigation*, 48 LOY. U. CHI. L.J. 501, 503 (2016) (“Decision makers must resolve many patent law issues from the perspective of a ‘person having ordinary skill in the art’ (‘PHOSITA’) (i.e., an average technical person in the relevant field).”).

252. *See* Holbrook, *supra* note 249, at 781 (“Consequently, the description in a patent need not include information already known by the PHOSITA, which permits applicants to submit simpler patent disclosures.”).

253. *See* Anderson, *supra* note 209 and accompanying text (describing the secrecy surrounding patent law).

For the public at large are incapable of screening scientists by their innate abilities, and they are equally incapable of evaluating the relative importance of scientific discoveries; not only does one scientist look much like another, one publication looks pretty much like another, as well! So scientists are themselves commodities of uncertain quality to the public, as are their past publications.²⁵⁴

To be sure, it may be possible to appreciate and evaluate the quality of an invention when it is embodied in an artifact, such as an actual “beerbrella”²⁵⁵ or the USB port on a computer.²⁵⁶ And yet, how can the public know—from the existence of a physical artifact—that a particular individual invented it? Patents provide that evidence; more, they have historically provided a framework for contests between inventors in which other types of evidence can be weighed.²⁵⁷ It is difficult to assess whether an invention is truly “new.” Generally, an audience does not have days or weeks to assess whether someone really has an invention or not. The audience must necessarily rely on the credential—the patent—as the best source of information about whether a person making a claim to be an inventor really is one.

V. Examples of Patents as Credentials

This Part provides a few examples of credential uses of patents. A credential use is one where the abstraction of a patent plays an important role in communicating with an audience or making a determination.²⁵⁸ Each of these examples use the patent as credential in slightly different ways based on who the audience is. Together, they lend support to the conclusion that patents serve

254. Dasgupta Partha & Paul A. David, *Toward a New Economics of Science*, 23 RES. POL'Y 487, 505 (1994).

255. U.S. Patent No. 6,637,447 (issued Oct. 19, 2001).

256. See Hubbard, *supra* note 14, at 385 (describing the Intel commercial about the co-inventor of the USB drive).

257. See Dane, *supra* note 104 and accompanying text (describing the post-Alice landscape of Federal Circuit jurisprudence and proposing possible improvements).

258. See *supra* Part III (describing patents as credentials).

as a credential for named inventors, whether as proof of inventive talent, technological skill, or qualification for a job.

The examples we give are necessarily under inclusive; virtually every reader of drafts of this Article offered their own suggestions. One of the most powerful is that of Bob Kearns in John Seabrook's 1993 *New Yorker* article, *The Flash of Genius*.²⁵⁹ Seabrook describes Bob Kearns's patenting of the intermittent windshield wiper and his efforts to enforce his patent against the giants of the automobile industry.²⁶⁰ Seabrook writes of that litigation:

At a hearing in 1980, Kearns said, "I want you to understand that I am wearing a little badge here, and that badge says that I am an inventor, and it says I am a net contributor to society. And it is like maybe you can't see the badge, and these other gentlemen can't see the badge, and I don't think anybody is going to be able to see the badge until my trial is finished in this courtroom and I will find out whether I am wearing the badge or not."²⁶¹

Kearns's quotation is revealing of an underlying theme: that many inventors view patents as more than the stark economic instrument they are legally meant to be.²⁶² Rather, inventors view a patent as a strong symbol of inventor-status and as evidence of an underlying inventive quality. This status may manifest in monetary terms, such as in seeking employment, or in ways that cannot easily be quantified by money alone. The below examples illustrate both aspects of patents as credentials, recognizing also that they are often intertwined and not easily disentangled.

A. Credential Uses of Patents in Universities

Institutions of higher education frequently showcase their patents and named inventors. The University of Iowa Engineering department provides a prime example. A central feature of the

259. See Seabrook, *supra* note 196 (describing Seabrook's journey to patent his invention of windshield wipers).

260. *Id.*

261. *Id.*

262. See *id.*

engineering building is a large display of plaques representing the department's many granted patents.²⁶³ Iowa Engineering is in good company: institutions of higher education across the country feature their issued patents in buildings and online.²⁶⁴ In addition to showcasing issued patents in prominent displays, many universities host annual award ceremonies where inventors are publicly recognized and given plaques.²⁶⁵ The practice of recognizing inventors identified by patents obtained suggests a

263. See picture on file with the authors.

264. See, e.g., *Patent Wall of Fame*, U. ALASKA ANCHORAGE, https://www.uaa.alaska.edu/research/office-of-research-and-graduate-studies/office-of-research-technology-commercialization/patent_wall_of_fame.cshtml (last visited Feb. 19, 2019) (featuring the inventors listed on patents such as the "Fish Carcass Disposal System" and "Data Hiding Based Messages and Advertisements") (on file with the Washington and Lee Law Review); *A Brief Guide to Technology Transfer*, N.C. A&T ST. U., <http://www.ncat.edu/research/dored/tech-transfer-guide.html> (last visited Feb. 19, 2019) (featuring the University's "Patent Gallery") (on file with the Washington and Lee Law Review); *Faculty Patents*, THAYER SCH. ENGINEERING DARTMOUTH, <https://engineering.dartmouth.edu/research/entrepreneurship/patents> (last visited Feb. 19, 2019) (featuring the school's invention wall and listing patents held by faculty) (on file with the Washington and Lee Law Review).

265. See, e.g., *2016 Inventor Award Ceremony & Reception*, U. TEX. AUSTIN, <https://research.utexas.edu/otc/about-otc/programs-and-events/event-2016-inventor-award-ceremony-and-reception> (last visited Feb. 19, 2019) (detailing the program for an annual event honoring university inventors granted U.S. Patents) (on file with the Washington and Lee Law Review); *2017 Patent Awards Ceremony Honorees*, GEO. U., <https://otc.georgetown.edu/pac2017awardees> (last visited Feb. 19, 2019) (listing inventors honored at the university's annual patent awards) (on file with the Washington and Lee Law Review); Kevin Coss, *Recognizing the U's Most Entrepreneurial Innovators*, U. MINN. (Mar. 29, 2017), <https://research.umn.edu/inquiry/post/recognizing-u%E2%80%99s-most-entrepreneurial-innovators> (last visited Feb. 19, 2019) (describing the University of Minnesota's Inventor Recognition Event, recognizing 220 university inventors whose technology had been recently licensed or patented) (on file with the Washington and Lee Law Review); Jennifer Pittman, *Campus Inventors Recognized for Recent Patents*, U. CAL. SANTA CRUZ (Dec. 12, 2016), <https://news.ucsc.edu/2016/12/inventor-recognition.html> (last visited Feb. 19, 2019) (spotlighting inventors within the university) (on file with the Washington and Lee Law Review). For a general discussion of inventor recognition programs, see *Inventor Recognition Programs an Effective Form of Internal Marketing*, TECH TRANSFER CEN. (Aug. 31, 2011), <http://techtransfercentral.com/2011/08/31/inventor-recognition-programs-an-effective-form-of-internal-marketing-2> (last visited Feb. 19, 2019) (on file with the Washington and Lee Law Review).

credential use of the patent by the universities—one that has gradually shifted from distaste to desirability.²⁶⁶

Patents are often features on the curriculum vitae of professors. A review of the websites of professors in the bioengineering department at the University of Iowa provides numerous examples of professors with issued or pending patent applications reflected on their curricula vitae.²⁶⁷ Those researchers are hardly exceptions.

The concept of patents as credentials also provides a possible causal explanation for why, as empirical studies demonstrate, academic researchers believe that patents add to their reputation.²⁶⁸ Patents establish to the world that the academic is not just an academic—she is an inventor. Yet, there is also a complex relationship between academic “credit” for patents and other types of activities that a researcher might receive credit for, such as article citations or grants.²⁶⁹ In a *Nature Immunology* article written for academic researchers, for example, Janet Reed observes that while “publishing remains the investigator’s ‘bread and butter’ for academic recognition and career advancement . . . there is a growing trend of recognizing patents

266. See Peter Lee, *Patents and the University*, 63 DUKE L.J. 1, 10–13, 36–39 (2013) (“Early patent policies on the part of universities reveal a unique academic skepticism of patents.”).

267. See *People*, U. IOWA BIOMED. ENG’G, <https://bme.engineering.uiowa.edu/people> (last visited Feb. 19, 2019) (listing faculty members with links to their biographies and curricula vitae) (on file with the Washington and Lee Law Review).

268. See Devrim Göktepe-Hultén, *Inventing and Patenting Activities of Scientists: in the Expectation of Money or Reputation?*, 35 J. TECH. TRANSFER 401, 402 (2010) (proposing that scientists use patents and invention disclosures as signals to gain reputation rather than financial benefits); Nicola Baldini, Rosa Grimaldi & Maurizio Sobrero, *To Patent or Not to Patent? A Survey of Italian Inventors on Motivations, Incentives, and Obstacles to University Patenting*, 70 SCIENTOMETRICS 333, 334 (2007) (surveying 208 Italian inventors of university-owned patents and discovering that their primary goal in patenting is to enhance prestige and reputation rather than increase personal earnings). *But see* Brian Love, *Do University Patents Pay Off? Evidence from a Survey of University Inventors in Computer Science and Electrical Engineering*, 16 YALE J.L. & TECH 285, 316 (2014) (finding that 85% of respondents to a survey of computer science and electrical engineering professors do not rank patents among the top four activities motivating their research activities).

269. See Love, *supra* note 268.

as legitimate indicators of research success, especially in more entrepreneurial academic environments.”²⁷⁰

B. Employer and Professional Uses of Patents as Credentials

Employers across the country recognize the achievements of employees for a variety of activities. In certain industries, especially those with high pressure for innovation, companies host recognition ceremonies for named inventors on patents. One example is Vermeer, an industrial and agriculture equipment company headquartered in Pella, Iowa.²⁷¹ The “Vermeer Inventor Club” was initiated in 1999 to recognize inventors at a time when the company was investing more in patented technology.²⁷² Vermeer hosts an annual event to recognize Inventor Club members. Each inventor receives a patent plaque, “modest cash stipend,” and a baseball hat embroidered with the inventor’s patent number(s).²⁷³ According to Robert R. Smith, Vice-President and General Counsel, the hat is the least costly but is perhaps the most valued premium offered to the inventors.²⁷⁴ Inventor Club members “often wear it during work and it can have the effect of elevating their status among their peers—particularly those with multiple patent numbers on the hat.”²⁷⁵ The hat’s ability to raise an engineer’s status among peers suggests a credential use in that the engineers recognize that a patent represents technological skill and innovative capacity. Additionally, the company, in recognizing

270. See Janet E. Reed, *Publishing and Patenting the Fruits of Academic Research: The Key to a Successful Parallel Track*, 14 NATURE IMMUNOLOGY 523, 523 (2013) (discussing the commercialization of academic research); see also Lee, *supra* note 266, at 39–46 (describing the aggressive patent practices of research universities, notably their efforts to extend patent exclusivity to their professors’ discoveries and to patent fundamental biological processes).

271. In the interest of full disclosure, one of the authors, Rantanen, has personal contacts with Vermeer, Deere and Rockwell Collins, and is hardly unbiased when it comes to using Iowa firms as examples.

272. Memorandum from Robert R. Smith, Vice-President & Gen. Counsel, Vermeer Corp., Regarding the History of the Vermeer Inventor Club (Feb. 6, 2017) (on file with authors).

273. *Id.*

274. *Id.*

275. *Id.*

inventors, is using the patent as a credential representing a certain level of contribution by an employee.

Vermeer's Inventor Club is one of a multitude of examples. Deere & Company, known for their tractors and other agricultural and construction equipment,²⁷⁶ celebrates inventors on patents with award ceremonies, plaques and other forms of peer recognition.²⁷⁷ Similarly, Rockwell Collins, an aviation and communication firm,²⁷⁸ views innovation as one of its core values.²⁷⁹ Nan Mattai, Rockwell's Chief Technology Officer, stated that each inventor receives both "a monetary reward and a plaque for each invention, presented to them by their manager usually as part of a team celebration."²⁸⁰ Microsoft gives out decorative black cubes to inventors when a patent application is filed and inventors display stacks of them as their "street cred."²⁸¹ One former employee commented that "I remember interviewing for a new position within Microsoft and feeling my hands sweat when I saw a stack of cubes behind my interrogator."²⁸² And *Intellectual Ventures* recently touted one of the individuals it works with,

276. See *About Us*, JOHN DEERE, <https://www.deere.com/en/index.html> (last visited Feb. 19, 2019) ("Since our founding in 1837, John Deere has delivered products and services to support those linked to the land.") (on file with the Washington and Lee Law Review).

277. See Email from Joshua Heitsman, Senior IP Counsel, John Deere, to author (on file with authors).

278. See *About Us*, ROCKWELL COLLINS, <https://www.rockwellcollins.com/Our-Company.aspx> (last visited Feb. 19, 2019) ("Rockwell Collins . . . is a leader in aviation and high-integrity solutions for commercial and military customers around the world.") (on file with the Washington and Lee Law Review).

279. See Email from Donna Suchy, Managing Counsel IP, Rockwell Collins, to author (on file with authors).

280. *Id.* Interestingly, both Deere and Rockwell Collins indicated that they provide recognition for non-patent innovations in addition to awards based on patents. See *id.*; Heitsman, *supra* note 277. Thus, although patents are held up as one type of credential, it is important to keep in mind that they are not the only form of recognition of technological achievement. But they may be the easiest to transfer from one community to another: an "innovation" award at one firm may have less meaning to another firm (or the public at large) than a patent.

281. Email from Daniel Reed, Vice President for Research and Econ. Dev., Univ. of Iowa, to author (on file with authors).

282. CURTIS, *supra* note 35, at 99.

Lowell Wood, as America's new "most prolific inventor."²⁸³ Why? Because he now has more patents than Thomas Edison.²⁸⁴

Outside of private industry, governmental departments engage in employee recognition for patents. For example, the Department of Homeland Security (DHS) hosted a patent award ceremony in 2015 where it recognized inventor "employees and other individuals who have been awarded patents by the U.S. Patent Office for their technology advancements and inventions contributing to the homeland security mission."²⁸⁵ During the ceremony, DHS Under Secretary for Science and Technology Dr. Reginald Brothers said, "The technologies developed by our employees that culminate in patent awards are vitally important for the Department in attracting scientific talent"²⁸⁶ Brothers' statement indicates that even the DHS relies in part on the credential value of patents to attract talented new employees.

Parts of the military also acknowledge inventors with plaques and ceremonies. The U.S. Armament Research, Development and Engineering Center (ARDEC) honors inventors by placing an image of the patent on the "Innovation Wall of Fame" and giving them a trophy.²⁸⁷ And, the Naval Surface Warfare Center

283. See Nathan Myhrvold, *Move Over, Thomas Edison. Lowell Wood is Now America's Most Prolific Inventor*, INTELL. VENTURES (Nov. 4, 2015), <http://www.intellectualventures.com/insights/archives/move-over-thomas-edison-lowell-wood-is-now-americas-most-prolific-inventor> (last visited Feb. 19, 2019) (celebrating Wood's 1,085th patent and noting that he "averages about one new U.S. patent granted every day of the week") (on file with the Washington and Lee Law Review).

284. See *id.* ("Between 1869 and 1933, Edison racked up an astonishing 1,084 U.S. utility patents, a record for American inventors that held for 82 years. Until now.").

285. See DHS Press Office, *DHS Recognizes Innovators at Patent Award Ceremony*, HOMELAND SECURITY (June 16, 2015), <https://www.dhs.gov/news/2015/06/16/dhs-recognizes-innovators-patent-award-ceremony> (last visited Feb. 19, 2019) ("The event, hosted by the DHS Science and Technology Directorate (S&T), recognized inventors from across DHS including the Transportation Security Administration (TSA), U.S. Coast Guard, and the Office of the General Counsel.") (on file with the Washington and Lee Law Review).

286. *Id.*

287. See Audra Calloway, *Picatinny Honors 11 Patent Holders During ARDEC Ceremony*, U.S. ARMY (July 11, 2016), https://www.army.mil/article/171287/picatinny_honors_11_patent_holders_during

Dahlgren Division (NSWCDD) began hosting patent awards ceremonies in 2012.²⁸⁸ At the inaugural NSWCDD event, Catherine Donovan, Counsel to the Office of Naval Research, explained why the Navy seeks patents for inventions. Donovan said that one motivation was “[t]o attain international recognition . . . for the inventors of useful, novel, and non-obvious inventions.”²⁸⁹ This explanation strongly suggests that the Navy envisions a credential benefit to the inventors of Navy-owned patents. The patent provides an avenue for the Naval employee to evidence her prior inventive activities, even though the employee is unlikely to receive direct financial benefit from the invention.²⁹⁰

A final example of a credential use of patents can be found in the way that some patent attorneys and patent agents highlight their own patents when advertising legal services. The websites of numerous patent professionals reflect that the attorney or agent holds his or her own patent.²⁹¹ This use of a patent is meant to

_ardec_ceremony (last visited Feb. 19, 2019) (“The wall, which was created [in 2016], honors an innovative culture and represents successful partnerships that focus on developing solutions for warfighters.”) (on file with the Washington and Lee Law Review).

288. See John J. Joyce, *NSWC Dahlgren Holds Its First Patent Awards Ceremony*, SOUTHERN MD. ONLINE (May 29, 2012), <http://somd.com/news/headlines/2012/15564.php> (last visited Feb. 19, 2019) (“Receiving a U.S. patent is a significant event. It’s a formal recognition that an invention is in a very special class of inventions—those worthy of a patent.”) (on file with the Washington and Lee Law Review).

289. *Id.* “The taxpayer benefits, the Navy benefits, and our inventors benefit” from seeking patent protection. *Id.*

290. See, e.g., U.S. DEP’T OF ARMY, REG. 672-20, INCENTIVE AWARDS 5 (Apr. 1, 2014), <http://8tharmy.korea.army.mil/dhrm/assets/us/labor/AK-Reg-672-20.pdf> (indicating that Army service members are awarded between \$200 and \$500 per patent); see also Göktepe-Hultén, *supra* note 268 (proposing that monetary incentives are often secondary for patent applicants).

291. See, e.g., *General Information About the Firm*, L. OFFICES DR. CLIFFORD H. KRAFT (2016), <http://www.patenttheoretics.com/Qualifications.html#Credent> (last visited Feb. 19, 2019) (“I am a patent attorney, licensed professional engineer, inventor and researcher. . . . I hold six patents. I have over 20 other patent applications where I am an inventor in process before the USPTO.”) (on file with the Washington and Lee Law Review); *About Us*, SEATTLE PATENT AGENT (2013), <http://seattlepatentagent.com/about-3> (last visited Feb. 19, 2019) (“Before going into patent work, he was a professional inventor in industry, and received 11 US patents.”) (on file with the Washington and Lee Law Review); *My Philosophy of Service*, GALVIN PATENT L. LLC (2011), http://www.galvinpatentlaw.com/about_me (last visited Feb. 19, 2019) (“I am an inventor in my own

reflect that the professional is knowledgeable about patents and invention, a credential use. Furthermore, at least one patent attorney sought and received a patent exclusively for a credential purpose. The “Beerrella” is an umbrella-type device for use to shade a drink in the heat of summer.²⁹² The inventor listed on the patent is a patent attorney who filed the patent for the purpose of obtaining an example of his work.²⁹³ Here, the actual use of the patent served primarily as a credential, albeit one that’s different than the pure inventorship credential. In this case, the patent stood as evidence of the attorney’s ability to write and receive a patent.²⁹⁴

C. Patents as Credentials in Judicial Opinions

One area where the reputational effects of patents as credentials is particularly salient is in the context of judicial opinions in actions to correct inventorship.²⁹⁵ While 35 U.S.C. § 256 provides a mechanism for correction of inventorship on a patent by a court,²⁹⁶ a petitioner must still meet the Article III

right, with 14 issued patents, one about to issue, and many more pending.”) (on file with the Washington and Lee Law Review); *Lawrence J. Shaw, PHD: Bio and Interests*, INTEGRAL PAT., <https://www.integralpatent.com/aboutme> (last visited Feb. 19, 2019) (“I am an inventor myself with 8 patents responsible for over 10 million units sold, and can bring creativity to the patenting process when necessary.”) (on file with the Washington and Lee Law Review).

292. See U.S. Patent No. 6,637,447 (issued Oct. 28, 2003) (patenting “a novelty [umbrella] accessory for use with beverages”).

293. See Gene Quinn, *Obscure Patent: The Beerrella*, IPWATCHDOG (Apr. 10, 2008), <http://www.ipwatchdog.com/2008/04/10/obscure-patent-the-beerrella/id=146> (last visited Feb. 19, 2019) (explaining that the patent holder “felt like he needed an example of a patent application he drafted that he could show to clients”) (on file with the Washington and Lee Law Review).

294. *Id.* As William Hubbard describes, even patent law scholars use patents in this way. See Hubbard, *supra* note 14, at 400 n.207 (“The capacity of patents to facilitate the enforcement of norms evidently applies to patent law scholars, too. For example, some patent law professors mention in their online biographies that they are named inventors on patents.”).

295. See *Faryniarz v. Ramirez*, No. 3:13-CV-01064 (CSH), 2015 WL 6872439, at *17–18 (D. Conn. Nov. 9, 2015) (summarizing cases in which reputational injury was alleged in the context of seeking correction of inventorship on a patent).

296. See 35 U.S.C. § 256 (2012) (stating that if an inventor’s name is omitted

standing requirement.²⁹⁷ A direct ownership interest in the patent, or a pecuniary benefit that flows from being named an inventor can suffice;²⁹⁸ but the Federal Circuit has also recognized that a reputational injury alone from failing to be named as an inventor on a patent may be sufficient.²⁹⁹

The Federal Circuit planted the seeds of reputational injury standing theory in its 2001 decision in *Chou v. University of Chicago*.³⁰⁰ The court wrote:

Chou argues that a reputational interest alone is enough to satisfy the requirements of Article III standing. That assertion is not implausible. After all, being considered an inventor of important subject matter is a mark of success in one's field, comparable to being an author of an important scientific paper. Pecuniary consequences may well flow from being designated as an inventor.³⁰¹

Standing was ultimately resolved on another ground: Chou, the court concluded, had a concrete financial interest in the patent.³⁰²

In 2015, the Federal Circuit squarely addressed the issue in *Shukh v. Seagate Technology, LLC*,³⁰³ concluding that reputational

from a patent, the Director of the United States Patent and Trademark Office may issue a certificate correcting the error).

297. See *Fishel v. Mich. State Univ.*, No. 1:15-CV-50, 2016 WL 4006820, at *3 (W.D. Mich. July 19, 2016), *appeal dismissed*, No. 2017-1007, 2017 WL 4541744 (Fed. Cir. July 26, 2017) (“Even a party concerned who is clearly within the purview of § 256, however, must show that he has suffered an injury-in-fact, that the injury is traceable to the conduct complained of, and that the injury is redressable by a favorable decision.” (quoting *Chou v. Univ. of Chi.*, 254 F.3d 1347, 1357 (Fed. Cir. 2001))).

298. See *Chou v. Univ. of Chi.*, 254 F.3d 1347, 1359 (Fed. Cir. 2001) (finding concrete financial interest in a patent is enough to satisfy the three requirements for standing under Article III).

299. See *Shukh v. Seagate Tech., LLC*, 803 F.3d 659, 663 (Fed. Cir. 2015) (holding that “[a] concrete and particularized reputational injury can give rise to Article III standing” and remanding to determine whether the inventor suffered a reputational injury).

300. 254 F.3d 1347 (Fed. Cir. 2001).

301. *Id.* at 1359.

302. *Id.*

303. 803 F.3d 659 (Fed. Cir. 2015).

injury alone can be sufficient to establish Article III standing.³⁰⁴ In concluding that reputational injury could be enough, the court directly considered whether the failure to be named as an inventor on the disputed patents harmed Dr. Shukh's reputation as an inventor. Even though there was no dispute that "Dr. Shukh had a reputation as an excellent inventor," this did not mean that "Dr. Shukh's omission from the patents did not harm his reputation."³⁰⁵ Rather, "[t]he evidence supports the conclusion that Dr. Shukh's reputation as an inventor would have been higher had he been named on the patents."³⁰⁶ And ultimately, it was the effect on future employers that mattered, employers who would necessarily rely on the Dr. Shukh's being named an inventor on the patent rather than first-hand knowledge of his work:

Likewise, the testimony of Dr. Shukh's coworkers that additional patents would not change their impression of Dr. Shukh's technical abilities does not speak to whether additional patents would improve Dr. Shukh's reputation in the eyes of potential employers. Dr. Shukh's coworkers had years of experience working directly with Dr. Shukh, unlike potential employers, who likely lack that first-hand knowledge and are therefore more likely to rely on their knowledge of Dr. Shukh's reputation in evaluating their impression of him.³⁰⁷

In *Shukh*, the court may have allowed the reputational effect of being named an inventor to provide constitutional standing, but there was substantial and specific evidence for the court to draw on. A more recent case—albeit nonprecedential and involving pleading issues—involved a failure to establish sufficient reputational injury.³⁰⁸ Exactly how much of a direct reputational showing is necessary remains an open legal question, and one for future scholarship to explore.

304. *See id.* at 663 ("Today, we hold that concrete and particularized reputational injury can give rise to Article III standing.").

305. *Id.* at 665.

306. *Id.*

307. *Id.*

308. *See Huster v. j2 Cloud Services, Inc.*, 682 F. App'x 910, 916–19 (Fed. Cir. 2017) (finding that a putative inventor that failed to provide any evidence of reputational injury in a correction-of-inventorship claim did not meet the injury requirement for Article III standing).

D. Government and Nonprofit Patent Awards

Universities and employers are not alone in recognizing named inventors on issued patents. Several international, national, and local organizations recognize named inventors.

Internationally, the European Inventor Awards hosted by the European Patent Office (EPO) recognize inventors in categories such as industry, research, and lifetime achievement.³⁰⁹ A key requirement for a nominee to qualify for award consideration is an issued European Patent.³¹⁰ The patent functions as a credential because the EPO relies on the underlying decision to issue a patent to support the conclusion that the inventor created new and innovative technology.³¹¹

A similar honor exists in the United States: the National Inventor's Hall of Fame.³¹² Induction into the Hall of Fame requires a United States patent that has contributed significantly to the nation's welfare and the advancement of science and useful arts.³¹³ Although the National Inventors Hall of Fame is an independent nonprofit, it is sponsored by the United States Patent

309. See *European Inventor Award Categories*, EUR. PAT. OFF., <https://www.epo.org/learning-events/european-inventor/about/categories.html> (last visited Feb. 19, 2019) (listing the European Inventor Award's five categories) (on file with the Washington and Lee Law Review).

310. See *Entry Forms for the European Inventor Award 2016 (2016)* ("If you do not specify a European patent for your chosen inventor, and we cannot identify one after doing our own research, your entry will be eliminated from the competition.") (on file with the Washington and Lee Law Review).

311. See *About the Award*, EUR. PAT. OFF., <https://www.epo.org/learning-events/european-inventor/about.html> (last visited Feb. 19, 2019) (stating that the award recognizes innovation) (on file with the Washington and Lee Law Review). Admittedly the EPO has some interest in promoting the value of receiving a patent, but this self-interested purpose does not negate the use of a patent as a credential. *Id.*

312. See NATIONAL INVENTORS HALL OF FAME 1, https://www.invent.org/sites/default/files/file-upload/2018-10/2019_Company_Overview_Compressed.pdf (describing its mission as "paying forward America's rich history of invention and securing our country's competitive advantage for the future").

313. See *Nominate the Next Great Inventor for Our Hall of Fame*, NAT'L INVENTORS HALL OF FAME, <http://www.invent.org/honor/inductees/nominate-an-inventor> (last visited Feb. 19, 2019) (describing the nomination process) (on file with the Washington and Lee Law Review).

Office, and is housed in the Patent Office headquarters in Alexandria, Virginia.³¹⁴

Numerous organizations at the state and local level recognize “inventors”—by which they mean, inventors named on a patent—as well. The Edison Patent Award, for example, is sponsored by the Research & Development Council of New Jersey.³¹⁵ This award recognizes the named inventors on patents covering technology developed, at least in part, in New Jersey.³¹⁶ In most cases, the inventors recognized with the Edison Patent Award do not have any ownership right in the patent because they are employees of large companies.³¹⁷ Using a patent as criteria for recognizing inventors at large companies represents a credential use of the patent, serving as an indicator of underlying innovative characteristics not readily discerned in a different way.³¹⁸ The Florida Inventors Hall of Fame “honors and celebrates those inventors whose achievements have advanced the quality of life for Floridians, our state and our nation.”³¹⁹ A requirement for being

314. See *Our Museum is a National Monument to Innovation*, NAT'L INVENTORS HALL OF FAME, <http://www.invent.org/honor/hall-of-fame-museum> (last visited Feb. 19, 2019) (noting the Museum is located at 600 Dulany Street, which is also the address of the Patent and Trademark Office) (on file with the Washington and Lee Law Review).

315. See EDISON PATENT AWARD 2018 SUBMISSION GUIDELINES, RESEARCH & DEVELOPMENT COUNCIL OF NEW JERSEY 2 (2018), <http://www.rdnj.org/news/wp-content/uploads/2018/03/2018-Edison-Patent-Award-Nomination-Form.pdf> (listing award criteria).

316. See *id.* (“[The] [p]atent must have at least part of the technical [or] scientific work that comprises the patent . . . done in New Jersey and submitter must be able to substantiate this.”).

317. For examples of award winners, see, e.g., RDCouncilNJ, *2014 Edison Patent Award Honeywell Tribute Film*, YOUTUBE (Nov. 14, 2014), <https://youtu.be/ci8KcN9LcV4> (last visited Feb. 19, 2019) (listing Honeywell employees) (on file with the Washington and Lee Law Review); RDCouncilNJ, *2014 Edison Patent Award Winner Colgate-Palmolive Tribute Film*, YOUTUBE (Nov. 18, 2014), <https://youtu.be/uQkK32PJkA0> (last visited Feb. 19, 2019) (showing Colgate employees) (on file with the Washington and Lee Law Review); RDCouncilNJ, *2011 R&D Council of NJ Bristol-Myers Squibb Edison Patent Award Film*, YOUTUBE (Nov. 30, 2011), <https://youtu.be/DWoZsKafMDQ> (last visited Feb. 19, 2019) (listing Bristol-Myers Squibb employees) (on file with the Washington and Lee Law Review).

318. See *supra* Part V.B (examining employer and professional uses of patents as credentials).

319. See *generally About the Hall of Fame*, FLA. INVENTORS HALL OF FAME (2019),

recognized? “Must be a named inventor on a patent issued by the United States Patent and Trademark Office.”³²⁰ The \$500,000 Lemelson-MIT Prize is awarded to mid-career inventors who must “be the primary inventor of two or more granted U.S. patents, one of which is a product or process that has been commercialized or has potential or realized adoption.”³²¹

Intellectual property lawyer associations, too, recognize inventors. Examples include the New York Intellectual Property Law Association’s “Inventor of the Year Award”³²² and the Houston Intellectual Property Law Association.³²³ Both organizations require that nominees must have received one or more U.S. patents to be eligible.³²⁴

Social organizations, too, may require patents for membership. The National Academy of Inventors, “with over 4,000 individual inventor members and Fellows spanning more than 250 institutions worldwide” states that “to join your university or non-profit research institute’s chapter, you must be a member of your institution’s academic community . . . and have a patent issued from the USPTO.”³²⁵

<http://www.floridainvents.org/about> (last visited Feb. 19, 2019) (describing the Hall of Fame as a state-wide initiative that encourages Floridian innovation) (on file with the Washington and Lee Law Review).

320. See *Nominate*, FLA. INVENTORS HALL FAME (2019), <http://www.floridainvents.org/nominate> (last visited Feb. 19, 2019) (listing award criteria) (on file with the Washington and Lee Law Review).

321. See *Lemelson-MIT Prize, Eligibility Requirements*, LEMELSON-MIT, <http://lemelson.mit.edu/prize> (last visited Feb. 19, 2019) (listing requirements) (on file with the Washington and Lee Law Review).

322. See *Inventor of the Year (IOTY) Award*, N.Y. INTELL. PROP. L. ASS’N, <https://www.nyipla.org/nyipla/InventorOfTheYear.asp> (last visited Feb. 19, 2019) (“In order to be eligible for the Award, nominees must have received one or more U.S. patents for [their] invention(s) contributing to modern society.”) (on file with the Washington and Lee Law Review).

323. See *Inventor of the Year*, HOUS. INTELL. PROP. L. ASS’N, <https://hipla.org/Inventor-of-the-Year> (last visited Feb. 19, 2019) (calling for nominations) (on file with the Washington and Lee Law Review).

324. See *supra* notes 322–23 (detailing the eligibility criteria of both awards).

325. See *About Us*, NAT’L ACAD. INVENTORS (2019), <http://www.academyofinventors.org/about.asp> (last visited Feb. 19, 2019) (describing membership requirements) (on file with the Washington and Lee Law Review).

E. Capitalizing on the Credential Value of Patents

A final piece of evidence supporting the idea of patents as credentials is the “patent award” industry.³²⁶ A search for purveyors of patent plaques and frames revealed at least five companies engaged in the business.³²⁷ These companies’ models depend on inventors and companies valuing a patent as an award or achievement, similar to a college degree, worthy of a place on a wall.³²⁸ At least one inventor, Jeff Greenhalgh, made the connection between a patent and being officially recognized as an “inventor” upon receipt of a certificate from a patent plaque company.³²⁹ Recognizing oneself as inventor only after receiving a patent and a plaque tends to support the credentialing effect of a patent.

326. See Hubbard, *supra* note 14 (describing the patent plaque industry).

327. See, e.g., *Patent Plaques by IPIax*, IPLAX PAT. PLAQUES (2018), <https://iplax.com> (last visited Feb. 19, 2019) (presenting Wilmington, North Carolina-based patent plaque manufacturer) (on file with the Washington and Lee Law Review); PAT. AWARDS (2019), <http://www.patentawards.com> (last visited Feb. 19, 2019) (presenting Warsaw, Indiana-based patent plaque manufacturer) (on file with the Washington and Lee Law Review); U.S. PAT. CERTIFICATE (2019), <https://uspc.com> (last visited Feb. 19, 2019) (presenting Ft. Myers, Florida-based professional awards manufacturer) (on file with the Washington and Lee Law Review); U.S. PAT. SERVS., INC. (2016), <http://recognizinginnovation.com> (last visited Feb. 19, 2019) (presenting Grafton, Wisconsin-based patent award manufacturer) (on file with the Washington and Lee Law Review); PATS. AS ART (2017), <http://www.patentframe.com> (last visited Feb. 19, 2019) (presenting Little Rock, Arkansas-based patent framers) (on file with the Washington and Lee Law Review).

328. See Matthew Knell, *By Watson, I Am an Inventor!*, TAGSMITH.ORG (Aug. 3, 2010), <http://www.tagsmith.org/2010/08/03/by-watson-i-am-an-inventor> (last visited Feb. 19, 2019) (recounting the story of an inventor who did not know his patent had been accepted and granted until he received a piece of “spam” mail from “the ‘Official Patent Certificate’ company,” which offers to frame certificates of recently-granted patents) (on file with the Washington and Lee Law Review). A blog post by Matthew Knell makes it seem as if patent framing companies actively pursue individuals recently named on patents. *Id.*

329. See JEFF GREENHALGH, SO, YOU HAVE A GREAT IDEA 9 (2011)

When I ordered the plaque of my first patent, as a reproduction of the original patent provided me by the United States Patent Office, the plaque company also included a formal certificate that says “Inventor,” with my name and patent number on it. If the United States Patent Office formally recognizes me as an Inventor, then yes, I am an inventor.

No single piece of anecdotal evidence can conclusively support the theory that patents function as credentials in society. Indeed, we hope this Article sparks interest in empirical research into the credentialing function of patents. But, the present accumulation of these examples of credential-type uses of patents in multiple sectors of public and private life strongly indicate that patents serve as socially acknowledged credentials. The strength of a patent as a credential, as with any credential, is likely to vary depending on the nature of the audience, but it seems that patents are widely accepted across a broad array of audiences, perhaps more readily transferable than many other types of credentials.

VI. A Normative Assessment of Patents as Credentials

Patents are widely used as credentials—that much seems clear. But is that a good thing? The sociological literature on academic credentials argues, almost uniformly, that credentials are normatively bad.³³⁰ But that sociological thesis is itself counterculture, and is set against a backdrop of a society that takes credentials' value for granted.³³¹ Given this context, it is important to examine both sides: the positives and negatives of patents as credentials.

A. The Purpose of Credentials

A normative assessment of patents as credentials cannot begin without thinking about the purposes that the credentialing function of patents might serve. As noted at the outset, a common function of credentials is to distill and abstract a characteristic or

330. See, e.g., Brown & Bills, *supra* note 49, at 137 (describing “credentialing” as “a mere defensive necessity for holding mediocre . . . positions in [weak] labor markets,” noting for example the sharp increase in degree-seekers after the 2008 recession).

331. See Kim A. Weeden, *Why Do Some Occupations Pay More than Others? Social Closure and Earnings Inequality in the United States*, 108 AM. J. SOCIOLOGY 55, 55–58 (2002) (describing credentialism—the increasing requirement for formal qualifications such as “licensing, educational credentialing, voluntary certification, association representation, and unionization”—as a barrier to entry in many occupations).

attribute possessed by the bearer into a form that is more easily understood and processed.³³² In other words, a credential provides information about a difficult to observe aspect of the bearer. Often, this information is being provided to a third party decisionmaker ex ante, prior to a decision that will have consequences in the future.³³³

We see this distillation as having two effects. The first is what we refer to as the “economic” effect, in which the formalized abstraction of a patent can be translated into monetary benefit. A typical example is a hiring decision. Employers must typically make decisions about whether or not a potential employee possesses certain characteristics before having an opportunity to observe the potential new hire in practice. Perhaps the new employee will have the desired characteristics, such as high productivity, but perhaps not. Credentials function as a way for employers to mitigate the risk of hiring an employee who lacks the desired characteristics because they provide the employer with information about the employee.³³⁴

The second effect of the credential is as a mechanism of self-worth for the bearer. As shorthand, we refer this concept as the “self-worth” effect and recognize that it can take two forms: self-validation and approbation.³³⁵ Self-validation refers to the

332. See Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 630 (2002) (showing that observers may use patent documents, as well as patent portfolios, to deduce information about patentees).

333. *Id.* at 659.

334. See BILLS, *supra* note 49, at 47–60 (demonstrating how the use of educational credentials as a shorthand for applicant qualification results in over-qualification and the perpetuation of inequality).

335. Although there are some threads connecting the “self-worth” effect of a credential and theories based on personhood, the two are distinct concepts. See Margaret Jane Radin, *Property as Personhood*, 34 STAN. L. REV. 957, 958 (1982) (exploring the relationship between property rights and personal development). “Personhood”-based theories, which draw upon Margaret Jane Radin’s seminal work *Property as Personhood*, approach intellectual property from the perspective of the degree to which a creative intangible reflects a person’s personality. See *id.* (explaining that the “personhood perspective” corresponds to the personality theory of property) see also Justin Hughes, *The Personality Interest of Artists and Inventors in Intellectual Property*, 16 CARDOZO ARTS & ENT. L.J. 81, 87 (1998) (applying the personhood perspective to intellectual property). “Self-worth” draws upon the effect that self-validation and external recognition has on the individual. *Id.*

effect of overcoming a challenge external to the self. Perhaps that challenge is obtaining a college degree or completing a marathon. Whatever the challenge, completing it adds to one's sense of self-worth. Approbation is the innate desire for external validation and recognition from others.³³⁶

The degree to which external validation is normatively desirable is too fundamental a question to address in this Article.³³⁷ Instead, we take it as a given that human beings desire to realize their potential and that one component of that self-realization is achieving validation from others. The question then simply becomes whether or not patents effectively provide such a challenge or offer meaningful external validation.

B. The Case for Patents as Credentials

Patents seem to fit the economic purpose of credentials fairly well. As described above, a patent can function as a signal that the person named as an inventor possesses inventive capabilities, such as an ability to innovate, or as a filter for those with those attributes.³³⁸ A patent can also function as an indicator that the person named on the patent is someone who is willing to participate in the patenting process—potentially a desirable characteristic for an employer that seeks to maximize its own patent portfolio. In these ways, patents can provide information to

336. See SMITH, *supra* note 36 (proposing that the desire to better one's individual condition inadvertently improves society as a whole). See also Maria Pia Piaganelli, *Approbation and the Desire to Better One's Condition in Adam Smith: When the Desire to Better One's Condition Does not Better One's Condition and Society's Condition*, in HUMANISM AND RELIGION IN THE HISTORY OF ECONOMIC THOUGHT: SELECTED PAPERS FROM THE TENTH AISPE CONFERENCE 59–77 (Daniela Fernanda Parisi & Stefano Solari eds., Franco Angeli 2010) (describing Adam Smith's approbation-based approach in the WEALTH OF NATIONS and MORAL SENTIMENTS).

337. As an example of the depth of this topic, an entire psychological literature addresses the relationship between external mechanisms and self-esteem. See, e.g., Jeff Greenberg, Tom Pyszczynski, & Susan Solomon, *The Causes and Consequences of a Need for Self-Esteem: A Terror Management Theory*, in PUBLIC SELF AND PRIVATE SELF 189–212 (1986) (discussing ways in which people try to attain and maintain a favorable self-image).

338. See *supra* Part IV.B.2.b (stating that patents signify desirable qualities).

third parties, such as employers, about desirable characteristics that the third party will only be able to directly observe after an initial decision is made.

Indeed, unlike many other credentials, patents convey more than information about characteristics that are difficult to observe *ex ante*. They also serve to compress and distill information about events in the past into a form that has greater meaning to others. Specifically, they communicate the inventive activities of the person named as an inventor. Exactly *what* the inventor did in the past is difficult to observe; although that difficulty is different than an inability to predict the future. Rather, the past can be difficult to see into due to a lack of record evidence, different lenses worn by the observer, and more. While an inventor's activities may be memorialized in notebooks and other writings,³³⁹ those materials often will not be publicly accessible, and even if they are may be difficult to comprehend.³⁴⁰

Patents can provide a single, public summary of what an inventor actually did in the past. In this way, patents do not simply provide information about a named inventor that is difficult to observe *ex ante*; they also provide a concise, memorialized *ex post* summary of what the inventor has done.³⁴¹ Just as patents codify knowledge in a multitude of ways,³⁴² patents also codify the state of an inventor at the time of filing by providing an evidentiary record of what existed at that time.

339. See Tamara Monosoff, *Keeping an Inventor's Notebook*, ENTREPRENEUR (June 12, 2006), <https://www.entrepreneur.com/article/159556> (last visited Feb. 19, 2019) (advising that a dated inventor's notebook acts as a record for the USPTO to validate one's inventive progress in case of a patent dispute) (on file with the Washington and Lee Law Review).

340. *Id.* (explaining that inventor's notebooks are highly personalized).

341. See 35 U.S.C. § 112 (2012) (stating that a patent must contain a "written description" of (1) the invention and (2) the manner and process of making and using the invention). Indeed, within patent law there are formal doctrines that explicitly draw on the idea that what an inventor is entitled to claim exclusive rights over is based on what the inventor actually contributed at the time of filing as reflected in the patent application itself. See *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1349 (Fed. Cir. 2010) (describing the written description doctrine and stating that a patent application must objectively demonstrate that the applicant actually invented the claimed subject matter).

342. See *generally* Burk, *supra* note 210 (explaining that patents codify and commodify tacit or industry knowledge).

Patents can also satisfy the human desire for self-worth. They represent an external challenge to be overcome, one that can only be met by creating an invention. Meeting that challenge, as proven to one's self by receiving a patent, can enhance one's sense of self-worth.³⁴³ Patents can also offer a measure of approbation in the form of the Patent Office's recognition of the achievement of invention as well as the subsequent recognition by others.³⁴⁴

Importantly, the meaningfulness of external validation requires both recognition and accuracy. If the external validation is given out to all, like a participation trophy, then it is also of little value as a form of external recognition. Thus, the extent to which patents function as a mechanism of external validation depends in large part on what the audience believes about patents.³⁴⁵

In answering questions about the normative value of patents as credentials under both an economic and self-worth approach, some of the benefits of patents seem reasonably clear. For example, if society correctly values practical innovation as a social good—and that is a wholly different inquiry that we are willing to answer in the affirmative for purposes of this assessment—then the information provided by a patent seems to be reasonably useful.³⁴⁶ It is not perfect, but given the relative rigor of the examination process, the height of the bar to achieve the credential, and the legitimacy of the issuer, it is probably better than many other credentials at providing evidence for the characteristic for which it stands.³⁴⁷ In this sense, patent credentials may be valuable because they both recognize those

343. See SILBEY, *supra* note 10, at 156–57 (discussing how creators of patents can view their creation as their “baby”); Fromer, *supra* note 12, at 548 (describing how patents encourage people to invent).

344. See *id.* at 313 n.6 (describing the growing body of research which demonstrates the importance to creators that they receive recognition for their work).

345. See *id.* at 150.

346. See Fromer, *supra* note 12, at 553 n.69 (describing the social value of patent law).

347. See Brown & Bills, *supra* note 49, at 136–37 (discussing some of the criticisms of the current credentialing regime).

individuals who *have* created an invention and identify to future employers or investors those persons with inventive capabilities.³⁴⁸

The credentialing function of patents may be more important than ever before in today's world where facts seem fluid and everything is open to debate.³⁴⁹ Everyone thinks they are an expert, regardless of any actual expertise.³⁵⁰ The credentialing function of patents offers one way out of this morass. It illustrates how society can actually rely on the determinations of experts, while at the same time maintaining a basic understanding of the relatively simple core elements that analysis revolves around.³⁵¹ We can't all be experts in everything. But society can know just enough about something to let the experts examine the details—at least when it trusts the examiners.

C. Limitations and Costs of Patents as Credentials

Most of the literature on credentials, however, does not take a laudatory approach.³⁵² Indeed, two leading scholars of educational credentials observe that “[o]ne sure route to infamy among academic analysts of credentials and perhaps even in spheres of judgment beyond these would be to write a piece extolling the virtues of credentials.”³⁵³ Instead, “explicit public discourse about the topic focuses on the gnarly underside of credential malfeasance and system failure.”³⁵⁴ Although it is important that examination of patents as credentials not focus wholly on the “gnarly

348. See SILBEY, *supra* note 10, at 182–83 (describing the multitude of ways in which the reputational protection aspect of a patent benefits creators).

349. See *id.* at 149 (describing how the internet and social media has made reputation “both more powerful and more fragile”).

350. See Lisa Guernsey, *Suddenly, Everybody’s an Expert*, N.Y. TIMES (Feb. 3, 2000), <https://www.nytimes.com/2000/02/03/technology/suddenly-everybody-s-an-expert.html> (last visited Feb. 19, 2019) (describing how the internet contributes to people considering themselves experts) (on file with the Washington and Lee Law Review).

351. See Hubbard, *supra* note 14, at 400 (describing how patents can inform laypeople of the ideas of inventors).

352. See Brown & Bills, *supra* note 49, at 136 (describing how academia looks down upon the credentialing process).

353. *Id.*

354. *Id.*

underside”—there is dirt under every rock, after all—it is equally important to seriously consider the negative, and perhaps outright unsavory, consequences of patents as credentials.³⁵⁵ The following discussion identifies these concerns, allowing future work to examine them more closely.

1. Patent Law's Imperfections

Patents are necessarily abstractions of what an inventor has actually done. Judge Alan Lourie recognized this point in *Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.*³⁵⁶—a seminal decision setting out the boundaries of the written description doctrine, a critical limitation on the permissible scope of patent claims—when he wrote that the doctrine was based on only “possession as shown in the disclosure” rather than encompassing what else was (or might have been) known to the inventor at the time of the application.³⁵⁷ As abstractions, they necessarily omit detail, and this can lead to skepticism.³⁵⁸

In any event, it is well recognized that decisions of the Patent Office are not perfect.³⁵⁹ Examiners make mistakes; they have too little time to do a perfect job (if a perfect job is even possible).³⁶⁰ Patentability decisions are necessarily made against the backdrop of limited information, thus leading to errors when compared

355. See *id.* (describing the “gnarly underside” of the current credentialing environment).

356. 598 F.3d 1336 (Fed. Cir. 2010) (en banc).

357. See *id.* at 1351 (discussing how patents must be able to inform one of how to recreate an invention).

358. See Brown & Bills, *supra* note 49, at 136 (“[C]redentials are explicit abstractions from substantive realities—they represent something else, and this fact undoubtedly is a prime source of recurring historical skepticism about them.”).

359. Patent office imperfection led one scholar to write an article arguing that such error is rational. See Lemley, *supra* note 245, at 1511 (“We understand rational ignorance on the part of the PTO, in other words—the only question is how much time we should spend per patent.”).

360. See, e.g., Michael D. Frakes & Melissa F. Wasserman, *Is the Time Allocated to Review Patent Applications Inducing Examiners to Grant Invalid Patents?: Evidence from Micro-Level Application Data*, 99 REV. ECON. & STATISTICS 550, 552 (2017) (“On average, a U.S. patent examiner spends only nineteen hours reviewing an application.”).

against the world as a whole.³⁶¹ Indeed, just because a patent is strong evidence of invention does not mean that only those who are named on patents are inventors, or that it is conclusive evidence of invention.³⁶² Strong evidence, yes, but as the legal mechanism of patents indicates, they are presumed valid but are not dispositive evidence of validity.³⁶³

2. Overreliance on the Credential

Another concern is that of overreliance on the credential. Commentators often deride professional and occupational licensing for imposing unnecessary costs.³⁶⁴ While patents don't rise to the same level—despite the examples above, one doesn't need a patent to start inventing—similar concerns about the overreliance on patents as credentials invite scrutiny.³⁶⁵

Inventors may not obtain a patent for a variety of reasons: they may discover something but not turn their discovery into an invention; they may lack the financial resources to file for a patent; they may have conceived of innovative creative expression but not patentable subject matter.³⁶⁶ While substantive requirements to

361. See *supra* Part III.A.1 (describing the imperfections of the patent system as it relates to inventions).

362. See, e.g., Sherkow, *supra* note 226, at 1050 (describing the difficulties in awarding credit to inventors based on patents).

363. See, e.g., *id.* (“[T]he patent system struggles to give appropriate credit to researchers. . . . Patent doctrines . . . are like elections for parliamentary ridings: Prizes are awarded only to the first past the posts the law erects, whether they are grounded in contemporary science or otherwise.”).

364. See, e.g., Walter Gellhorn, *The Abuse of Occupational Licensing*, 44 U. CHI. L. REV. 6, 23 (1976) (“The legal profession must take great care not to emulate the many occupational groups that have managed to convert licensure from a sharp weapon of public defense into a blunt instrument of self-enrichment.”).

365. See Lauren Flick, *Inventor Alert: Patents Aren't All They're Built Up to Be*, CNBC, <https://www.cnbc.com/2015/09/16/the-case-against-patenting-your-brilliant-invention.html> (last updated Sept. 16, 2015) (last visited Feb. 19, 2019) (“For lone inventors, patenting may not be necessary at every step of the inventing process—and maybe not at all.”) (on file with the Washington and Lee Law Review).

366. See *When You Should Not File a Patent*, PATENTFILE, <https://patentfile.org/when-you-should-not-file-a-patent/>, (last visited Feb. 19, 2019) (listing “[u]npatentable [s]ubject [m]atter,” “[t]he invention is not new or it is obvious,” wanting to keep an invention secret, and not having a plan as reasons

obtain a patent can address some of these concerns by defining what is and is not an “invention” in the first place, not all inventions are patented.³⁶⁷ Jonas Salk invented the polio vaccine, but it was never patented.³⁶⁸ When asked who owned the patent he famously replied “[w]ell, the people I would say. There is no patent. Could you patent the sun?”³⁶⁹ Multiple explanations have been offered for the failure to patent Salk’s polio vaccine: inability to obtain a patent, Salk’s ethical stance, and the public-interest nature of the organization funding the vaccine research.³⁷⁰ But in the end, Salk’s vaccine—something that society could easily view as an “invention”—did not lead to a patent.³⁷¹

Ultimately, a patent, as with other credentials, is just an indicator. It is not dispositive proof either that someone is or is not an inventor; although that answer is complicated to the extent that inventions are *defined* by patents.³⁷² This is in line with how patents function as a legal mechanism.³⁷³ They come imbued with a presumption of validity and are *prima facie* evidence of validity, but they are not dispositive evidence of validity or ownership.³⁷⁴ At the same time, the power of patents raises a somewhat troubling question: can one be an inventor without a patent, at least in society’s eyes? Or is the presence of a patent necessary in order for one to be called an inventor? Hedy Lamarr is recognized as an

inventors should not seek a patent) (on file with the Washington and Lee Law Review).

367. See JANE S. SMITH, *PATENTING THE SUN: POLIO AND THE SALK VACCINE* 338 (1990) (pointing out that Jonas Salk never patented the Polio vaccine).

368. See *id.* (explaining why Jonas Salk never patented the Polio vaccine).

369. *Id.*

370. See Brian Palmer, *Jonas Salk: Good at Virology, Bad at Economics*, SLATE (Apr. 13, 2014, 9:21 PM), http://www.slate.com/articles/technology/history_of_innovation/2014/04/the_real_reasons_jonas_salk_didn_t_patent_the_polio_vaccine.html (last visited Feb. 19, 2019) (pointing out that financial incentives drive innovation, and therefore vaccines should be patented, even though Salk did not patent the polio vaccine) (on file with the Washington and Lee Law Review).

371. SMITH, *supra* note 367, at 338.

372. See Flick, *supra* note 365 (emphasizing that one does not need a patent to be an inventor).

373. See 35 U.S.C. § 282 (2012) (noting that patents receive a presumption of validity).

374. See *id.* (stating that “[a] patent shall be presumed valid” but allowing challenges against such validity).

inventor for her pioneering work on spread spectrum technology, but would she be seen an inventor if not for being named on Patent No. 2,229,287?³⁷⁵ The answer to that question informs the deeper question of whether one is an inventor if one doesn't have a patent.

A related concern is that the incentive offered by a patent as a credential may result in the undervaluing of other types of inventive behavior that don't lead to patented technologies.³⁷⁶ And it may overvalue other work—particularly “inventions” that differ only incrementally from what already exists and, in fact, lack more utility than the current state of the art.³⁷⁷ To the extent that patents function as credentials, the result would be the use of this social capital to subsidize socially redundant work as the expense of other areas of technology, such as basic science, software and user innovations that cannot be rewarded with a patent.³⁷⁸

3. Mistaken Understandings of the Meaning of the Credential

A related concern is that of mistaken understandings of the meaning of the credential, especially by those who have obtained it. A patent is—at most—an indicator that an individual has conceived of a new and useful invention; it is very clearly not evidence of the economic value of the invention.³⁷⁹ Craig Nard writes “the patent system neither guides inventors as to where they should channel their inventive energies, nor guarantees commercial success; rather, it is the marketplace that signals to

375. See *Hedy Lamarr*, FAMOUS WOMEN INVENTORS, <http://www.women-inventors.com/Hedy-Lamarr.asp> (last visited Feb. 19, 2019) (stating that Hedy Lamarr “became a pioneer in the field of wireless communications”) (on file with the Washington and Lee Law Review).

376. Thanks to Peter Lee for this suggestion. See A.B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT 38 (2004) (describing how the current patent system can stifle creativity).

377. See *id.* (“While prizes may be an effective mechanism for drawing forth a specific, desired technology, they are not as effective a mechanism for bringing forth innovation in general.”).

378. See *id.* at 201–03 (describing the current patent regime’s inability to successfully incentivize software innovation).

379. See CRAIG ALLEN NARD, THE LAW OF PATENTS 2 (4th ed. 2016) (describing how patents do not “guarantee[] commercial success”).

inventors where the financial rewards reside, and the costs and benefits of a given research project.”³⁸⁰ Similarly, the authors of *IP and Antitrust* write that an intellectual property right “is not even a guarantee of market success. Many patented inventions are not ever brought to market, and many published books never get beyond their first printing.”³⁸¹ The Federal Trade Commission cautions that “although a patent can provide valuable protection for a successful invention, getting a patent doesn’t necessarily increase the chances of commercial success.”³⁸² And David Pressman’s *Patent It Yourself*, includes an entire section on the need to conduct a commercial assessment of your invention.³⁸³ He warns against the common misconception that “[a]nyone who gets a patent will be assured of fame and fortune.”³⁸⁴ Nor does a patent’s newness mean that it is necessarily superior to what already exists.³⁸⁵ Pressman again cautions that “[a]lthough Madison Avenue would like you to believe this, in reality a patent merely means the invention is significantly different, not necessarily superior.”³⁸⁶

One particular concern that mistakes about the meaning of a patent brings is the opportunity for exploitation of those who misunderstand what a patent means.³⁸⁷ “Invention promotion scams” are a particularly pernicious species.³⁸⁸ In these scams, an inventor is sucked in through late night television or other advertisements that tout the wonders of a patent and offer a free

380. *Id.*

381. HERBERT HOVENKAMP ET AL., *IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLES APPLIED TO INTELLECTUAL PROPERTY LAW* § 4.02[A] (2017).

382. *Invention Promotion Firms*, FED. TRADE COMM’N (Sept. 2011), <https://www.consumer.ftc.gov/articles/0184-invention-promotion-firms> (last visited Feb. 19, 2019) (on file with the Washington and Lee Law Review).

383. *See* PRESSMAN, *supra* note 137, at 16, 80–94 (noting how inventors should consider the economic realities of patent law).

384. *Id.* at 82.

385. *See id.* at 16 (rejecting the “[c]ommon [m]isconception” that “[i]f a product has been patented, it’s bound to be superior”).

386. *Id.*

387. *See* PROTECT YOURSELF AGAINST INVENTION PROMOTION SCAMS, USPTO, <https://www.uspto.gov/sites/default/files/documents/ScamPrevent.pdf> (providing tips for people to avoid becoming victims of “invention promotion scams”). A mild example might be plaque companies that target everyone who has just been issued a plaque in their name.

388. *Id.*

inventor's kit; ultimately, the result may be thousands or tens of thousands of dollars lost.³⁸⁹ Many such scams have been targeted by governmental entities tasked with investigating unfair business practices. The Federal Trade Commission provides a warning about “unscrupulous promoters” who “take advantage of an inventor’s enthusiasm for a new product or service.”³⁹⁰ “They not only urge inventors to patent their ideas or invention, but they also make false and exaggerated claims about the market potential of the invention.”³⁹¹ *IPWatchdog* offers similar warnings, with a host of examples.³⁹² And the Patent Office itself hosts a scam prevention page focused on invention promoters and promotion forums.³⁹³ The number and strengths of such cautions—and the stories of those who have been scammed—indicate that mistaken understandings of the meanings of a patent—that it is a sure-win get-rich ticket—are real.³⁹⁴

4. Patents and Equality

The conventional story of patents often features a Schumpeterian narrative, in which patents allow new firms to challenge existing capital.³⁹⁵ Viewed on the level of the individual, patents as credentials might operate this way as well. If anyone

389. See *id.* (describing the ways in which invention protection scams work).

390. *Invention Promotion*, *supra* note 382.

391. *Id.*

392. See *Invention Promotion Companies*, IPWATCHDOG, <http://www.ipwatchdog.com/inventing/invention-promotion-companies> (last visited Feb. 19, 2019) (“The sad truth is that many inventors and entrepreneurs have had their share of difficulty with the various invention promotion and idea promotion companies out there.”) (on file with the Washington and Lee Law Review).

393. See *Scam Prevention*, USPTO, <https://www.uspto.gov/patents-getting-started/using-legal-services/scam-prevention> (last updated June 27, 2018, 7:09 AM) (last visited February 19, 2019) (listing a variety of scams) (on file with the Washington and Lee Law Review).

394. See *Invention Promotion Companies*, *supra* note 392 (listing several scam stories).

395. See JOSEPH A. SCHUMPTER, CAPITALISM, SOCIALISM AND DEMOCRACY 102–03 (1942) (“The main value to a concern of a single seller position that is secured by patent or monopolistic strategy does not consist so much in the opportunity to behave temporarily according to the monopolist schema.”).

who created an invention can walk into the Patent Office and get a patent, then patents as credential offer an opportunity for social movement—Jacksonian equality for all. At the same time, broader social control over access to patents may control and limit those who might be called an inventor.³⁹⁶

Consider the situation of inventors who are not white males. Women have long been allowed to receive patents, but property laws limiting women's property rights into the early 1900s stymied the practice.³⁹⁷ Many fewer women than men—by orders of magnitude—obtained patents.³⁹⁸ During this time, when men dominated the Patent Office, a few women utilized the patent system to establish that they were, in fact, the inventors of a specific invention.³⁹⁹ But this practice was the exception, not the norm, and the extraordinary challenges faced by women in the Patent Offices highlight the divide further.⁴⁰⁰ Of course, the

396. See Brian L. Frye, *Invention of a Slave*, 68 SYRACUSE L. REV. 181, 182 (2018) (noting that the *Dred Scott* decision limited African Americans' ability to acquire patents).

397. See Carrol Pursell, *The Cover Design: Women Inventors in America*, 22 TECH. & CULTURE 545, 546 (1981) (“[D]espite the *Scientific America's* claim in 1861 that ‘women can also apply for and obtain patents upon the same terms as the sterner sex,’ the wide range of discriminatory laws limiting women’s right to hold and dispose of property in their own names must have influenced the practice.”); B. Zorina Khan, *Married Women’s Property Laws and Female Commercial Activity: Evidence from United States Patent Records, 1790–1895*, 56 J. ECON. HIST. 356, 358 (1996) (“Patent grants are secured by the U.S. Constitution and protected by the federal judicial and legal system. Nevertheless, women inventors confronted legal limitations at the state level that affected their ability to benefit from such rights.”).

398. See Pursell, *supra* note 397, at 547 (showing that in “[t]en selected years from 1905 to 1921” an average of 34,836.9 patents were issued to men while 501.6 patents were issued to women); see also Khan, *supra* note 397, at 367 (“According to Patent Office records, only 72 patents were credited to women inventors from 1790 through 1859, even though 4,773 patents were issued to male patentees in 1860 alone.”). Between 1890 and 1894, there were 1,419 women patentees and 111,535 male patentees. *Id.* at 368.

399. See CATHERINE THIMMESH, *GIRLS THINK OF EVERYTHING: STORIES OF INGENIOUS INVENTIONS BY WOMEN* 11, 35 (2000) (discussing how inventors Mary Anderson and Margaret Knight used the patent system to establish inventorship).

400. See Kara W. Swanson, *Rubbing Elbows and Blowing Smoke: Gender, Class and Science in the Nineteenth-Century Patent Office*, 108 ISIS: J. HISTORY SCI. 40, 40–41 (2017) (discussing an experiment from the 1850’s in which women worked alongside men in patent offices); Kara W. Swanson, *Getting a Grip on the*

challenge is separating out access to the patent system from underlying social and cultural constraints on invention.⁴⁰¹ The relationship, though, creates a potential feedback loop: limited opportunities to access the patent system may lead to lower numbers of patents, which in turn may lead to the lack of patents being used as a false justification for a lack of natural ability, which in turn may lead to fewer resources, and hence fewer opportunities.⁴⁰²

African-American inventors, too, have long been allowed to receive patents, assuming they met the patentability requirements and excluding a short period following the *Dred Scott* decision.⁴⁰³ But practical (and at times, formal) limitations on African-American inventors' ability to receive patents—particularly while enslaved—meant that there were few such inventors.⁴⁰⁴

Another narrative suggests the opposite: that patents provided a wedge for historically disadvantaged groups to challenge the status quo; to prove that they were the equals of the

Corset: Gender, Sexuality and Patent Law, 23 YALE J.L. & FEMINISM 57, 57–58 (2011) (providing a feminist analysis of patent law in part by using a patent case in which a female inventor attempted to gain a patent for a specific type of corset).

401. See Khan, *supra* note 397, at 358 (analyzing “whether improvements in married women’s property rights stimulated patenting by women inventors”).

402. See *id.* at 359 (“[L]ower inventiveness [in women] might also have resulted from laws that prevented women from engaging in business or professions.”).

403. See JIM HASKINS, OUTWARD DREAMS: BLACK INVENTORS AND THEIR INVENTIONS 19 (1991) (“[B]lack inventors were having a . . . material impact on society with their inventions, although only a few of them were able to receive patents; many were refused the recognition and rewards they deserved because they were slaves.”); PATRICIA MCKISSACK & FREDRICK MCKISSACK, AFRICAN-AMERICAN INVENTORS 33–34 (1994) (discussing the citizenship requirement for receiving a U.S. patent and the dramatic implications of the *Dred Scott* decision); Frye, *supra* note 396, at 182 (noting the impact of the *Dred Scott* decision upon African Americans’ ability to acquire patents).

404. See MCKISSACK & MCKISSACK, *supra* note 403, at 10; L.D. Cook, *Inventing Social Capital: Evidence from African American Inventors, 1843–1930*, 48 EXPLORATIONS ECON. HIST. 507, 509–11 (2011) (identifying forty-five African-American patent owners between 1843 and 1930, but observing that this number may be under-representative due to the lack of racial data kept by the Patent Office and fear that revelation of clients’ racial identity could have resulted in negative consequences).

dominant social group.⁴⁰⁵ Kara Swanson's current work draws upon the idea that patents were deployed as the tip of the wedge that allowed white women and African-American men to advance their own social causes.⁴⁰⁶ In this way, the formalized abstraction of a patent allowed an entire social group to share in the observable contributions of its members.⁴⁰⁷

VII. Concluding Thoughts

A question left open by this Article is the degree to which law has shaped the meaning of the credential, or the meaning of the credential has shaped the law. We see good arguments in both directions. On the one hand, the disputes and requirements of patent law have necessarily provided the structure for constructing narratives about what a patent means; on the other hand, patent law itself reflects social norms about the good and worthwhile.⁴⁰⁸ Our society happens to value practical innovation; not all societies do.

Yet, the role of law in defining the patent as a credential should not be ignored, nor its consequences dismissed. In the same way that Congress and the courts shaped society's view of patents in the nineteenth century, legislative changes to the patent law and judicial decisions will shape patents' function as credentials in

405. See Professor Kara Swanson *Explores How Suffragists and Civil Rights Activists Used the Patent System as a Political Resource*, U. IOWA, <https://ibl.law.uiowa.edu/article/professor-kara-swanson-explores-how-suffragists-and-civil-rights-activists-used-patent> (last visited February 19, 2019) ("19th-century women activists and turn-of-the-century African American activists realized they could use the patent system to further their causes.") (on file with the Washington and Lee Law Review).

406. See *id.* (noting that Professor Swanson's upcoming book *Inventing Citizens: Race, Gender, and the Patent System* will show "how two historically marginalized groups have utilized the patent system as a means of working toward social equality").

407. See *id.* ("Beginning in the 1880s, African American activists began publicizing and promoting black inventors to achieve a similar goal to that of the women inventors' movement: to dispel the notion that they were incapable of inventing and combat any illusions of biological inferiority.").

408. See, e.g., Lubar, *supra* note 167, at 939 (highlighting a shift in public opinion that occurred in the early nineteenth century when courts and the public began to favor patent rights as a valuable utilitarian tool).

the future. If we are right that patents serve as reasonably good proxies for the human characteristic of “inventor,” and that individuals seek patents for this reason, we should take this function of patents into account. On balance, the exclusionary function of patents will necessarily weigh heavily—and perhaps commandingly so—but a focus on the exclusionary function alone ignores the organicism and complexity of the real world.

In particular, changes to the law that take the human element out of patents are at odds with the role of patents as important credentials.⁴⁰⁹ For example, the 2011 America Invents Act made it easier for assignees—typically employers—to file in the name of the inventor.⁴¹⁰ Employee-inventors now have even less mandatory involvement with the patenting process than they had before, further eroding the relationship between the individual inventor and the patent.⁴¹¹ The America Invents Act also made it easier to “correct” named inventors.⁴¹² Whereas the law prior to the America Invents Act required the petitioner to declare that the mistake had been made “without deceptive intent,” the post-America Invents Act law eliminates that requirement.⁴¹³ Yes, firms’ patenting decisions are typically made by business interests and legal departments.⁴¹⁴ But, these legal changes perpetuate a long-term trend in American patent law away from the human-as-inventor and toward the business-as-inventor.⁴¹⁵

409. See Petherbridge & Rantanen, Kesan, *supra* note 107, at 232 (describing how “[a] firm with resources-and a large potential book of business [to] get its patent applications drafted more quickly than a firm without them”).

410. See *supra* note 107 and accompanying text (discussing the America Invents Act).

411. See *supra* note 120 and accompanying text (describing some of the changes the America Invents Act made to patent law).

412. See KASPER ET AL., *supra* note 121, at 7-33 to 7-34 (describing the elimination of “without deceptive intent,” but adding the caveat that the inequitable conduct doctrine continues to apply).

413. *Id.*

414. See Robert P. Merges, *The Law and Economics of Employee Inventions*, 13 HARV. J.L. & TECH. 1, 2 (1998) (describing how employers often control the patent process of inventions created by employees).

415. See Catherine L. Fisk, *Removing the ‘Fuel of Interest’ from the ‘Fire of Genius’: Law and the Employee-Inventor, 1830–1930*, 65 U. CHI. L. REV. 1127, 1129–34 (1998) (describing the shift towards giving business more control over patents as opposed to individuals); Merges, *supra* note 414, at 2 (“Most employees

These changes are arguably undesirable, particularly if one accepts the idea that patents are not merely credentials, but especially important credentials for society to offer to those who meet their requirements.⁴¹⁶ This position is even stronger when the exclusionary function of patents is not involved.⁴¹⁷ To be sure, it may be more efficient to take humans out of the picture altogether, but whether that outcome is normatively good (for human beings, at least) is questionable.⁴¹⁸

At the same time, there is some movement in the opposite direction. The Federal Circuit's holding in *Shukh v. Seagate Technology, LLC*,⁴¹⁹ allowing for standing to be established based on the reputational harm of not being named on the patent, is a decision that is particularly consistent with the credentialing function of patents.⁴²⁰

None of this suggests that patent law should *only* consider the credentialing function of patents in determining the proper shape of the law; that would be absurd.⁴²¹ Surely the conventional economic function of patents must be more important than the pat on the head that being named an inventor offers.⁴²² And yet, this Article suggests that by serving as a valuable credential, patents do provide some motivation beyond the purely exclusionary for inventors to invent.⁴²³ That motivation is in some sense, economic—functioning as a credential, a patent can show the value

do not hold property rights in the things they invent on the job.”).

416. See *supra* Part VI.B (describing the case for patents as credentials).

417. See *supra* Part VI.B (noting the importance of the exclusionary function of patents in their use as credentials).

418. See SILBEY, *supra* note 10, at 149–83 (noting that the importance individuals place on their patents and inventions often goes beyond a simple monetary interest).

419. See *Shukh v. Seagate Tech., LLC*, 803 F.3d 659, 663 (Fed. Cir. 2015) (allowing reputational injury to give rise to standing in a patent case).

420. See *id.* (“Today, we hold that concrete and particularized reputational injury can give rise to Article III standing.”).

421. See LANDES & POSNER, *supra* note 2, at 3 (describing intellectual property as “a large and growing part of the U.S. economy in general”).

422. See *id.* (noting that in 1998, “\$190 billion out of total [American] exports of \$690 billion” came from “high technology products”).

423. See *supra* Part VI.B (noting that patents can also have use as credentials).

of an individual to an employer or potential investor.⁴²⁴ But it also extends beyond the purely monetary in ways that may motivate flesh and blood human beings to seek out patents.⁴²⁵

In the end, what we offer here is a lens through which to view patents, one that moves away from the conventional focus on patents as exclusionary mechanisms. We close with an emphasis on our central thesis that patents are credentials—formal abstractions of a person’s inventive nature. It is precisely because of their formalization that patents have such power to capture mind and emotion.

424. See *supra* Part VI.B (noting how patents can be useful as identifiers of valuable employees).

425. See *supra* Part VI.B (noting how patents can provide approbation).