

Chapter IV. United States Patents

On the eve of creating the American patent regime in 1790 the American patent grant practice was still rather similar on both the practical and the conceptual level to the traditional English framework. In fact, it was much closer to the English origin than its contemporaneous British counterpart. Colonial and state patents were individual privileges granted as a result of a case-specific policy-political decision by government in the name of the public good. Although this aspect was beginning to change late in the eighteenth century, patents were also conceived and practiced not as creating “ownership” in an intellectual-informational entity called an “invention;” but rather as commercial privileges to exercise a “trade.” By the end of the nineteenth century American patents were thoroughly different creatures. Patents became governed by a general universal statutory regime administered by a special bureaucracy and by the courts of law. Within this system patents stopped being special privileges and became general rights, that is to say, they became a set of standard entitlements enjoyed by any person, as a matter of right, upon fulfillment of uniform criteria. Just as significantly, patents also came to be conceived as ownership of technologically innovative information rather than a commercial privilege to exercise a trade.

This chapter surveys in detail the transformation of American patent law and practice along these two dimensions. It argues that the change was neither sudden nor instantaneous, but rather occurred as a gradual and long development that stretched for the entire century. As for the first dimension of transformation from privileges into general rights, the chapter describes three main developmental stages. The first was the short-lived 1790 regime that had many of the characteristics of the traditional privilege framework. During the registration years between 1793 and 1836 the question of the character of the patent entitlement was handled and shaped mainly by the courts of law, most importantly through their crafting and application of the utility requirement. There existed different strands of thought within the legal community during this period, but the general trend was toward gradually increasing dominance of a legal-conceptual framework that constructed patents as general universal rights. Finally, the period from 1836 to the end of the century was characterized by a new statutory examination regime and the continuance of case-law developments that together eradicated all traces of the former special privileges scheme.

The second dimension of transformation involved no less dramatic changes. Patents were gradually reconceptualized as ownership of innovative

technological information rather than commercial privileges to exercise a certain economic activity. There were two correlated aspects to this change. First, there appeared a concept of the patent object of ownership as an informational entity known as the “invention.” Complex doctrinal-semantic structures developed for defining and conceptualizing this entity, as well as for debating its proper boundaries and practical implications. In this conceptual scheme “inventions” were created by “inventors.” Accordingly the second aspect of the process was the development within patent doctrine and discourse of a unique, previously non-existent concept of the inventor. The combination of all of these ingredients constituted the modern conceptual scheme of patents as radically different than that of the late eighteenth century.

A. From Patent Privileges to Patent Rights

At the inception of the federal patent regime the traditional character of English patents as case-specific discretionary privileges was in a state of flux and ambiguity. In Britain formal legal doctrine still treated patents as privileges, while social practices and views began to shift toward general patent rights.¹ The immediate American background was more unequivocal. Colonial and state patents were and firmly remained in 1789 discretionary privileges created by case-specific enactments.² Despite the common opinion in modern scholarship that the constitutional clause, which established the federal power to grant patents, created the “first modern patent regime,”³ the clause contained no indication whatsoever that the familiar patterns of the patent grant were changed. There is no evidence that at this point anybody contemplated a break with existing practices or even gave any thought to the issue.

The transformation of patents from privileges into the modern right framework did not occur at the constitutional moment, but rather through subsequent developments in legislation, case-law and administrative practices. It also did not happen overnight or abruptly. The first federal regime of 1790 introduced some significant developments but it remained

¹ See *supra* chapter 1, sec. I(C)(4)(b).

² *Id.*, sec. II.

³ B. Zorina Khan & Kenneth L. Sokoloff, History Lessons: *The Early Development of Intellectual Property Institutions in the United States*, 15 J. ECON. PERSP. 233, 235 (2001).

deeply rooted in the privilege framework. The transition to patent rights would take place gradually over the ensuing decades. Only in the second half of the nineteenth century would the privilege framework be completely supplanted by the modern model of patents as universal rights.

1. The 1790 Patent Act: An Early Examination System?

As was the case with copyright, the fact that in 1790 many did not understand the new federal grant power a break with familiar patterns of patents is most apparent in the period leading to the enactment of the first patent statute. During this period petitioners for federal patents and the first Congress did not show any sign of interpreting the constitutional clause as necessitating any deviation from existing practices. Thus, soon after Congress convened a trickle of individual patent petitions started to arrive. The trickle gradually grew into a flood.⁴ Petitioners, some of which explicitly referred to the constitutional clause, acted in patterns familiar from the state and colonial practices. Indeed, some of the early petitioners, like John Fitch, were veterans of those practices. Patent petitions to Congress detailed specific public benefits offered by the relevant inventions and pleaded for private laws granting case-specific exclusive privileges as “encouragements” or rewards. Sometimes the petitions bundled the request for exclusive privileges with pleas for other “encouragements,” such as the commission of an official printer⁵ or the financing of a scientific expedition.⁶ As far as petitioners were

⁴ For a survey of early petitions see: BRUCE W. BUGBEE, *GENESIS OF AMERICAN PATENT AND COPYRIGHT LAW* 131-141 (1967); Edward C., EDWARD C. WALTERSCHEID, *TO PROMOTE THE PROGRESS OF SCIENCE AND USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION, 1798-1836* 81-87, 115-116 (1998).

⁵ This request was included in Francis Bailey’s petition for his printing device. See Bugbee, *supra* note 4, at 140.

⁶ In his April 1789 petition for a patent for items utilizing his method of determining longitude based on magnetic variation John Churchman also petitioned for funding of an expedition to Baffin’s Bay. See *Proceedings in Congress during the Years 1789 and 1790, Relating to the First Patent and Copyright Laws*, 22 J. PAT OFF. SOC’Y 243, 244 (1940) [hereinafter *Proceedings*]. This particular request invoked some concerns that “encouragements” of this sort were beyond the power granted to Congress by the constitutional clause. See: Walterscheid, *supra* note 4, at 77-79; X DOCUMENTARY HISTORY OF THE FIRST FEDERAL CONGRESS OF THE UNITED

concerned, it seems, the only effect of the constitutional clause was the transfer of the familiar grant practice to the federal level. Congress did not seem to think otherwise. It did not reject the individual privilege petitions, rather it sent them for consideration on the merit by a special committee and in at least one case a private enactment was almost passed.⁷

At some point, for reasons that remain somewhat obscure,⁸ the House dealing with the various petitions decided to respond not by individual statutes but rather by enacting a general patent law.⁹ After a complex legislative process,¹⁰ including a joint patent-copyright bill in the early stages,¹¹ Congress passed the 1790 Act to Promote the Progress of the Useful Arts.¹² This, in itself, was an important development. For the first time the issuance of patents were governed by a general statutory regime. But did this new general regime change the traditional character of patents as case-specific discretionary privileges?

Right from the start of the federal regime a few voices began to argue that, in the words of John Fitch, “patents are now obtained as a matter of

STATES OF AMERICA, *Debates in the House of Representatives* 213, 214, 220 (L.G. De Pauw et al. eds. 1992).

⁷ This was the case of Francis Bailey’s petition. The House passed a private enactment granting him protection, but, as legislation of the general patent statute advanced, Senate failed to act and the private enactment was never passed. See Walterscheid, *supra* note 4, at 116-120.

⁸ The exact reason for the turn to a general patent law is unknown. One can speculate however, that the predicted volume of petitions on the national level could be expected to overwhelm Congress if dealt with individually. Prior to the decision Congress received a live demonstration of this problem in the form of its bombardment by individual patent petitioners. To this we can add the fact that the question of patents was closely related to that of copyright, and that in this field there were already established precedents of general laws both in Britain and the American states.

⁹ III DOCUMENTARY HISTORY OF THE FIRST FEDERAL CONGRESS OF THE UNITED STATES OF AMERICA, *House of Representatives Journal* 29 (L.G. De Pauw et al. eds. 1977); *Proceedings, supra* note 6, at 246.

¹⁰ For a detailed account of the legislative process see: Walterscheid, *supra* note 4, at 84-143.

¹¹ See *Id.*, at 87-105.

¹² Act of April 10, 1790, ch. 7, 1 Stat. 109 [hereinafter the 1790 Patent Act].

property and as a matter of right.”¹³ In 1792 Joseph Barnes went as far as arguing that “each American citizen has a constitutional right to claim that his property in the product of his genius, should be secured by the National Legislature.”¹⁴ Probably most known (and misleading to some later observers) was the 1793 argument of Rep. William Murray who during debate in the House framed the issue in terms of a sharp contrast between the English privilege-based system and the supposed American patent rights. In the words of the Annals of Congress:

“The minds of some members have taken a wrong direction, he conceived, from the view in which they had taken up the subject under its analogy with the doctrine of patents in England. There is a strong feature which distinguishes that doctrine in that country from the principles which we must settle in this. These patents are derived from the grace of the Monarch, and the exclusive enjoyment of the profits of a discovery is not so much a right as it is a privilege bestowed and an emanation of the prerogative. Here, on the contrary, a citizen has a right in the inventions he may make, and he considers the law but as the mode by which he is to enjoy the fruits.”¹⁵

All of this was a mix of wishful thinking, inaccuracies and rhetorical maneuvers.¹⁶ The main significance of such utterances is the indication that by the late eighteenth century there consolidated a crisp vision of and some ideological support for the patent-rights idea, that a century earlier was unthinkable. The legal framework and the administrative practices in the 1790s United States, however, were far from a full-blown patent-rights model.

¹³ Cited in F.D. Prager, *The Steamboat Interference 1787-1793*, 40 J. Pat. Off. Soc. 611, 633 (1958).

¹⁴ JOSEPH BARNES, TREATISE ON THE JUSTICE, POLICY AND UTILITY OF ESTABLISHING AN EFFECTUAL SYSTEM FOR PROMOTING THE PROGRESS OF USEFUL ARTS BY ASSURING PROPERTY IN THE PRODUCTS OF GENIUS 16 (1792). Barnes was James Rumsey’s attorney and was active both in promoting individual patent applications and in lobbying for statutory reform.

¹⁵ 3 ANNALS OF CONG. 855 (1793). For an example of taking this declaration at face value see: George Ramsey, *The Historical Background of Patents*, 18 J. PAT. OFF. SOC’Y. 7,16 (1936).

¹⁶ For a similar argument see: Walterscheid, *supra* note 4, at 168-170.

In some respects the 1790 Act did constitute a break with previous traditions and a beginning of a modern patent system. The Act consciously created a general framework for a patent regime. It was no longer the case-specific legislative grants of the states, nor even the peculiar English arrangement of defining by statute the outer-limits of an exception to a general ban on monopolies. Instead the Act defined in comprehensive terms the outline of a universal patent regime. It created standard substantive criteria for patentability. These criteria were rooted in the English patent law tradition under the Statute of Monopolies framework, but they also differed in some important respects.¹⁷ The Act also defined general uniform entitlements to be bestowed by all patents: “the sole and exclusive right and liberty of making, constructing, using and vending to others to be used the said Invention.”¹⁸ Moreover, standard administrative procedures for obtaining and granting patents were established. These were important moves toward generalization and standardization of patents.

Despite those significant developments the statutory framework stopped short of creating patent-rights. At the heart of the new arrangement stood a forum that came to be known as the Patent Board.¹⁹ It consisted of the Secretary of State; the Secretary of War and the Attorney General. The Act mandated that, provided that all patentability requirements were met, for any two of these “it shall and may be lawful... if they deem the invention or discovery sufficiently useful and important, to cause Letters Patent to be made out in the name of the United States.”²⁰

The legislative history fails to supply direct evidence on this point, but all indications are that this, in effect, instituted the patent board as an arm of the executive with full discretionary power regarding patent grants. In other words, the patent board stood in the shoes that in England were reserved to the crown. The 1790 statutory framework is often referred to as

¹⁷ The major substantive criteria defined by the statute were: patentable subject matter, priority of invention; novelty of the invention and enabling disclosure. For a detailed discussion of those requirement and their differences from English patent law see: Walterscheid, *supra* note 130, at 109-143.

¹⁸ 1790 Patent Act, at §1.

¹⁹ It was also referred to as the “Commissioners for the Promotion of the Useful Arts;” and the “Patent Commission.” See: P.J. Federico, *Operation of the Patent Act OF 1790*, 18 J. PAT. OFF. SOC’Y. 237, 238 (1936).

²⁰ 1790 Patent Act, at §1.

an “examination system.”²¹ But it was not at all an examination system in the modern sense. The patent board was not merely an administrative agency assigned the mere task of certifying the fulfillment of standard patentability criteria and the duty of issuing a patent when they were met. Instead it was an arm of the sovereign with full discretionary power to weigh public policies and make case-specific decisions whether to grant. The granting authority was no longer the legislature as in the states or the crown as in England, but the institution of the patent board was deeply rooted in the Anglo-American tradition of patents as particularistic discretionary policy decisions of the sovereign.

The 1790 Act said nothing about a right to receive a patent or a duty to issue one. It merely gave the board a discretionary power by providing that it “shall and may be lawful” to issue a patent in case the board finds that the invention is “sufficiently important and useful.” Moreover, there was no procedure or remedy that enabled petitioners to enforce their “rights” for a patent in cases of rejection. As far as one can tell there is no inkling of the patent-rights idea in the 1790 patent Act.

Furthermore, it seems implausible that anyone contemplated a forum with a personal constitution such as that of the board as having merely administrative responsibilities. The members of the board, specifically designated by the Act, were some of the highest ranking members of the executive. It seems unlikely that such officials were endowed with only the limited administrative task of applying and “examining” the fulfillment of standard patentability criteria. It is much more plausible that a forum composed of the Secretary of State, the Secretary of War and the Attorney General was envisioned as a body that represented the most important national interests and was vested with a substantive discretionary power to make policy decisions and grant patents as a form of state patronage.

Thus the framework of the 1790 Patent Act was a hybrid between the particularistic privileges of the traditional English and state grants and the modern patent-rights. It created a kind of a universalized privilege system. The Act established standardized substantive and procedural criteria for patentability as well as uniform patent entitlements. Yet, the grant itself remained a matter of discretionary privilege. Similar to the English post Statute of Monopolies arrangement, the patentability criteria only defined the outer limits of the discretionary grant power. Outside those limits no valid

²¹ See Khan & Sokoloff, *supra* note 3, at 236 n. 3; see also Bugbee, *supra* note 4, at 144.

patent could be issued. Within them the sovereign's power to grant remained fully discretionary and no enforceable individual right to receive a patent existed.

What about the actual grant practices that created the social experience of patents? Were patents regarded and granted as "rights" or as "privileges" by petitioners and by the board during the short years of its operation between 1790 and 1793? Unfortunately, the sources available for reconstructing the exact practices and the guiding concepts of the patent board are limited.²² Nevertheless, when one assembles together the available pieces it seems that the administrative practices of the patent grant reflected a self-understanding of the Patent Board as a body with full discretionary power, not only to "examine" the satisfaction of general patentability requirements, but also to engage in case-specific assessments of the relevant social benefits and the desirability of each grant.

To begin with, it is clear that patents were not granted on demand, and that many petitions were rejected.²³ Since little is known about the board's reasons for rejecting patent petitions- in fact it is doubtful whether such reasons were issued- there is also no direct evidence of rejection on the basis of the board's general discretion or the "sufficiently useful and important" statutory cause.²⁴ Yet the fragmentary documents in existence convey a clear understanding by all persons involved that the board exercised broad discretionary power. Nathan Read, for instance, conducted a long correspondence with the board regarding his steam-engine.²⁵ Read's basic

²² A 1836 fire in the Patent Office destroyed all original records. A few records relating to early patents were later reconstructed from various sources. See, B.M. Federico, *The Patent Office Fire of 1836*, 19 J. PAT. OFF. SOC'Y 804 (1937).

²³ Fifty seven patents were issued under the 1790 Act. It is unknown how many petitions were rejected. However, on the basis of a 1792 internal State Department report Federico points at a high rejection rate. The report listed 114 patent applications under active consideration at the time (hence it is likely that the total number was higher). A comparison to the total of 57 patents granted under the Act gives a general idea as to the rejection rate. Federico, *supra* note 19, at 244.

²⁴ See Walterscheid, *supra* note 4, at 174.

²⁵ The correspondence and related documents are reprinted in DAVID READ, NATHAN READ: HIS INVENTIONS OF THE MULTI-TUBULAR BOILER AND

stance, reflected in his letters, was that “[h]ow far my improvements merit an exclusive privilege, the Honorable Board will judge.”²⁶ Six months later Read was informed by Hennery Remsen- the board’s clerk- that “The Commissioners at their meeting in April, agreed to grant patents to all the claimants of steam-patents.”²⁷

The board’s discretionary power was not just a matter of attitudes and humble phrasing of petitions. Probably the best evidence in existence about the character of the patent board’s work is in the few complete patent petitions that survived from this period. In 1790 William Pollard petitioned for a patent in what he argued to be an improvement on Arkwright’s spinning machine.²⁸ Pollard’s petition is remarkable because it is overwhelmingly devoted to describing in detail and exalting the substantial social benefits offered by his invention to the United States. He began his argument by referring the board to a “An account of the Cotton Mills in Great Britain & an Estimate of the Cotton Manufactory of that Country”- a list of statistics that demonstrated the dramatic increase in productivity in the years 1781-1787, presumably attributable to Arkwright’s machine. The following prose followed:

“... in the Southern states where young negroes & weakly disabled Men & Women are at present a [Burden?] to their owners they may in these cotton mills be employed to advantage, and the same observations may be extended to the poor white inhabitants in all our large towns... One girl or boy from eight to fourteen years of age will tend from 30 to 50 spindles, & it is necessary to have man or woman to every ten children, to keep order no exertion of strength is required in the spinning apartment... Your

PORTABLE HIGH-PRESSURE ENGINE, AND DISCOVERY OF THE TRUE MODE OF APPLYING STEAM-POWER TO NAVIGATION AND RAILWAYS (1870).

²⁶ *Id.* at 53. Nathan Read to Thomas Jefferson, January 8, 1791.

²⁷ *Id.* at 115. Hennery Remsen to Nathan Read, July 1, 1791.

²⁸ The petition is available at the National Archive. See Nat’l Archives., Records of the Patent Office, Record Group 241, Copies of Specifications for “Name and Date” Patents, Volume I, 1790-1803 [hereinafter PATENT RECORDS]. It is quite possible that Pollard did not invent anything and that he was deploying the “improvement” argument as a thin cover over a petition for a patent of importation for Arkwright’s design. Walterscheid, *supra* note 4, at 164, n. 61.

Petitioner therefore prays that in consideration of the expense & trouble he hath been at... so as to perfect a machine which promises such extensive advantages to these United States... that your honorable board will be pleased to grant him... the sole and exclusive rights and liberty of making constructing & using of & of vending to others... for fourteen years.”

To this Pollard added a promise to submit his prices to inspection by the board. In 1792 the relentless Pollard, who received a patent for his machine in December 1791, wrote Jefferson and suggested that the board (and possibly also “our worthy President”) would visit and see “to what extent it may be carried, and its usefulness in such a Country as ours.”²⁹

Similarly, John Fitch devoted the bulk of his June 1790 patent petition for his steamboat³⁰ to demonstrating the “great immediate utility and the important advantages which would in future result therefrom not only to America but to the world at large.” Fitch supplied long descriptions of the public benefits that were expected to follow from his invention including “increased value [that] will be given to the western territory” due to the fact that “[t]he western waters of the United States, which hitherto been navigated with great difficulty and expense may now be ascended with safety, conveniency, and great velocity.” To that he added “the great saving in labour of men and horses, as well as expense to the traveler.” Fitch’s petition was thus in the vein of the traditional Anglo-American grant petitions. It offered specific public benefits and appealed to the sovereign’s discretionary power to grant, as Fitch put it, “public countenance and encouragement.”

Oliver Evans in his 1792 petition was more succinct but he too made a point of arguing that “[t]hese engines are of such simple Construction that they may with Convenience be applied to move any kind of machinery that requires either Circular or Vibrating motion And to the propelling of land Carriages with heavy burdens in an easie cheap an powerful manner.”³¹ A

²⁹ 24 THE PAPERS OF THOMAS JEFFERSON 126 (John Catanzariti ed. 1990). William Pollard to Thomas Jefferson June 26, 1792. [hereinafter JEFFERSON PAPERS]

³⁰ The petition is reprinted in WILLIAM THORNTON, SHORT ACCOUNT OF THE ORIGIN OF STEAM BOATS 13-14 (1814).

³¹ The petition of Oliver Evans is reprinted in 24 JEFFERSON PAPERS, *supra* note 29, at 683-684. Evans never received a patent for this particular invention.

handful of petitions from the period immediately following the transition to the new 1793 patent regime show similar tendencies of describing in detail the public benefits offered by the invention.³² Although under the 1793 new framework the board and its ex-ante discretionary power were gone,³³ the inertia of the old system continued to influence petition phrasing for a while.

In short, petitioners' view of the board and their dealings with it were clearly saturated with the traditional privilege concept. Their petitions reflect the assumption that the board's role was to weigh the public benefits of their invention and use its discretionary power in deciding whether it merited special protection.³⁴ It is possible that the board spent some time on certifying

³² Eli Whitney's cotton gin patent petition from June 1793 mentions that the machine "may be turned by horses or water with the greatest ease" and that it "requires no other attendance than putting the Cotton into the hopper." "One of its peculiar excellencies," it goes on to elaborate, "is that it cleanses the kind called green seed cotton almost as fast as the black seed." And it ends with the familiar promise of progress: "[i]f the machinery is moved by water, it is thought it will diminish the usual labour of cleaning the green seed cotton at least forty nine fiftieths." Unnumbered Cotton Gin Eli Whitney, June 20, 1793, in PATENT RECORDS, *supra* note 28. Jacob Perkins's 1795 petition for a nail making machine promises that "much manual labor may be saved," and goes on to explain, echoing Pollard's petition, that "one boy of ten or twelve years of age can with ease supply six Engines so that the labor of one Boy can cut three thousand Nails pr minute." Unnumbered, Machine for Making Nails, Jacob Perkins, in *id.*

³³ See *infra*, sec. A(2).

³⁴ One especially interesting episode involved the induced immigration of William Pearce. Pearce an English artisan, residing in Ireland at the time, was enticed to immigrate to the United States by one Thomas Digges. In 1791 Digges wrote Jefferson regarding a subject of "importance to the Manufactures of our country." He reported that Pearce being disappointed with lack of public patronage in his homeland "has finally determined to go for America with his Invention." Digges suggested that Pearce and his partner McCabe would receive "a Patent, or such exclusive Benefits as the Laws of America provide for Artists who furnish new and usefull inventions" and attached detailed descriptions of Pearce's looms. Digges further promised that "with the aid of such Machinery and mill work as Pearce's, He will make wood and water, a vast substitute for manual Labor." Thomas Digges to Thomas Jefferson, April 28 1791. 20 JEFFERSON PAPERS, *supra* note 29, at 313-322. Pearce eventually arrived to America and was supported and employed by Tench Coxe and Alexander Hamilton. Although a patent

the statutory patentability criteria such as novelty or priority of invention. The standard patent grants ended with a formal certification of the Attorney general that the invention meets all the statutory criteria.³⁵ On the other hand, it seems that the board purposefully bypassed deciding the most significant priority dispute brought before it.³⁶ At any rate, the bulk of the available materials from the board's work revolve not around certification of patentability requirements but rather around the usefulness and actual public

petition was drafted on his behalf, he apparently never received a patent. See DORON, BEN ATAR, *TRADE SECRETS: INTELLECTUAL PIRACY AND THE ORIGINS OF AMERICAN INDUSTRIAL POWER*, 143-147 (2004). What is most remarkable about this story is its striking resemblance to the old origins of English patents. Early English patents were often used to entice foreign craftsmen to immigrate and bring their skill and knowledge with them. Jefferson was apparently not enthusiastic about the whole scheme that violated British legislation designed to prevent the leak of technological knowledge abroad. Nonetheless, the correspondence between all persons involved, including Jefferson, Washington and Hamilton seems to suggest that all of them took for granted the basic notion that patents could and indeed were designed to function in this way as discretionary tools in the hands of government seeking to promote specific initiatives to further the public good or the country's "manufacture." The editor of Jefferson's papers refers to a draft of a patent petition written by Tench Coxe on behalf of Pearce. 20 JEFFERSON PAPERS, *supra* note 29, at 322. Unfortunately neither the Jefferson's papers editorial board nor the Pennsylvania historical society that holds Coxe's papers were able to locate this document.

³⁵ The more or less standard phrasing was: "I do hereby certify that the foregoing patent were delivered to me in pursuance of the Act, entitled 'An Act to promote the progress of useful Arts' that I have examined the same, and find them comfortable to the said Act." This particular certification is from Francis Bailey's 1791 patent in *PATENT RECORDS*, *supra* note 28. It is hard to judge whether this was mainly a formality or whether any real investigation of those requirements was routinely undertaken by the board.

³⁶ The board was faced with conflicting claims to priority regarding steamboat related inventions by four inventors: John Fitch, Nathan Read, James Rumsey and John Stevens. Although opinions differ, it seems that the board ultimately avoided the question by granting patents to all four inventors, leaving issues of coverage and potential conflicts to be decided by the courts. See Walterscheid, *supra* note 4 at 184-194. For an argument that the board actually decided the priority question see: Federico, *supra* note 19, at 249.

benefits expected to follow from specific inventions. There is no shred of evidence of anyone assuming that he could “demand” a patent as a right, much less evidence of anyone trying to turn to the courts in order to force the board to grant a patent. All available evidence supports the conclusion that the patent board functioned as the embodiment of the sovereign exercising full discretion in the grant of ad-hoc special privileges on the basis of particular policy decisions.

In other respects the grant’s administrative practices broke with previous patterns of patents as case-specific privileges. There appeared many signs of universalization and standardization. It appears that the patent grants were phrased in a rather uniform form right from the start. The exclusive privileges awarded were also standard and they closely adhered to the statutory definition. Even regarding issues where the board had discretionary power under the statute, uniformity seems to have been the norm. Thus the duration of all grants was that of the statutory cap- fourteen years. Unlike the colonial and state grants, the federal patents contained no case-specific limitations, provisions or conditions and no working clauses. Finally, it appears that the board began developing its own uniform rules of patentability to consistently govern its decisions even within the discretionary zone defined by the statute.³⁷ To what degree such self-imposed uniform rules existed and were consistently applied up to 1793 is unclear;³⁸ but to the extent that these rules governed the decisions of the board, they further blurred the line between the old privilege regime and the emerging right framework. In short, the administrative grant practices went a long way toward standardization, but the basic privilege framework was not abandoned. Like the formal statutory framework, patent grant practices under the Patent Board regime constituted patents as a sort of universalized privileges.

The short-lived 1790 federal patent regime was not an equivalent of an examination system under the modern framework of patent rights. Rather, all indications of both the formal legal and institutional framework and the actual administrative practices are that it was an intriguing hybrid. The

³⁷ In 1814 Jefferson wrote that “the patent board, while it lasted, had proposed to reduce their decisions to a system of rules.” But he also added that “[t]hey had done but little when the business was turned over to the courts of justice.” 14 THE WRITINGS OF THOMAS JEFFERSON 174 (A.A. Lipscomb ed. 1904) [hereinafter: JEFFERSON WRITINGS]. Thomas Jefferson to Thomas Cooper, August 25, 1814.

³⁸ See Walterscheid, *supra* note 4, at 183.

statutory framework and the administrative practices moved significantly toward standardization and universalization. Yet, at the last analysis, patents still remained case-specific discretionary privileges.

2. The Registration Years 1793-1836

In 1793 after less than three years the 1790 patent Act was replaced by a fundamentally different regime. Complaints from petitioners about delays and difficulties in obtaining patents may have played some part, but it appears that the main drive behind the change came from the members of the Patent Board who were overwhelmed with the burden of patent applications.³⁹ The sheer magnitude of applications quickly made impracticable the traditional scheme in which high-ranking members of government weigh and decide each grant petition as a discretionary policy decision. The pendulum swung all the way to the other end. The essential difference of the patent Act of 1793⁴⁰ was that it created a registration system, that is to say, the governmental authority in charge of issuing patents was now allocated a minimal role. Patents were now to be issued with no governmental exercise of discretion regarding the public desirability of the invention or of the privilege grant. Not less significantly, however, there was also no examination process in which a governmental agency was to certify standard patentability criteria. Instead the ex-ante governmental role was limited to issuing patents on demand whenever a few procedural requirements were followed and the petitioner “alleged” that he met the substantive patentability criteria.

Although the text of the 1793 Act still mandated simply that “it shall and may be lawful for the... Secretary of State to cause Letters Patent to be made out”⁴¹ it was clear to everyone involved in the legislative process and in the operation of the new regime that patents would be issued on demand upon the satisfaction of a few procedures. Gone was the Patent Board and consideration of patent petitions by top-rank officials. Under the 1793 regime

³⁹ *Id.* at 195. In a 1792 letter Jefferson complained about the time demands of his patent duties that resulted in him being “oppressed beyond measure,” and expressed his wish to be relieved of those duties. 6 THE WORKS OF THOMAS JEFFERSON 459 (P.L. Ford ed. 1904). Thomas Jefferson to Hugh Williamson, April 1, 1792.

⁴⁰ Act of Feb. 21, 1793, ch. 11, 1 Stat. 318 [hereinafter 1793 Patent Act].

⁴¹ *Id.*, at §1.

patents were handled by clerks of the State Department, and since 1802 by the Patent Office that was established by Madison as a subdivision of the department.⁴² Despite attempts by the dominant head of the Patent Office during this period- William Thornton- to assert some examination powers and impose requirements not explicitly mentioned in the statute,⁴³ the practice under the 1793 regime was one of registration. The Patent Office exercised no powers of examination. As Thornton himself put it in a 1811 pamphlet instructing potential patent applicants: “there is at present no discretionary power to refuse a patent.”⁴⁴ Years later in 1836 a congressional select committee observed that “[t]he granting of patents... is but a ministerial duty. Everyone who makes application is entitled to receive a patent.”⁴⁵

Despite the swing of the pendulum all the way to issuance on demand, the 1793 framework was not an unequivocal move to patent rights. Doing away with any investigation and discretionary powers at the issuance stage did not decide the question of patents as right or privileges. It merely postponed it. In other words, the 1793 system shifted the real gravity center to ex-post review of patents in the courts. While the issuing authority was deprived of any meaningful role, all substantive decisions regarding patents were now to be made by the courts whenever a conflict was laid at their doors. Ironically, while de jure the previous 1790 regime was closer to the British one, the 1793 framework resembled the de facto situation in Britain, where by that time patents were granted in practice with little examination or discretion and all patentability questions were deferred to the courts. Members of Congress, it appears, were aware of the parallel. As Rep. Williamson explained the proposed Act was “an imitation of the Patent System of Great Britain” and was meant to “circumscribe the duties of the deciding officer within very narrow limits.”⁴⁶

⁴² Walterscheid, *supra* note 4, at 253-254.

⁴³ *Id.* at 254-257, 259-268.

⁴⁴ WILLIAM THORNTON, PATENTS (1811), reprinted in 6 J.PAT.OFF.SOC’ Y 98 (1923).

⁴⁵ John Ruggles, Select Committee Report on the State and Condition of the Patent Office, S. Doc. No. 228 (1st. Sess. 1836), reprinted in *1836 Senate Committee Report*, 18 J. PAT. OFF. SOC. 853 (1936) [hereinafter SELECT COMMITTEE].

⁴⁶ 3 ANNALS OF CONG. 855 (1793). In 1813 Jefferson made a similar observation, although with a somewhat less favorable view of the change:

This left the courts in a key position in the system. Ex-post challenges in the courts to the validity of patents became the only stage in the system where the standard patentability criteria were interpreted and applied regarding specific patents. Moreover, as the only institution regulating the validity of patents, courts found themselves in a position to shape the basic model of a patent as a privilege or a right. Since the Statute of Monopolies the character of patents as case-specific discretionary privileges had two aspects: the ex-ante issuance process; and the patentability criteria, many of which were triggers to particularistic policy determinations, especially in ex-post review proceedings.⁴⁷ The transition to a registration system eliminated the first aspect, but it left open the question of whether the rules of ex-post review shaped by courts would constitute patents as standardized rights or as discretionary policy-based privileges. Would courts limit themselves to the role of interpreters and enforcers of standard patentability criteria, or would they function like the eighteenth century Privy Council⁴⁸ as a forum for general open deliberation of the public desirability of specific grants? To some extent the institutional character and self ethos of the bodies put in charge- the courts of law- already decided the question. But only to some extent. Courts and judges would battle over the nature of patents and the court's role in their review for the next half a century, with the patent-rights vision winning the day only gradually and not without resistance.

3. Patents in the Courts: The Rise and Fall of Utility

When after 1793 courts became the main institutions wielding the power to review and shape patents at least some of the judges saw themselves as entering the shoes of the patent board. From this perspective the institutional transition had little effect on the character of patents as privileges. Whereas before the board considered petitions on a case-specific basis and weighed considerations of public policy and utility, courts would

“Instead of refusing a patent in the first instance, as the board was authorized to do, the patent now issues of course, subject to be declared void on such principles as should be established in courts of law... England had given it to her judges, and the usual predominancy of her examples carried it into ours.” Thomas Jefferson to Isaac McPherson Aug. 13, 1813. 13 JEFFERSON WRITINGS, *supra* note 37, at 336.

⁴⁷ See *supra* chapter 1, sec. I(B)(2)(ii).

⁴⁸ See *id.* sec. I(C)(2).

now carry out the same function through ex-post challenges to validity of patents.

Judge Van Ness gave a lucid account of this vision in the 1821 *McGaw v. Bryan*.⁴⁹ Van Ness contrasted the American patent system with the English one and with the 1790 regime. In England, he explained, the proceedings for obtaining a patent are “tedious” and involve ample opportunity for challenging the patent and considering its merit (by this time this was true mainly as a matter of formal law rather than actual practice).⁵⁰ Similarly the 1790 American regime created the Patent Board and “made the duty of these officers to inquire into the utility and importance of the proposed patent before it issued.”⁵¹ But under the new system, he explained, “it seems to me equally required by considerations of expediency and public safety that when all preliminary inquires are abolished, and monopolies and patents freely and gratuitously given to all who present themselves in the character of inventors or discoverers there should be some easy and summary mode of investigating their merit and deciding on their validity.”⁵²

The new power in charge of reviewing patents, Van Ness concluded, was a judge invested with “a plenary supervision over the legality of patents” and with “a discretionary power.”⁵³ In this account the courts were now entrusted with the exact role that was carried out in Britain by organs of the crown, and in the 1790 American regime by the Patent Board. In 1818 Joseph Ingersoll, arguing before the Supreme Court, repeated the same argument (with one significant difference) when he argued that “[t]he jury are substituted for the board, which, under the first law, was to decide whether the supposed invention was ‘sufficiently useful and important’ for a patent.”⁵⁴

⁴⁹ *McGaw v. Bryan*, 16 F. Cas. 96 (S.D.N.Y. 1821)

⁵⁰ *Id.* at 98.

⁵¹ *Id.* at 102.

⁵² *Id.* at 99.

⁵³ *Id.* The term “discretionary power” was used by Van Ness in regard to the judges of the federal district courts. According to one of the proposals, debated during the legislation of the 1793 Act, these judges were to have the power to issue patents. Van Ness’ argument was that the ex-post review power of the court that was ultimately adopted was the equivalent of that function.

⁵⁴ *Evans v. Eaton*, 16 U.S. 454, 488 (1818).

Van Ness and Ingersoll took for granted that the role of courts (either judge or jury) was to exercise discretion equivalent to that of the Patent Board, except for the fact that it was to be invoked in ex-post challenges. This assumption was only natural, when courts filled the void left by the abolition of the board. In the traditional framework, someone had to make such case-specific public policy decisions and use discretion in the grant of privileges.

At the same time, however, there emerged an opposite view that strove to shape the courts' power over patents in a thoroughly different image. While Van Ness and Ingersoll saw courts from the traditional framework perspective as representatives of the public in charge of examining the social desirability of each patent; the new voices presented the courts as mere regulators of general patentability norms and advocated leaving all questions of social value to the market. As observed by George Armstrong,⁵⁵ the main battleground for those conflicting views was the interpretation and application of the statutory requirement that the invention be "useful,"⁵⁶ that came to be known as the utility requirement.

One line of utility cases dovetailed with the self-understanding of courts as the new locus of the traditional discretionary power over patent grants. The utility requirement was the main doctrinal valve through which courts applied the power to review patents on the basis of their discretionary assessments of the net public effects of specific inventions. Thus when in the 1810 *Whitney v. Carter*⁵⁷ Eli Whitney's cotton gin patent was challenged testimonies were produced "to prove the origin and progress of his invention."⁵⁸ When arguing the utility question Whitney's counsel, rhetorically stated that "the court would deem it a waste of time to dwell long on this topic" and went on to an extensive "dwelling" of his own. He provided the following detailed description of the public benefits of the cotton gin:

⁵⁵ George M. Armstrong Jr., *From the Fetishism of Commodities to the Regulated Market: The Rise and Decline of Property*, 82 NW. L. REV. 79, 91-96 (1987).

⁵⁶ See 1790 Patent Act, §1; Patent Act of July 4, 1836, ch. 357 §7, 5 Stat. 117, 120 [hereinafter 1836 Patent Act].

⁵⁷ 29 F. Cas. 1070 (C.C.D.Ga. 1810).

⁵⁸ *Id.* at 1071.

“The whole interior of the Southern states was languishing, and its inhabitants emigrating, for want of some objects to engage their attention, and employ their industry, when the invention of this machine at once opened views to them which set the whole country in active motion. From childhood to age, it has presented us a lucrative employment. Individuals who were depressed with poverty, and sunk in idleness, have suddenly risen to wealth and respectability. Our debts have been paid off, our capitals increased, and our lands have trebled in value. We cannot express the weight of obligation which the country owes to this invention; the extent of it cannot now be seen. Some faint presentiment may be formed from the reflection that cotton is rapidly supplanting wool, flax, silk, and even furs, in manufactures, and may one day profitably supply the want of specie in our East-India trade. Our sister states also participate in the benefits of this invention; for, besides affording the raw materials for their manufactories, the bulkiness and quality of the article afford a valuable employment for their shipping.”⁵⁹

The reported cases of the time indicate that this was not an exception and that when the utility question was discussed courts were often provided with substantive evidence and arguments regarding the social benefits and effects of the relevant inventions.⁶⁰

Two sets of related ideas were bundled together in this approach. First, the utility requirements served as the main instrument that enabled courts, at least to some extent, to carry out the traditional role of the sovereign in granting patents. Substantive utility inquiries were in fact, a somewhat fossilized form, of government using its plenary discretion in ascertaining the public interests involved and allocating “encouragements” accordingly on a particularistic basis. Second, this understanding of utility

⁵⁹ *Id.* at 1072.

⁶⁰ See for example: *Langdon v. De Groot*, 14 F. Cas. 1099 (S.D.N.Y. 1822); *Stanley v. Whipple*, 22 F. Cas. 1046, 1048 (C.C.D.Ohio 1839). In his 1830 treatise Willard Phillips referred with disdain to “some of the earlier cases in Pennsylvania and Massachusetts” in which substantive inquires into the merits of inventions were undertaken. WILLARD PHILLIPS, *THE LAW OF PATENTS FOR INVENTIONS* 137 (1837).

was also embedded in traditional concepts of intrinsic value of resources⁶¹ and objective “fair-price” of commercial exchanges.⁶²

The 1822 *Langdon v. De Groot* exemplified the interaction of those ideas in the substantive utility mode of thought. In this case the court upheld a trial court’s instruction to the jury that plaintiff’s invention was not useful.⁶³ Judge Livingston relied on the concept of patents as discretionary grants when he explained that each invention must “be beneficial to the community” and offer “benefits [that] are of sufficient consequence to be protected by the arm of government.”⁶⁴ When he applied this requirement to the invention at hand- an attractive wrapper for cotton wool products- Livingston’s reliance on a pre-market conception of value became apparent. His conclusion was that there were no “advantages which the public are to derive from it.” When faced with the objection that the public was willing to pay “an enormous additional price” for the new warping, he responded that this “extravagant premium” was exactly what the consumer who “literally receives no consideration” had to be protected against.⁶⁵ Utility, in other words, was to be evaluated by the court that was entrusted with protecting the public interest and not by the market. This was exactly the point of fusion between the two sets of ideas. In a worldview that refused to handover completely the measure of public utility to the market the court occupied the role of a discretionary arbiter of intrinsic social value. In the words of Livingston:

“When congress shall pass a law, if they have the right so to do, to encourage discoveries by which an article, without any amelioration of it, may be put off for a great deal more than it is worth, and is actually selling for, it will be time enough for courts to extend their protection to such inventions”⁶⁶

⁶¹ For the idea of intrinsic value and its gradual replacement by that of market value in nineteenth century economic and political thought see: Armstrong, *supra* note 55, at 86-91.

⁶² See MORTON J. HORWITZ, *THE TRANSFORMATION OF AMERICAN LAW 1780-1860* 161-173 (1977).

⁶³ Part of the controversy in the case was not over the standard of utility but rather regarding the adequate decider of such questions: judge or jury.

⁶⁴ See *Langdon*, 14 F. Cas. at 1100.

⁶⁵ *Id.* at 1100-1101.

⁶⁶ *Id.* at 1101.

The conservative interpretation of utility conserved some of the traditional character of patents as privileges and the ideological framework that supported it. But parallel to this interpretation, a conflicting line of cases appeared that challenged its fundamental premises. Joseph Story in a series of patent decisions⁶⁷ was the leader of this new line. In the 1817 *Lowell v. Lewis* Story first deployed his new conception of utility. He vigorously rejected defendant's argument that the invention offered no public benefits because it was inferior to other similar devices already in use. Under the conservative utility framework this was a rather common argument, but Story launched an all out assault on this "broad and sweeping doctrine." "All that the law requires," Story explained, "is, that the invention should not be frivolous or injurious to the well-being, good policy, or sound morals of society. The word 'useful,' therefore, is incorporated into the act in contradistinction to mischievous or immoral." Story's telling examples of a non-useful invention were "a new invention to poison people, or to promote debauchery, or to facilitate private assassination."⁶⁸

Despite the role still allocated to the judge as the guardian of society's moral standards,⁶⁹ Story's new formula was a frontal attack on the two basic premises of the traditional view of utility. Courts under the new interpretation, developed by Story, were limited to ascertaining whether an invention crossed the extreme line of being "mischievous" or "noxious." They lost their role as the traditional discretionary arbiters of the social benefits of inventions, and of the extent to which they deserved governmental privileges. As Story put it "whether it be more or less useful"⁷⁰ was irrelevant. Who then shall judge the value of inventions? Here Story explicitly appealed to a market-conception of value, very similar to the one that already started to appear in late eighteenth century patent thought in

⁶⁷ *Lowell v. Lewis*, 15 F. Cas. 1018 (C.C.D.Mass. 1817); *Bedford v. Hunt*, 3 F. Cas. 37 (C.C.D.Mass. 1817); *Earle v. Sawyer*, 8 F. Cas. 254 (C.C.D.Mass. 1825).

⁶⁸ *Lowell*, 15 F. Cas. 1019.

⁶⁹ It is probably this bundling of the ruling with the role of the judge as the guardian of society's moral standards that misled George Armstrong in respect to *Lowell*. Armstrong, who keenly identified the significance of the transformation of the utility requirement, mistook the decision as being representative of the traditional conservative line of cases. See Armstrong, *supra* note 55, at 92.

⁷⁰ *Lowell*, 15 F. Cas. 1019.

England.⁷¹ “If its practical utility be very limited, “ Story said, “it will follow, that it will be of little or no profit to the inventor; and if it be trifling, it will sink into utter neglect.”⁷² In Story’s new vision the court lost its role as the discretionary allocator of reward in the name of the public interest, and the market rose as the only measure of value.⁷³

The conflict between these two lines of cases continued for a while, Treatise writers immediately and uniformly adopted Story’s views. In 1837 Phillips, the writer of the first systematic American treatise on patents,⁷⁴ declared that “the construction of Mr. Justice Story is now universally adopted in the United States.”⁷⁵ He went on to elaborate the new orthodoxy according to which “it is not the province of the court to go into the question of the extent of degree of usefulness”⁷⁶ Earlier he deployed the new market conception of value. He explained that a patent is the “most equitable” reward because invention “is graduated according to its utility in the public estimation” and the inventor “is saved from mistakes, favoritism and prejudices of censors.”⁷⁷

But the acceptance of Story’s line was less than “universal” in the antebellum courts. There are many examples of courts that continued to demand evidence of the actual utility of patented inventions, and conducted

⁷¹ See *supra* Chapter 1, sec. I(C)(4)(ii).

⁷² *Bedford*, 3 F. Cas. 37.

⁷³ Story would launch an almost identical attack on the originality requirement in copyright law. See: *Gray v. Russell*, 10 F. Cas. 1038 (C.C.D.Mass. 1839); *Emerson v. Davies*, 8 F. Cas. 615 (C.C.D.Mass. 1845).

⁷⁴ Thomas Fessenden’s 1810 *Essay on the Law of Patents*, though it aspired to “give a synthetical view of the Law of Patents for New Inventions,” was far from being a comprehensive treatise. It consisted mainly of long abridgments and quotations from well known British patent cases. See THOMAS G. FESSENDEN, AN ESSAY ON THE LAW OF PATENTS FOR NEW INVENTIONS 42 (1810).

⁷⁵ Phillips, *supra* note 60, at 142. See also GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS IN THE UNITED STATES OF AMERICA 37 (1854 2nd ed.).

⁷⁶ Phillips, *supra* note 60, at 142.

⁷⁷ *Id.* at 20.

substantive assessments of the public benefits involved.⁷⁸ Still, the standard was consistently eroding and even courts that adhered to the traditional attitude were moving away from the posture of earlier self-assured judges that saw themselves as taking over the discretionary role of the Patent Board. Some decisions declared that it is enough if the invention is superior to or cheaper from existing comparable products and methods.⁷⁹ Others made a point of explaining that a small amount of objective social value or utility would be enough.⁸⁰

At the same time the new line of cases whose foundation was laid by Story was gathering momentum. An increasing number of decisions refused to permit any substantive investigation into the degree of utility as long as it was not established that the invention fall within the forbidden zone of being immoral.⁸¹ This trend expressed the growing reluctance of courts to play the

⁷⁸ See for example *Stanley v. Whipple*, 22 F. Cas. 1046, 1048 (C.C.D. Ohio 1839); *Parker v. Stiles*, 18 F. Cas. 1163, 1175 (C.C.D. Ohio 1849); *Many v. Sizer*, 16 F. Cas. 684, 685-686 (C.C.D. Mass. 1849); *Wilbur v. Beecher*, 29 F. Cas. 1181, 1185 (N.D.N.Y. 1850); *Judson v. Moore*, 14 F. Cas. 17, 20-21 (C.C.S.D. Ohio 1859); *In re Corbin* 6 F. Cas. 538 (C.C.D.C. 1857); *Colt v. Massachusetts Arms Co.* 6 F. Cas. 161, 165 (C.C.D. Mass. 1851); *Carr v. Rice*, 5 F. Cas. 140, 145 (S.D.N.Y. 1856); *Wayne v. Holmes*, 29 F. Cas. 473, 476 (C.C.S.D. Ohio 1856). In *Page v. Ferry*, 18 F. Cas. 979, 982-983 (C.C.E.D. Mich. 1857) the court applied Story's formula, but proceeded to bend its spirit by declaring that "new inventions in regard to some trifling article or dress, such as hoops, or crinolines" are "frivolous" and hence unpatentable.

⁷⁹ See *Carr v. Rice*, 5 F. Cas. 140, 145 (S.D.N.Y. 1856) ("it is sufficient that if it produces an improved article, at less cost, or with more expedition, than other known methods"); *Wayne v. Holmes*, 29 F. Cas. 473, 476 (C.C.S.D. Ohio 1856) ("it is clearly proved that the wash-board, made pursuant to this patent, is superior to any before in use; and for this reason and on account of the reduced price at which it can be made, it has superseded all others.")

⁸⁰ See for example: *Many v. Sizer*, 16 F. Cas. 684, 686 (C.C.D. Mass. 1849); *Wilbur v. Beecher*, 29 F. Cas. 1181, 1185 (N.D.N.Y. 1850).

⁸¹ *Kneass v. Schuylkill Bank*, 14 F. Cas. 746 (C.C.D. Pa. 1820); *Whitney v. Emmett*, 29 F. Cas. 1074 (C.C.E.D. Pa. 1831); *Roberts v. Ward*, 20 F. Cas. 936 (C.C.D. Mich. 1849); *Tilghman v. Werk*, 23 F. Cas. 1260 (C.C.S.D. Ohio 1862); *Lee v. Blandy*, 15 F. Cas. 142, 145 (C.C.S.D. Ohio 1860); *Wintermute v. Redington*, 30 F. Cas. 367, 370 (C.C.N.D. Ohio 1856).

role of discretionary granters of privileges as opposed to enforcers of universal rights, and a rising insistence on relegating all judgments of public value to the market. The latter was often accompanied by an argument that quickly became a lawyer's favorite and exemplified the self-destructing character of the utility requirement in its new conceptual context. An infringer, the argument went, could never argue a lack of utility in the invention, because the very fact that he used it proved that there was some demand and hence some value.⁸² Thus by the mid-nineteenth century vestiges of the traditional concept of patents as privileges and of the court as a discretionary evaluator of public benefits could still be discerned, but it was Story's new framework that was gradually prevailing.

Debates about utility in patent law were increasingly limited to an ever-shrinking periphery. As far as ex-post review by the court was concerned, by the second half of the century the two premises of Story's new orthodoxy gradually came to be uniformly accepted. The role of courts was now limited to applying general standard patentability criteria. Accordingly, the sole arbiter and allocator of value came to be the market.

4. The Coming of Modern Patent Rights: 1836 and After

Two developments converged to bring about the final disappearance of the privilege framework of patents: the new statutory examination regime of 1836 and the continuing decline of the utility standard in the courts. In 1836 after a protracted period of dissatisfaction with the patent regime and agitation for reform another sea-change occurred in the statutory framework. The Patent Act of 1836⁸³ created the first real examination system in the United-States. Unlike its predecessors the Act specifically established the Patent Office as a sub-division of the State Department and defined its structure and personnel. It also provided for "an examination of the alleged new invention"⁸⁴ and mandated that "if the Commissioner shall deem it to be sufficiently useful and important, it shall be his duty to issue a patent."⁸⁵

⁸² See Phillips, *supra* note 60, at 140; Gray v. James, 10 F. Cas. 1015, 1018 (C.C.D.Pa. 1817); Vance v. Campbell, 28 F. Cas. 956, 958 (C.C.S.D.Ohio 1859); Lee v. Blandy, 15 F. Cas. 142, 145 (C.C.S.D.Ohio 1860).

⁸³ 1836 Patent Act.

⁸⁴ *Id.* § 7.

⁸⁵ *Id.*

Despite the “sufficiently useful and important” language it was clear that the newly organized Patent Office was meant to be nothing like the old Patent Board. It was set up not as a semi-political forum with discretionary powers to grant privileges, but rather as a bureaucracy whose role was to certify the satisfaction of standard patentability criteria. The underlying concepts were universality and uniformity. The report of the Senate committee headed by John Ruggles, that prepared the ground for the 1836 Act, explicitly laid out this philosophy of the Act. The best way to incentivize and reward innovation, it explained, is “a general law to secure to all descriptions of persons, without discrimination, the exclusive use and sale, for a given period of the thing invented.”⁸⁶

The committee report echoed another related idea that by that time already dominated the new line of utility court decisions.⁸⁷ A general law of patent rights is the best solution, it claimed, because “[t]here appears to be no better way of measuring out appropriate rewards.” In such a system inventors “will generally derive a just and appropriate encouragement proportioned to the value of their respective inventions.”⁸⁸ In other words, a general rights system is preferable because it transfers judgments about social value to the market.

Thus the 1836 Act was a decisive move toward patent rights. It assigned the Patent Office the role of certifying universal patentability criteria and entitled individuals to a right of receiving a patent whenever those criteria were met. Maybe the most profound expression of the transition to patent rights was a newly created right to appeal the examination decisions. As the committee report put it “the rights of the applicant will find ample protection in an appeal to a board of examiners.”⁸⁹ The Act originally created the board of examiners - an ad hoc panel composed of “three disinterested persons” to which any rejection could be appealed.⁹⁰ But the appeal board was quickly superseded by the judicial system. In 1839 the Patent Act was amended and replaced the board of examiners with the Chief Justice of the United States District Court for the District of Columbia.⁹¹ It

⁸⁶ SELECT COMMITTEE, *supra* note 45, at 855.

⁸⁷ See *supra* text accompanying notes 69-77.

⁸⁸ SELECT COMMITTEE, *supra* note 45, at 855.

⁸⁹ *Id.* at 861.

⁹⁰ 1836 Patent Act, *supra* note 56, §7.

⁹¹ Act of March 3, 1839, ch. 88, §11, 5 Stat. 353, 354-355.

also provided a right of appeal to the federal courts (including from the decisions of the Chief Justice) in “all cases where patents are refused for any reason whatever.”⁹² The issuance of a patent on the basis of uniform patentability criteria was now a right enforceable in the courts of law. An applicant who was rejected by the Patent Office could now “demand” a patent. He could turn to the courts and in case he met the uniform patentability criteria as interpreted and applied by the court he could enforce his right against the Patent Office and compel it to issue a patent. Rejected applicants would soon start using this power and exercise this new aspect of patent as rights.⁹³

The practice of the Patent Office in the decades following the 1836 Act was characterized by cycles of “scientific men” who employed strict standards of patentability and “liberalizers” who slackened them and by public and political battles over these policies.⁹⁴ Occasionally when the *Scientific American*⁹⁵ was in a particularly combative mood it accused the Patent Office examiners of being “each a feudal Baron of his own domain.”⁹⁶ However, by this time the old discretionary privilege system was gone. The Patent Office never tried to become the heir of the Patent Board or to exercise plenary discretion as to the public benefits and desirability of each patent. At most, during some periods and in specific contexts examiners (presumably not of the “liberalizers” brand) would interpret the utility requirement broadly and would deny patents to inventions not perceived as sufficiently beneficial.⁹⁷ But under the new framework the courts had the last word on this front too. Courts held the ultimate responsibility for the general

⁹² *Id.* §11.

⁹³ See for example: *In re Fultz*, 9 F. Cas. 998 (C.C.D.C. 1853); *Ex parte Ball*, 2 F. Cas. 550 (C.C.D.C. 1860);

⁹⁴ See Robert C. Post, “*Liberalizers*” versus “*Scientific Men*” in *the Antebellum Patent Office*, 17 *TECH. & CULTURE* 24 (1976); ROBERT C. POST, *PHYSICS, PATENTS AND POLITICS: A BIOGRAPHY OF CHARLES GRAFTON PAGE* (1976).

⁹⁵ The *SCIENTIFIC AMERICAN* that started appearing in 1845 was devoted to issues of technology and patents. In 1846 its proprietors became the owners of the Munn & Co. patent agency. Post, *PHYSICS, PATENTS AND POLITICS*, *supra* note 94, at 110-111, 125.

⁹⁶ *Patent Office and Reform of the Patent Laws*, 5(40) *Scientific American* 317 (June 22 1850).

⁹⁷ See for example: *In re Corbin*, 6 F. Cas. 538 (C.C.D.C. 1857).

interpretation of the utility standard, and in specific cases when the Patent Office attempted to diverge from this standard, applicants had the option of resorting to legal proceedings.

On the judicial front previous trends intensified in the second half of the century. After the Civil War the new views about utility and the role of courts in the patent system were utterly triumphant. Any previous pretensions of courts to replace the patent board as the discretionary arbiter of the public interest under the traditional privilege scheme (or to allow the new Patent Office to do so) were gone. The old line of utility cases faded away, and a flood of decisions that recited and implemented Story's framework appeared.⁹⁸ It became generally accepted that the utility standard exercised by the courts or the Patent Office does not entail any substantive or comparative weighing of the public benefits of a particular invention. As long as it could not be shown that the invention was utterly immoral or performed no function whatsoever, the patentee had a right to his patent. The market concept of value pervading this doctrinal trend also became quite apparent. In the utility context courts would often declare that sales to the public⁹⁹ or the

⁹⁸ See for example: *Cook v. Ernest* 6 F. Cas. 385 , 388 (C.C.D.La. 1872); *Gibbs v. Hoefner*, 19 F. 323 , 324 (N.D.N.Y. 1884); *Seymour v. Osborne*, 78 U.S. 516 ,549 (1870); *Crompton v. Belnkamp*, 6 F. Cas. 841, 843 (C.C.D.N.H. 1869); *Shaw v. Colwell Lead Co.*, 11 F. 711 ,715 (S.D.N.Y. 1882); *Crouch v. Speer*, 6 F. Cas. 897 , 898 (C.C.D.N.J. 1874); *Westlake v. Carter*, 29 F. Cas. 800, 802 (C.C.E.D.Mo. 1873); *Hoffheins v. Brnadt*, 12 F. Cas. 290 , 296 (C.C.D.Md. 1867).

⁹⁹ For cases declaring that sales or broad public use is evidence of utility see *Lorillard v. McDowell*, 15 F. Cas. 893 , 894 (C.C.E.D.Pa. 1877); *Magowan v. New York Belting & Packing Co.*, 141 U.S. 332, 343 (1891); *Gandy v. Main Belting Co.*, 143 U.S. 587, 593 (1892). See also: 1 WILLIAM C. ROBINSON, *LAW OF PATENTS FOR USEFUL INVENTIONS* 467 (1890). But see *McClain v. Ortmyer*, 141 U.S. 419, 428 (1891), where the court grudgingly accepted that general use is evidence of utility but not conclusive evidence, saying: "That the extent to which a patented device has gone into use is an unsafe criterion even of its actual utility, is evident from the fact that the general introduction of manufactured articles is as often effected by extensive and judicious advertising, activity in putting the goods upon the market and large commissions to dealers, as by the intrinsic merit of the articles themselves. The popularity of a proprietary medicine, for instance, would be an unsafe criterion of its real value, since it is a notorious fact that the extent to which such preparations are sold is very largely dependent upon the liberality with which they are advertised, and the attractive manner in which

act of infringement¹⁰⁰ were in themselves proof of the invention's utility. As one court put it in 1886: "any element which increases the salability of an article may be said to contain the elements of utility."¹⁰¹

The utility requirement was not eradicated, but it lost its role as a trigger for broad discretionary powers of assessing the public effects of an invention and deciding whether it is worthy of a patent. Utility was turned into a relatively insignificant technical requirement. Instead of being one of the defining features of patents as it was under the privilege framework, it now became an exotic periphery of patent law consisting of debates over

they are put up and exposed to the eye of the purchaser. If the generality of sales were made the test of patentability, it would result that a person by securing a patent upon some trifling variation from previously known methods might, by energy in pushing sales or by superiority in finishing or decorating his goods, drive competitors out of the market and secure a practical monopoly, without in fact having made the slightest contribution of value to the useful arts. Indeed it is impossible...to say how far the large sales of these pads is due to their superiority to others, or to the energy with which they were forced upon the market." The suspicious approach in *McClain* toward the market is remarkable because it explicitly rejected the idea of the market as the sole measure of value, falling back not so much on traditional fair price ideas as on anticipation of modern critiques of advertisement and manipulation of consumer demand. However, it is also important to notice, that *McClain* as well as a few cases that cited it did not deal directly with utility challenges. For some reason doubts of this sort about the market as a reliable criterion of value, appeared mainly in cases where the alleged utility of the invention was used indirectly to establish the new requirement of non-obviousness or of the use of the inventive faculty. About this new requirement see: *infra*, sec. B(2)(b).

¹⁰⁰ For cases that treat infringement as evidence of utility, some of which refer to estoppel against the defendant see *Lehnbeuter v. Holthaus*, 105 U.S. 94, 97 (1882); *Vance v. Campbell*, 28 F. Cas. 956, 958 (C.C.S.D. Ohio 1859); *Smith v. Prior*, 22 F. Cas. 629 (C.C.D.Cal.1873).

¹⁰¹ *Nebury v. Fowler*, 28 F. 454, 460 (C.C.D.Ill. 1886).

patentability of exploding machines;¹⁰² gambling devices¹⁰³ and snake-oil medicine.¹⁰⁴

Albert Walker's hypothetical discussion of dual-character inventions in his 1889 treatise nicely demonstrates the radical conceptual shift.¹⁰⁵ Walker used Colt's revolver as an example of an invention that has both social benefits and injurious effects on the morals, health and good order of society. "By what test... is utility to be determined in such cases?" he asked. His answer was unequivocal: "everything [is] useful within the meaning of the law if it can be used to accomplish a good result, though in fact it is oftener to accomplish a bad one." Firmly rejecting the possibility of "balancing the good functions with the evil functions" Walker explained that this criterion "cannot stand, because if it could it would make the validity of the patents to depend on a question of fact, to which it would often be impossible to give a reliable answer." The hypothetical demonstrated how far patents had come since the colonial legislative grants or even since the earlier judicial attempts to employ a substantive utility standard. What was previously considered the most fundamental duty and power of the sovereign in the grant of patents- the balancing of "good and evil" in the name of the public good, now became a forbidden zone. A previous conviction that patents are based on a specific calculus of the public interest, now gave way to the axiom that reliable answers to such questions are impossible, and hence all judgments of relative value should be relegated to the market.

By the late nineteenth century the transformation of patents from specific privileges to universal standard rights was complete. Individuals now had an enforceable right for standard patent entitlements upon the fulfillment of a general set of criteria. The Patent Office became the "examiner" of those standardized patentability criteria, subject to a duty to issue whenever they were met. Courts assumed the sole role of the enforcers of patent-rights and deserted almost completely any pretensions some of them had entertained

¹⁰² See *Mitchell v. Tilghman*, 86 U.S. 287 (1874).

¹⁰³ See e.g. *Schultz v. Holtz*, 82 F. 448 (N.D.Cal. 1897); *National Automatic Device Co. v. Lloyd*, 40 F. 89 (C.C.D.Ill. 1889).

¹⁰⁴ See *Richard v. Du Bon*, 103 F. 868, 873 (2nd Cir. 1900); *In re Krimmel*, 292 F. 2d 948 (C.C.P.A. 1961). Pharmaceuticals were an area in which the Patent Office occasionally tried to assert a more stringent standard of utility well into the twentieth century.

¹⁰⁵ ALBERT H. WALKER, *TEXT BOOK OF THE PATENT LAWS OF THE UNITED STATES OF AMERICA* 64-65 (2nd ed. 1889).

earlier of engaging in substantive evaluations of the public desirability of specific inventions of patents.

B. Reconceptualizing the Invention

The transformation of patents from privileges into rights gradually created the modern concept of a patent as ownership. But ownership of what exactly? A second, no less significant, dimension of transformation involved the legal construction of the “object” of patent ownership: the “invention.” In the old Anglo-American scheme of patent grants there was no concept of the invention as an intangible informational entity which is “owned” by the patentee. The gist of the patent privilege was rather the exclusive entitlement to exercise a useful economic “trade” or “art.”¹⁰⁶ By the time of the inception of the American federal regime this traditional scheme was in sharp decline. In Britain a new legal theory of the disclosure in the specification as the “consideration” given by the patentee in the patent deal constructed the invention as innovative technological information.¹⁰⁷ In the late eighteenth century patent practice of the American states there gradually took over a preoccupation with invention and inventors in the modern sense with its emphasis on technological innovation. This new emphasis supplanted the traditional concept of invention as the practice of a socially useful economic trade.¹⁰⁸ Moreover, while no American common law of patents existed to adopt the new British theory of the patent deal, the state grant practice showed some signs of moving in this direction. On some occasions there appeared a requirement of specification as a condition for individual grants. Sometimes the requirement was even accompanied by express articulations of the new idea that the innovative information is the essence of invention.¹⁰⁹

The doctrinal details of the statutory federal regime expressed an even firmer adherence to the new concept of invention as an informational entity. The 1790 Patent Act applied to the person who “invented or discovered.”¹¹⁰ This term was commonly understood as referring to the inventor in the modern sense, despite lingering occasional disputes over the status of patents

¹⁰⁶ See *supra* Chapter 1, sec. I(A)(2) .

¹⁰⁷ *Id.* sec. I(C)(3)(ii) .

¹⁰⁸ *Id.* sec. II(B).

¹⁰⁹ *Id.*

¹¹⁰ 1790 Patent Act, §1.

of importation.¹¹¹ The Act and its successors deserted all former practices based on viewing the invention as the actual exercise of a socially useful art and expressly adopted the new British theory of the patent deal as based on disclosing information. No requirement of practicing or “working” the invention or any other limitation on the use or non-use by the patentee found its way to the Act as a condition for a valid patent. A patentee was no longer required to actually engage in a socially beneficial activity, to produce a product or to supply a service. In contrast an “enabling” disclosure of the invention in the specification became a central statutory requirement. In the words of the 1790 Act a patentee had to submit a specification “not only to distinguish the invention or discovery from other things before known or used, but also to enable a workman or other person skilled in the art... to make, construct or use the same, to the end that the public may have the full benefit thereof.”¹¹² Some subsequent disputes and different interpretations regarding the exact details of the requirement notwithstanding,¹¹³ American courts consistently enforced enabling disclosure as a substantive condition of patentability.¹¹⁴ Disclosure of information succeeded actual practice as the foundation of patentability.

Thus, in 1790 the American statutory framework of patents deserted lingering practices that expressed the traditional concept of invention as the introduction in practice of a useful trade. It came to be completely premised on the new understanding of invention as new innovative information. Nevertheless, this was just the beginning rather than the end of a long process of shaping and formulating complex doctrinal and conceptual structures. Similar to the interaction between copyright law and concepts of authorship, patent law had yet to come to terms with the two constitutive concepts that were placed at its center in 1790: the invention and the inventor. Patent law came to be unequivocally focused on a new notion of invention, but the working out of the complex set of ideas gathered under this title was just

¹¹¹ See *infra*, text accompanying notes 384-388.

¹¹² 1790 Patent Act, §2. See also 1793 Patent Act, §3.

¹¹³ A major interpretive difference from the British disclosure requirement was a lingering American interpretation according to which non-enablement could invalidate a patent only if it was the result of an intention to deceive. For a detailed account of the early relevant case law see: Walterscheid, *supra* note 4, at 405-420.

¹¹⁴ See e.g. *Reutgen v. Kanowrs*, 20 F. Cas. 555,556 (C.C.D.Pa. 1804); *Park v. Little*, 18 F. Cas. 1107, 1108 (C.C.D.Pa. 1813); *Whittemore v. Cutter*, 29 F. Cas. 1120, 1122 (C.C.D.Mass. 1813).

starting. What exactly is an invention and what distinguishes the “inventive” activity? What could qualify as patentable invention? How could one define and draw the boundaries of this new intangible entity in which ownership subsists? Who exactly qualifies as an inventor? Specific answers and complex structures of discourse for dealing with these issues would emerge and transform during the century. As in copyright law, the conceptual struggles of patent law would be often triggered by and mediated through the clashes of opposing economic interests and forces.

1. A Matter of Principle: The Invention as the Object of Property

a. From Fraud to Mechanical Equivalents

Surprisingly, early English patent jurisprudence seems devoid of any substantial discussion of the scope and nature of the object of patent protection. Until the late eighteenth century the few English cases and writers simply do not deal with questions such as the permissible scope of patent protection or the degree of similarity that constitutes infringement. One possible reason for this phenomenon is that as long as a patent was conceived as the economic exclusive privilege to exercise an art or a trade rather than ownership of an intangible informational entity, there was hardly any felt need of defining the character or scope of an “object” of property. To be sure, competing pressures and conflicts over the scope of particular patents existed. Yet these were dealt with through conceptual tools different than those of modern patent jurisprudence. Until the late eighteenth century conflicts over the scope of protection and ability to exclude were usually translated into arguments about the “inconveniency” of patents which led to general reviews of the patent’s public desirability.¹¹⁵

Towards the end of the eighteenth century, however, the concept of patents as privileges to exercise a trade declined and was replaced by the notion of ownership of inventions; namely a set of exclusive entitlements vis-à-vis an intangible object. At the same time the viability of the traditional procedures for accommodating competing interest through open-ended public policy reviews of patents was waning.¹¹⁶ Conflicts involving increasing stakes between patentees and others had to be mediated through different conceptual means. One of the main new battlegrounds came to be the concept

¹¹⁵ See *supra* chapter 1, sec. I(C)(2) .

¹¹⁶ *Id.*

of the invention. Disputes over defining and exploiting the legal concept of patentable invention usually involved two interlocking doctrinal questions. First there was the question of subject matter or: what constitutes a protectable invention? Second, there was the issue of infringement or: what sort of identity is required in order to conclude that an allegedly infringing device or process is identical to the protected invention? Unsurprisingly, in courts, defendants typically argued for a restrictive approach toward patentable subject matter and a narrow scope of the protected invention. Patentees advocated capacious concepts of subject matter and scope of protection. Out of these local skirmishes among parties trying to manipulate developing concepts to their advantage, there gradually emerged a conceptual scheme for defining and talking about the “invention.”

Many of the important British cases of the late eighteenth and early nineteenth centuries grappled with those questions and with the need to define the new concept that came to dominate patent law: the invention as an intangible entity. The 1795 *Watt v. Bull*¹¹⁷ was the cardinal case on patentable subject matter, which dominated patent thought in both Britain and the United States for decades to come. The opinions in that case exposed a fundamental split among jurists.¹¹⁸ An old-fashioned wing strove to define patentable invention in narrow terms. While grudgingly accepting the notion of entitlements in intangibles, this view attempted to conceive the invention in semi-materialist terms as confined to a narrow set of variations on a concrete physical embodiment. Underlying those views were concerns about the indeterminacy of the object of property once it lost its grounding in “natural” physical boundaries and about the resultant over-monopolization of technological knowledge. The other camp advocated a diametrically opposed view based on a full-fledged dephysicized notion of patents. While conceding that abstract truths could not be monopolized, it conceived the invention in broad terms as an intellectual essence, detached from any particular material form. The underlying practical concern of subscribers to this view was to insure substantial protection and reward to patentees and to avoid circumvention of patents through variations of design.¹¹⁹

At the beginning of the nineteenth century influential legal commentators in England tended toward the conservative camp. Thus for example, Richard Godson, the leading treatise writer in the field, offered a

¹¹⁷ 126 Eng. Rep. 651, 656 (C.P. 1795).

¹¹⁸ See *supra* chapter 1, sec. I(C)(4)(i).

¹¹⁹ *Id.*

narrow interpretation of what he called patentable “manufacture” as a “substance or a thing made.”¹²⁰ He elaborated a slew of requirements for patentability such as “materiality”¹²¹ and “vendibility.”¹²² Taken together, these requirements created a semi-materialist concept of the invention and excluded any subject matter, such as methods, that seemed to endanger it.¹²³

A similar division applied to the related question of infringement. Jurists who worried about substantial protection for patentees, sought to define infringement in broad terms as any appropriation of the intellectual essence of the invention, irrespective of variations in material “form.”¹²⁴ Old-fashioned conservatives, on the other hand, conceded that patent protection would be rendered meaningless if it could be avoided by minor variations. Still, they strove to restrict notions of identity and infringement to a narrow scope, as close as possible to one concrete embodiment of a “machine” or a “substance.” Their way of reconciling these competing pressures was to define the scope of identity by using the concepts of evasion and fraud. As Godson put it “[t]he law cannot be evaded by fraud or deceit of any kind.”¹²⁵ Hence when defendant created an article “with slight and immaterial additions or by substitution of things somewhat different.... Yet if the manufactures are really the same and substantially the same”¹²⁶ there would be an infringement. The analysis of the question of infringement by one English court exemplifies the connection made by advocates of the narrower view between identity of the inventions and intention to evade. The court defined infringement as encompassing “a slight departure from the specification for the purpose of invasion only” that “would of course be a

¹²⁰ RICHARD GODSON, LAW OF PATENTS FOR INVENTIONS AND COPYRIGHT 58 (1823).

¹²¹ *Id.* at 84. See also *King v. Wheeler*, 2 R & Ald 350. (“something of a corporeal and substantial nature, something that can be made by man from the matters subjected to his art and skill”).

¹²² Godson, *supra* note 120, at 84.

¹²³ *Id.* at 84. The patentability of methods was firmly established in Britain only in 1842. *Crane v. Price*, 134 Eng. Rep. 239 (K.B. 1842). See also BRAD SHERMAN & LIONEL BENTLY, THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW, 1760-1911 108 (1999).

¹²⁴ Chapter 1, sec. I(C)(4)(a).

¹²⁵ Godson, *supra* note 120, at 173.

¹²⁶ *Id.* at 174.

fraud upon the patent.”¹²⁷ Similarly, when Hindmarch discussed infringement in his 1847 treatise he wrote of “means only colourably different.”¹²⁸ He went on to state the rule that “[t]o be an infringement of a patent privilege, the defendant’s act must be either a use of the art invented by the patentee, or a fraudulent imitation of it, made for the purpose of evading the privilege.”¹²⁹

The conflict between these two opposing views about the character of the protected invention and about the scope of protection as well as notions of identity continued in England well into the nineteenth century. Notions of fraud and deceit slowly lost their dominant position. The broader interpretation that defined the invention in capacious terms and analyzed infringement using the vocabulary of persisting essence despite changes of form won the day only gradually.

In first blush it might appear that a similar conflict hardly existed in the United States and that the question was decided in favor of the broader view of invention early on. American patent jurisprudence was not encumbered with relics from earlier times, such as the British statutory definition of patentable invention as “manufacture” or the patentability requirement of materiality.¹³⁰ In Britain, such legal relics provided a fertile soil for those who sought to restrict the new concept of invention and forced their opponents to use complicated interpretive maneuvers. In contrast, American legislation defined patentable subject matter in relatively capacious and inclusive terms right from its inception. The 1790 Act referred to “any Useful Art, Manufacture, Engine, Machine or Device, or any improvement therein.”¹³¹ The 1793 Act covered “any new and useful art, machine

¹²⁷ Hill v. Thomson, 129 Eng. Rep. 427 (1818).

¹²⁸ W.A. Hindmarch, TREATISE RELATING TO THE LAW OF PATENT PRIVILEGES FOR THE SOLE USE OF INVENTIONS 258 (1847).

¹²⁹ *Id.*

¹³⁰ In his 1837 treatise Phillips still cited the vendibility requirement from Godson. He gave it, however, a very restrictive interpretation that prevented it from being a meaningful limitation on subject matter. While Godson bundled his interpretation of “vendibility” with materiality Phillips simply stated that “the thing patented, or its product or result, must be of a vendible character or description; or such as *can* be the subject of a sale.” Phillips, *supra* note 60, at 150. He did not bother to explain what subject matter did not satisfy this requirement.

¹³¹ 1790 Patent Act, §1.

manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture or composition of matter.”¹³² Moreover, the 1793 Act also contained an explicit reference to the notion that constituted the foundation of the broad view of invention. The Act explicitly stated the concept of invention as an intellectual essence that encompasses a manifold of material forms, albeit not in the context of infringement. It provided that “simply changing the form or the proportions of any machine, or composition of matter, in any degree shall not be deemed a discovery.”¹³³ Although this referred the novelty requirement rather than to subject matter or infringement, courts were quick to ground the multiplicity of forms notion in this text.¹³⁴

Despite those seemingly different starting points, American patent law experienced during the nineteenth century a conflict over the scope and concept of invention which resembled the British pattern. One salient manifestation of this conflict was the debate over the patentability of principles. In 1835 one writer in the *Westminster Review* complained that “[t]here is another word which in patent causes... recommended by such ambiguity, is in very frequent requisition. The word is *principle*. To make this law-fantom, the witchcraft used by the lawyers consists in mingling three different meanings together, used by the aid of certain professional solemnities, producing a mystical word, capable of harlequinizing an idea into many various forms.”¹³⁵ For almost a century American patent law was haunted by the very same “law-fantom” of the “principle.” There emerged two consistent lines of cases. The first line developed the idea that a patent protects the abstract “principle” of the invention, rather than any one specific form. The second insisted that abstract “principles” could never be patented.

Every now and then a judge or a commentator would remark that this was simply a semantic confusion, that the two lines of cases were perfectly reconcilable since they used the term “principle” to denote different things.¹³⁶

¹³² 1793 Patent Act, §1.

¹³³ *Id.*

¹³⁴ See e.g. Phillips, *supra* note 60, at 372; *Dixon v. Moyer*, 7 F. Cas. 758 (C.C.D.Pa. 1821); *Winans v. Adam*, 56 U.S. 330, 341 (1854).

¹³⁵ 44 *Westminster Review* (1835). Cited in Phillips, *supra* note 60, at 101.

¹³⁶ See e.g. Phillips, *supra* note 60, at 96 (Stating that the real question in *Boulton & Watt v. Bull* was “whether Mr. Watt had used the word *principle* in a wrong sense” and that this “philological inaccuracy... to all practical purposes was not of the slightest importance.”); *id.* at 101 n. 37 (“whether we say that [a principle]... is or is not patentable, the proposition will be true or

Nevertheless confusion and ambiguity persisted during the entire nineteenth century. This suggests that at the bottom of the legal struggle to come to terms with the concepts of invention and “principle” there was more than just semantic confusion or sloppiness.

During the century the legal concept of invention gradually developed in a similar way to the “work” in copyright law.¹³⁷ Throughout this process two opposing drives clashed. On the one hand there was a constant concern to restrict the almost unlimited expansion potential of the abstract concept of invention unmoored from any “natural” boundaries imposed by physicality. This concern was usually accompanied by an anxiety about the monopolization of knowledge or the “useful arts.” On the other hand there existed a rising pressure to expand and abstract protection. This pressure was supported by a concept of the invention as an abstract intellectual essence which is not limited to any concrete material form. None of these two drives was utterly triumphant, but throughout the century the pressure toward expansion gradually came to dominance. The outcome was the gradual broadening and abstraction of the legal concept of patentable invention.

When patent cases started to be litigated, American courts were faced with competing claims about the scope of patent protection. Just like their English counterparts one of their main conceptual tools for dealing with such claims was the legal notion of the invention as embedded in the dovetailing doctrinal questions of subject matter and infringement. Initially, some of the cases echoed the conservative strand of British patent jurisprudence by defining the outer limits of patent protection in terms of fraud and evasion. In the 1814 *Odiorne v. Winkley* Justice Story spoke of “[m]ere colorable differences, or slight improvements” that “cannot shake the right of the original inventor.”¹³⁸ In the 1821 *Dixon v. Moyer* Justice Washington

false, according to the sense in which the words are used and applied”); *Barrett v. Hall*, 2 F. Cas. 914, 923 (C.C.D.Mass 1818); *Robinson*, *supra* note 99, at 192 (“the word has sometimes been employed in its two different senses in the same connection, the peculiar attributes of one erroneously predicated also of the other, to the confusion of the subject which, in its fundamental truth, presents no special difficulty”).

¹³⁷ See *supra* Chapter 3, sec. C(1).

¹³⁸ *Odiorne v. Winkley*, 18 F. Cas. 581 (C.C.D.Mass. 1814). Similarly in *Barrett v. Hall* Story described an infringer of a patent in a specific invention as “whoever imitates it, either in whole or in part.” 2 F. Cas. 924. See also *Earle*, 8 F. Cas. 254 (“defendant had made and used a machine with a

analyzed the question of infringement by explaining that “if the difference between them be only in form, or proportions, they are the same in legal contemplation; since to permit the defendant to shelter himself under a mere formal difference, would be to sanction a fraudulent evasion of the plaintiff’s right.”¹³⁹ In *Davis v. Palmer* Chief Justice Marshall instructed the jury by defining the narrow penumbra of additional protection exactly in terms of fraud and evasion: “The patent, undoubtedly, covers only the improvement precisely described. But if the imitation be so nearly exact as to satisfy the jury that the imitator attempted to copy the model, and to make some almost imperceptible variation, for the purpose of evading the right of the patentee, this may be considered as a fraud on the law, and such slight variation be disregarded.”¹⁴⁰

Concepts of identity and fraud or intention to evade tended to create a relatively narrow zone of non-literal patent protection. An 1830 comment by the editor of the *Journal of the Franklin Institute* demonstrated the tendency to conceptualize identity and the scope of invention in terms of evasion and fraud:

“The modification of the mechanical powers are numerous; one may frequently as readily be substituted for another, without affording the slightest claim for invention. If after a man has devised a machine his neighbour may in this way rob him of his just dues with impunity, the patent law becomes a mere false light, to allure man to their destruction... A custom house oath has been long a by-word, but really when persons who have only crooked a lever, or substituted a screw for a wedge, will swear that they have invented a machine, the sacredness of the averment must be as little felt, and its fallacy as palpable as testifying to false invoice.”¹⁴¹

circular saw in substance like the plaintiff’s, though with some slight variations of form, so as to cover up the evasion of the patent”).

¹³⁹ *Dixon*, 7 F. Cas. 758.

¹⁴⁰ 7 F. Cas. 154, 159 (C.C.D.Va.1827).

¹⁴¹ *Specification of a patent for a machine, denominated the ‘Facilitator,’ for the Napping of Hats*, JOURNAL OF THE FRANKLIN INSTITUTE OF THE STATE OF PENNSYLVANIA 93 (Aug 6 1830).

The notions and terminology of evasion or fraud did not completely disappear later in the century. As late as 1849 one court decision defined the question of infringement as “[w]hether the article actually made by the defendants is substantially the same as that patented by the plaintiff?” And pointed out that “much ingenuity, thought, experiment, and study may be employed to prevent a similitude in form, although the principle be the same, and so evade the patent.”¹⁴² Concepts of fraud and evasion were sometimes infused into inquiries about coverage of patents and identity of inventions.¹⁴³ Nevertheless the emphasis gradually changed. Evasion and fraud lost their initial important defining role and sunk into the background.¹⁴⁴ Other

¹⁴² *Many*, 16 F. Cas. 684.

¹⁴³ See for example: *Page v. Ferry*, 18 F. Cas. 979, 984 (C.C.E.D.Mich. 1857); *Foss v. Herbert*, 9 F. Cas. 503; 505 (C.C.N.D. Ill. 1856) (“Mere colorable alterations, or adroit evasions”); *Sickles v. Gloucester Mfg. Co.*, 22 F. Cas. 94, 99 (C.C.D.N.J. 1856) (no “attempt in defendants' machine to invade the plaintiff's rights, by colorable evasions of his claims”); *Rich v. Lippincott*, 20 F. Cas. 672, 674 (C.C.W.D.Pa. 1853) (mere colorable evasion of the plaintiffs' patent... merely varying it... to cover the infringement); *Byam v. Eddy*, 4 F. Cas. 935, 936 (C.C.D.Vt. 1853) (“whether the proportion... used in making the defendant's matches was really very small, so small as to be merely colorable, or to justify its being considered as used for the purpose of evasion”); *McCormick v. Seymour*, 15 F. Cas. 1322, 1324 (N.D.N.Y. 1851) (“whether their plan is, in substance and effect, a colorable evasion of the plaintiff's contrivance”); *Blanchard v. Reeves*, 3 F. Cas. 638, 639 (C.C.E.D.Pa. 1850).

¹⁴⁴ Since the middle of the century courts also began to explicitly instruct the jury that motive or knowledge were irrelevant for purposes of determining infringement. See: *Parker v. Hulme*, 18 F. Cas. 1138, 1143 (C.C.E.D.Pa. 1849) (“The defendant may have infringed without intending, or even knowing it”); *Parker v. Haworth*, 18 F. Cas. 1135, 1136 (C.C.D.Ill. 1848); *Matthews v. Skates*, 16 F. Cas. 1133, 1135 (C.C.S.D.Ala. 1860) (“It is not necessary to constitute an infringement, that a man should work by the specifications contained in the patent. He might not even know there was such a patent, and yet infringe on it.”). There was never an explicit requirement of intention or knowledge as an element of patent infringement. Nevertheless the early formulas that discussed infringements in terms of fraud and evasion infused, at least to some extent, the concept of infringement with notions of bad motives. Thus the explicit rejection of intention and knowledge also marked the decline of the notions of fraud and evasion.

concepts took over in defining the scope and character of the protected invention.

In spite of the remnants of the more conservative outlook, the shift in American views about the scope of invention started early on. The emphasis gradually shifted to a metaphysical-conceptual discussion of the intellectual essence of an invention and its capability of being manifested in a multitude of concrete material forms. As in other contexts, it was Joseph Story who in a series of early decisions defined the terms of the debate. In his decisions Story consistently repeated two fundamental premises. The first was that a patent could not cover “a mere philosophical or abstract theory,”¹⁴⁵ “an effect only”¹⁴⁶ or a “mere elementary principle.”¹⁴⁷ Thus for example, he explained, “no patent can be obtained for the admeasurement of time, or the expansive operations of steam.”¹⁴⁸ A patent, Story wrote, “can only be for such a theory reduced to practice in a particular structure or combination of parts.”¹⁴⁹ The second premise, however, provided that a patent protects not one concrete structure or material form but rather “the principles of a machine.”¹⁵⁰ This established the idea that the patent’s object of protection is an amorphous intellectual essence that persists despite changes of material form; or as Story put it: “a mere change of the form or proportions of any machine cannot, per se, be deemed a new invention.”¹⁵¹

Those two premises defined the boundaries and basic terms of the debate for the entire nineteenth century. The rule that abstract natural principles are not patentable prescribed the outer limit of patentability. Moreover, as patents were reconceived as ownership of information, new fears of the monopolization of knowledge started to appear. The rule against patents in abstractions addressed these fears of monopolization of knowledge. As Phillips put it in his 1837 treatise: “A science is not a subject of a patent, and for the same reason, a mere theory, scientific axiom, or principle, or abstract proposition or truth is not so. All the abstract philosophical truths

¹⁴⁵ *Lowell*, 15 F. Cas. 1019.

¹⁴⁶ *Whittemore*, 29 F. Cas. 1124.

¹⁴⁷ *Earle*, 8 F. Cas. 254. See also *Wyeth v. Stone*, 30 F. Cas. 723, 727 (C.C.D.Mass. 1840).

¹⁴⁸ *Whittemore*, 29 F. Cas. 1124.

¹⁴⁹ *Lowell*, 15 F. Cas. 1019.

¹⁵⁰ *Id.* See also *Odiorne*, 18 F. Cas. 582; *Treadwell v. Bladen* 4 Wash. 706; .

¹⁵¹ *Id.*, at 1021.

that have been discovered, are free from the patent laws.”¹⁵² On the other hand, defining the protected invention as encompassing the “principle” rather than the “form” located its minimal scope on a more abstract level than one concrete material design and held the promise of substantial protection.

This, however, left much room for maneuver. What exactly are “natural principles” and what is the “principle of the invention?” Where does the boundary-line between the two pass? The dividing line was neither self-evident nor objectively defined. Instead it was constructed and constantly shifted as legal discourse changed. Jurists would go on struggling with these questions for the entire century, using the terminology of principles and abstractions and conjuring up competing visions of patent protection in the process.

Story’s initial answers to these questions tended to limit the scope of protectable invention to a relatively low level of abstraction. Throughout his opinions one can find two intertwined notions of the invention. The one conceptualized the protected “principle” as a set of insubstantial variations on a physical structure or design. Thus Story referred to “a particular structure or combination of parts,”¹⁵³ or “mere changes of form, without any material alteration in real structure”¹⁵⁴ and concluded that a “patent must be for a specific machine.”¹⁵⁵ The second notion of invention was somewhat more abstract and ambiguous. Here Story described the essence of the invention as “the modus operandi, the peculiar device or manner of producing any given effect,”¹⁵⁶ and defined the test of identity as “whether the given effect is produced substantially by the same mode of operation, and the same combination of powers, in both machines.”¹⁵⁷ Decades later a counsel arguing before the Supreme Court would suggest a “thought experiment” in order to “prove” this proposition: “It is obvious that, where the invention is in machinery, the mode of operation embodied in such machinery must constitute the essence of the means of producing the result. If any one think [sic] otherwise, let him test it by supposing the mode of operation to be taken away from the machine, and see what will remain. To enforce this truth,

¹⁵² Phillips, *supra* note 60, at 110.

¹⁵³ Lowell, 15 F. Cas. 1019.

¹⁵⁴ *Id.*, at 1021.

¹⁵⁵ *Id.*, at 1019. See also: *Wyeth v. Stone*, 30 F. Cas. 723, 727.

¹⁵⁶ *Whittemore v. Cutter*, 29 F. Cas. 1123, 1124.

¹⁵⁷ *Odiorne v. Winkley*, 18 F. Cas. 581, 582.

imagine, if possible, a machine without any mode of operation, and what is it? Clearly nothing but the wood and metal composing it. This shows that the mode of operation is the characterizing feature.”¹⁵⁸ Thus the “modus operandi” came to be conceived as an “essence” of the invention, existing irrespectively of mere specific “forms” or materials.

The significance of the Story opinions, which were soon joined by similar decisions by others,¹⁵⁹ was twofold. First, they defined the modern conceptual terrain of patentability jurisprudence, within which future battles between differing views were to take place. In decades to come there would appear conflicting accounts of patentability, but none would deny the two axioms formulated by Story. Second, Story offered a specific interpretation of the protectable subject matter that stretched between a concrete physical embodiment and the unpatentable abstract principle. This interpretation, went beyond the British conservative emphasis on evasion and fraud, but still envisioned the invention on a relatively low level of abstraction, either as a set of minor structural variations of a particular physical embodiment, or as the somewhat more instable “modus operandi.” This notion of the invention was further developed in the case-law and by the middle of the century it was formalized into what came to be known the “doctrine of mechanical equivalents.”

¹⁵⁸ *Burr v. Duryee*, 68 U.S. 531 (1863).

¹⁵⁹ As Walterscheid explains, the structure of jurisdiction of the federal judiciary and the high concentration of patent disputes in certain geographical areas combined to bring about a curious outcome. During the first decades of the patent system two Justices of the Supreme Court in their capacity as circuit court judges, Joseph Story and Bushrod Washington, decided the overwhelming majority of important and formative patent cases in the United States. Together Story and Washington decided forty out of fifty eight reported cases up to 1835. See Walterscheid, *supra* note 4, at 359. Some of the earlier opinions that struggled with the question of the scope of patent protection are: *Treadwell v. Bladen*, 4 Wash. 706; *Gray v. James*, 10 F. Cas. 1015 (C.C.D.Pa. 1817). Since during the nineteenth century the criterion of identity for purposes of novelty and of infringement was thought of as being identical some of the opinions that developed it occurred in the context of novelty. See *Evans v. Eaton* 8 F. Cas. 856 (C.C.D.Pa. 1818); *Evans v. Eaton* 20 U.S. 356 (1822).

The term “mechanical equivalents” first appears in American patent discourse in the 1840s.¹⁶⁰ At first it was used to denote the notion of identity that persists despite minor variation in structure or design in the context of novelty. Machines which were mere “mechanical equivalents” of existing devices, courts explained, could not be considered new inventions and hence were ineligible for a patent.¹⁶¹ Soon the same terminology began to be used in the context of infringement.¹⁶² By the 1850s the “mechanical equivalents” test came into dominance and took over judicial analysis of the scope of patented inventions and infringement. The question of identity came to be consistently defined as whether defendant’s device is the “mechanical equivalent” of the patented invention.¹⁶³

¹⁶⁰ Walterscheid traces the doctrine of equivalents to the 1822 decision of the supreme court in *Evans v. Eaton*, 20 U.S. 356 (1822) and to subsequent decisions in the circuit courts. Walterscheid, *supra* note 4, at 389. Walterscheid is certainly right in the sense that the doctrine was a direct continuation to the framework developed in those early decisions described here. Nevertheless the term “mechanical equivalents” as denoting a separate formal doctrine appeared in the United States only in the 1840s.

¹⁶¹ See: *Cochrane v. Waterman*, 5 F. Cas. 1145 (C.C.D.C. 1844); *Allen v. Blunt*, 1 F. Cas. 448 (C.C.D.Mass. 1845); *Woodworth v. Rogers*, 30 F. Cas. 581 (C.C.D.Mass. 1847).

¹⁶² The first case I could find where the term “mechanical equivalents” was used in the context of infringement in the United States is: *Parker v. Stiles*, 18 F. Cas. 1163; (C.C.D.Ohio 1849).

¹⁶³ In the years 1850-1860 thirty reported federal cases used the term “mechanical equivalents.” During most of the nineteenth century the mechanical equivalents test was applied in a relatively loose fashion that did not always insist on the modern “all elements” analysis, that is, on requiring that all elements of the invention would be present in the infringing device either literally or as equivalents. Only in the last quarter of the century an all elements analysis of this sort was formalized. Even then, however, the strict all elements test was conceived of as relevant only to “combination patents.” This category was, in turn, understood as a limited subset of all patents. Thus even by the end of the century there was no strict “all elements” approach that applied to all patents. See 3 *Robinson*, *supra* note 99, at 95-96 (There is “a fundamental difference between combinations and simple inventions;” “The infringement of a combination-patent, therefore consists in the manufacture, use or sale of any combination in which precisely the same elements or their equivalents are united under the same co-operative law”);

In 1868 an essay published in the *American Law Register* firmly declared that “[t]hus far, it is only as the defendant has been found to have employed mechanical equivalents for the construction specified by the patentee, that he has been held guilty of infringement, or the patentee has obtained protection.”¹⁶⁴ Yet continuing pressures to expand protection also brought the author to remark that “[i]t is very possible that the courts may give a larger range to the doctrine of equivalents, in order to secure to the discoverer of a new physical property an adequate reward for his ingenuity.”¹⁶⁵ As the remark implies, one channel for expansion of protection was the internal instability of the mechanical equivalents concept. The open-ended test allowed interpretation and application on different levels of abstraction. One bewildered reader of the *Scientific American* demonstrated this point in his plea for help:

“‘What is a mechanical equivalent?’ I know what an equivalent is and I have some idea of the terms as applied to mechanics, but what I desire to know is- what construction would be given to it by a court? I find among inventors a wide difference of opinion on this point, and a great anxiety to have it settled.”¹⁶⁶

The editor’s answer to this query was far from satisfactory.

Differing opinions and formulas were not limited to inventors. Courts that applied the mechanical equivalents test interpreted it on different levels of abstraction, and implicitly created competing conceptions of the protected invention. *Morgan v. Seaward*,¹⁶⁷ the 1836 British case that was sometimes cited by American jurists in support of the doctrine of equivalents¹⁶⁸ stated it in terms that were close to earlier narrower notions of the scope of protection. It described the test as “whether the defendant’s machine was only colourably different, that is whether it differed merely in the substitution

Dederick v. Whitman Agricultural Co., 26 F. 763 (C.C.D.Mo. 1886); Wheeler v. Morris, 26 F. 918 (C.C.D.Ind. 1886).

¹⁶⁴ S.H.H., *Patenting A Principle*, 16 Am. L. Reg. 129, 140 (1868).

¹⁶⁵ *Id.*

¹⁶⁶ *Mechanical Equivalents in Law*, XI (26) SCI. AM. 203 (Mars 8 1856).

¹⁶⁷ 1 Web. Pat. Cas. 170 (1836).

¹⁶⁸ See e.g. *Winans v. Adam*, 56 U.S. 330, 341 (1854); *Curtis*, supra note 75, at 326.

of what are called mechanical equivalents for the contrivances which are resorted to by the patentee.”¹⁶⁹ When later American courts articulated and applied the doctrine of equivalents they often tended to change the emphasis and move away from the notion of colorable differences toward a broader concept of the invention.

The specific articulations of the equivalents tests were not uniform. When American courts applied the test they formulated it in different ways that expressed competing notions of the scope of protectable invention. Looking backward from 1889 Walker observed that “[t]o define an equivalent is at present a weighty and difficult undertaking. It is weighty because many rights of property now depend, and always will depend upon the definition. It is difficult because the deliverances of the Supreme Court upon the subject are inharmonious, and because none of those deliverances are accompanied by elementary reasoning on the merits of the question.”¹⁷⁰

A 1854 Supreme Court decision, *Winans v. Denmead*,¹⁷¹ nicely demonstrates the range of opinions and interpretations within the equivalents framework. The case formally dealt with claim interpretation, but the substantive question directly involved issues of identity and equivalence. The disputed patent was for a cargo railroad car of conical shape that proved to be safer and more efficient.¹⁷² The defendants constructed octagonal and pyramidal cars that supplied similar advantages. Counsel for plaintiff cited a long string of English cases supporting the claim of identity, including *Morgan v. Seaward* that stated the rule that “substitution of mechanical equivalents” is an infringement.¹⁷³ Counsel for defendant, argued, on the other hand, that “It may be admitted, without hesitation, that the substitution of mechanical or chemical equivalents, as they are called, will not affect the

¹⁶⁹ 1 Web. Pat. Cas. 170, 171 (1836).

¹⁷⁰ Walker, *supra* note 105, at 272.

¹⁷¹ 56 U.S. 330 (1854).

¹⁷² Counsel for plaintiff explained that “[t]hese eminent advantages, which increased the available power of the locomotive engine, looking to revenue on coal as a freight, from 50 to 100 per cent. were to be attributed to the peculiar shape of the car body, consisting of a frustum of a cone, which permitted the use of iron, as thin as has been described, lessening, in proportion, the weight of the car, or the weight, the transportation of which by the locomotive gave no return in revenue.” *Id.*

¹⁷³ 1 Web. Pat. Cas. 170.

rights of a patentee, but the cases in which this principle holds are where the modus operandi embraces more than a single way to reach the desired end. Where the invention consists of a principle embodied in a single form, the form is the principle and the principle the form, and there can be no violation of the principle without the use of the form.”¹⁷⁴

The court divided five to four on this question. Justice Benjamin R. Curtis, the brother of the patent treatise writer George Ticknor Curtis, wrote for the court. His opinion that found defendants’ cars infringing, used the phrase “mode of operation” no less than twenty times, as a later treatise writer bothered to count.¹⁷⁵ Curtis found that the “substance is a new mode of operation, by means of which a new result is obtained. It is this new mode of operation which gives it the character of an invention, and entitles the inventor to a patent; and this new mode of operation is, in view of the patent law, the thing entitled to protection.”¹⁷⁶ In the specific case “by means of this change of form, the patentee has introduced a mode of operation not before employed in burden cars, that is to say, nearly equal pressure in all directions by the entire bad.”¹⁷⁷ Having defined the invention of this high level of abstraction Curtis naturally went on to conclude that it covered a variety of forms and shapes and that the inventor did not explicitly limit himself to only one geometrical form. Curtis was explicit regarding the reason for the high level of abstraction in his definition of invention. “[T]he property of inventors would be valueless,” he wrote, “if it were enough for the defendant to say, your improvement consisted in a change of form; you describe and claim but one form; I have not taken that, and so have not infringed.”¹⁷⁸ For Curtis the fundamental concern about substantial protection of value in the market led to an abstract and broad concept of invention.

Justice Campbell wrote a spirited dissent. The patentee, he wrote, “professes to have discovered the precise form most fitted for the objects in view. He describes this form, as the matter of his invention, and the principle he develops applies to no other form.”¹⁷⁹ Accordingly the essence of the invention was located on a much more concrete level than that identified by

¹⁷⁴ 56 U.S. 337.

¹⁷⁵ Walker, *supra* note 105, at 267.

¹⁷⁶ 56 U.S. 341.

¹⁷⁷ *Id.*, at 339.

¹⁷⁸ *Id.*, at 343.

¹⁷⁹ *Id.*, at 345.

the majority: “The principle stated in the patent applies only to circular forms. The modes of operation in coal transportation have experienced no change from the skill of the plaintiff, except by the change from the rectilinear figure to the circular.”¹⁸⁰ Campbell too was explicit regarding the underlying concerns that moved him to restrict the scope of protectable invention:

“Will this be the limit to that claim? Who can tell the bounds within which the mechanical industry of the country may freely exert itself? What restraints does this patent impose in this branch of mechanic art? To escape the incessant and intense competition which exists in every department of industry, it is not strange that persons should seek the cover of the patent act, for any happy effort of contrivance or construction; nor that patents should be very frequently employed to obstruct invention, and to deter from legitimate operations of skill and ingenuity. This danger was foreseen, and provided for, in the patent act”¹⁸¹

If the majority’s move to abstract the invention was motivated by the concern of substantial protection of value, the dissent’s restrictive move was informed by the equally pervasive fear of monopolization of technological knowledge. Metaphysical debates about essences and forms were thus closely related to the two clashing concerns that haunted the developing thought about ownership of intangibles. The absence of any naturally defined borders to these new objects of property and the resultant constructed and shifting boundaries of the property right gave rise to these twin concerns: substantial protection of value in the market on the one hand; and the specter of unbridled monopolization of knowledge on the other.

Mechanical equivalents, as *Winans v. Denmead* demonstrated, was a flexible and instable concept. The broad range of interpretations poured into the test by judges, motivated by opposing concerns, was augmented by the fact that the determination of equivalents was a question of fact to be decided in specific cases by the jury.¹⁸² The net result was a multitude of different

¹⁸⁰ *Id.*, at 346.

¹⁸¹ *Id.*, at 347.

¹⁸² The shift of ground in *Winans* to formal questions of claim interpretation rather than equivalents was due to an attempt to avoid the discretionary power of the jury. The plaintiff and the minority attempted to avoid a factual

concepts of the invention and of the scope of protection articulated in particular cases. Thus the doctrine of equivalents supplied a framework for debating and articulating the scope of invention, but rather than one unitary criterion it was a battleground for competing visions.

b. Owning Principles

The internal instability of the mechanical equivalents test was only one aspect of the different versions and views of the scope of invention. Since the middle of the century pressures to further expand and abstract the concept of the invention were expressed by iterating the premise that a patent protects the “principle” of an invention. Curtis phrased this notion in his 1854 treatise as follows: “an infringement is a copy made after and agreeing with the principle laid down in the specification.”¹⁸³

This claim that patents protect the principle of the invention was sometimes presented as a mere elaboration of the doctrine of equivalents. Thus, for example, in *Blanchard v. Reeves* the court explained that “[m]any of its parts may be changed or substituted by other mechanical equivalents or devices... while the original idea, principle, or mode of operation of the inventor is manifestly preserved... we must separate the substance and principle of it from its accidents; its essence from its modes.”¹⁸⁴ Similarly the *Scientific American* in an essay about the “Nature of the Patent Right” explained that “the *essence*, the *spirit*” of the invention is the “mode of applying the natural law in question, and also all merely equivalent means” and concluded that an invention is “*a principle embodied in practice.*”¹⁸⁵

But frequently the claim that protection extended to the principle of the invention was understood as an argument for expanding protection

finding of equivalence by obtaining an interpretation (determined as a question of law by the court) that limited the claim to a particular concrete form.

¹⁸³ Curtis, *supra* note 75, at 306. Curtis was ambivalent regarding the identity of principle test. While not rejecting it and supporting the drive to expand the scope of protection he proposed to “inquire whether the fact of infringement may not be tried by a test more, definite, precise and practical. *Id.*, at 321.

¹⁸⁴ *Blanchard v. Reeves*, 3 F. Cas. 638, 639 (C.C.E.D.Pa. 1850).

¹⁸⁵ 6(13) SCI. AM.101 (December 14 1850).

beyond the zone of structural variations covered by the doctrine of equivalents. The 1868 *American Law Register* note, that criticized attempts to abstract and expand patent protection, outlined such a division of opinions. It described the “diversity of sentiment... as to the extent of the right which the individual acquires”¹⁸⁶ in terms of two conflicting camps. One camp argued that a patentee “is entitled to the exclusive use of the principle, when employed for the same purpose by whatever instrumentalities the purpose is effected; and that a patent should expressly claim not only the instrumentalities adopted by the patentee, but also the use of the principle for the purpose however applied.”¹⁸⁷ The other camp believed that a patentee “is entitled to a patent for the method, or process or mechanism which he has contrived, and that he can set up no claim to anything more, nor vindicate a right to anything more.”¹⁸⁸ Thus, although the distinction from the doctrine of equivalents approach was often ambiguous, the new stronger claim for ownership of the principle was clearly understood to expand the scope of the protected invention to new levels of abstraction.

In 1831 the *Journal of the Franklin Institute* published an article entitled “On the Law of Patents, as it exists in England” claiming that “it contains many remarks applicable to the patent laws of our own country.”¹⁸⁹ The article proposed “Patents for Principles” on the theory that “[n]ew principles may be discovered by persons who do not see any useful application of them; yet as soon as they are made known, such application is quickly made by others.”¹⁹⁰ It concluded by speculating that “[i]f the first person who discovered that steam is capable of exerting great expansive force had obtained a patent for that discovery, and thereby given publicity to the fact, it is probable that... that the steam engine and many other inventions with which the force of steam is connected, would have been employed beneficially some centuries earlier.”¹⁹¹ In other words, the author was proposing patents in principles on the basis of an incentive for disclosure policy argument.

¹⁸⁶ *Supra* note 164, at 129.

¹⁸⁷ *Id.*

¹⁸⁸ *Id.*, at 130.

¹⁸⁹ *Journal of the Franklin Institute* 276 (Oct 1831).

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

This version of the case in favor of the patentability of principles was rather exceptional in the United States. The common American version of the argument, that started to gather momentum toward the middle of the century, differed in two important respects. First, the focus of the conventional justification for patentability of principles was usually a metaphysical argument about the “essence” of invention bundled with concerns about substantially protecting the true value of the invention. Second, unlike the *Franklin Institute* article the common American version was more embedded in the emerging framework of the legal discourse. One important implication of the latter was that the argument in favor of protecting the “principle” of the invention never denied the two basic axioms of patent jurisprudence. Most importantly, the basic axiom that laws of nature and abstract truths could not be patented was never rejected. On the contrary, advocates of patenting principles vocally repeated those rules and explained that a patent in a principle did not violate them. They based their argument on the second axiom of substantial protection of the essence of the invention irrespective of form.

But how could one distinguish between patenting a “principle” irrespective of “instrumentalities” and patenting an abstract truth? One legal-terminology subtlety that was refined in order to achieve this task was a new distinction between a principle and the application of a principle. As used at first the term application of a principle merely meant that a particular device, substance or method “by which a principle or a theory is carried into operation” could be patented.¹⁹² In the later version, however, the argument became that once a natural “principle” was reduced into practice in a concrete form the invention consisted in the abstract use of the principle rather than in any one concrete design or structure for doing so. It was Curtis who in his 1854 treatise supplied one of the earliest versions of this distinction.¹⁹³ Curtis started his discussion of patentability by reciting the familiar axiom that “the subject of a valid patent... cannot be a mere elementary principle, or intellectual discovery.”¹⁹⁴ This rule, Curtis explained, addressed concerns about the monopolization of knowledge:

¹⁹² Phillips, *supra* note 60, at 102.

¹⁹³ The 1849 first edition contained a similar, albeit less elaborate, discussion of patenting the application of a principle. GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS IN THE UNITED STATES OF AMERICA 57, 61-64 (1849).

¹⁹⁴ Curtis, *supra* note 75, at 90.

“The consequences of allowing a patent for an abstract art or principle... are apparent, when it is considered that principles are the elements of science; and if a patent could be taken for a newly discovered principle in science; it would cover every object to which that principle could be applied, and the whole field of the arts would thus at once be occupied by a few monopolists.”¹⁹⁵

However, while embracing this rule, Curtis took pains to abstract and expand the scope of the protected invention. “Any definition or description... of the act of invention,” he wrote, “which excludes the application of the natural law, or power, or property of matter, on which the inventor has relied for the production of a new effect, and the object of such application, and confines it to the precise arrangement of the particles of matter which he may have brought together, must be erroneous.”¹⁹⁶ Instead, the scope of protection covered a multiplicity of concrete forms and devices. As Curtis explained: “[i]f the patentee has invented some mode of carrying the principle into effect, he is entitled, it is said, to protect himself from all other modes of carrying the same principle into effect.”¹⁹⁷ The implications of this move became clear when Curtis came to discuss infringement:

“... when a party has invented some mode of carrying into effect a law of natural science, or a rule of practice, it is the application of that law or rule which constitutes the peculiar feature of this invention; that he is entitled to protect himself from all other modes of making the same application... The substantial identity, therefore, that is to be looked to in cases of this kind, respects that which constitutes the essence of the invention, namely, the application of the principle. If the mode of carrying the same principle into effect, adopted by the defendant, still shows only that the principle admits of the same application in a variety of forms, or by a variety of

¹⁹⁵ *Id.* at 91.

¹⁹⁶ *Id.*, at 8.

¹⁹⁷ *Id.* at 93.

apparatuses, the jury will be authorized to treat such mode as a piracy of the original invention.”¹⁹⁸

Protection for the “application of a principle,” thus construed, meant the expansion and abstraction of protection beyond the boundaries of minor structural variations. Curtis elaborated the concept of invention implicit in this expansion and its connection to the image of the genius inventor. To limit protection to “to the mode or means of the new application producing the new result,” he explained, “would be holding against the facts of the case, as no one can but see, that the original conception reaches far beyond these. It would be mistaking the skill of the mechanic for the genius of the inventor.”¹⁹⁹

Thus using the concept of an application of a principle Curtis was walking a thin line, expanding the scope of protection while reassuring that there arose no concern about the monopolization of science, since no law of nature was appropriated. As he put it:

“It is I truth, wholly incorrect to say that the inventor, in such cases, because his patent is held to embrace such a general claim, monopolizes the law, property or quality of matter which he has applied by a particular means to the accomplishment of a certain end. His patent leaves the law, property, or quality of matter, precisely where it found it, as common property, to be used by any one, in the production of a new end, by a new adaptation, of a different character. It appropriates the law, property, or quality of matter, only so far as it is involved in the subject with which, the means by which, and the end for which the inventor has applied it; and this application

¹⁹⁸ *Id.*, at 337-338. See also *id.* at 12. (“the doctrine, rightly understood, asserts only that a law, property, or rule cannot, in the abstract, be appropriated by any man; but if an inventor or discoverer for the first time produces an effect or result, practically, by the application of a law, he may so far appropriate that law, as to be entitled to say, that whoever applies the same law to produce the same effect or result, however the means, apparatus, forms, or arrangements of matter may be varied, practices or makes use of his invention, unless the variation of means, apparatus, method, form or arrangement of matter, introduces some new law, or creates some new characteristic, which produces or constitutes a substantially different result.”)

¹⁹⁹ *Id.* at 113.

constitute the essence and substance of the invention, I all cases, and in reality what the patentee has invented.”²⁰⁰

Woven into these arguments was consolidating a concept of the invention as an intellectual essence that persisted despite changes of mere “form.” “[I]t is obvious that there is a characteristic, an essence, or purpose of every invention, which, in our law has been termed by jurists its *principle*; and that this can ordinarily be perceived and apprehended by the mind,”²⁰¹ Curtis wrote. This elusive manifold “essence” was protected irrespective of the concrete form it assumed, or in the words of Curtis: “inventions are independent of form”²⁰² Employing these terms unmoored the protected invention from any particular concrete design even beyond the penumbra of the doctrine of equivalents. The parallel of this conceptual scheme to the notion of the “work” in copyright law as an intellectual essence that encompasses a multiplicity of forms, which began to emerge at the same time,²⁰³ is striking. In 1847 Justice McLean saw this parallel and attempted to use it as a justificatory means. As he grasped for analogies for expanding copyright protection, he claimed that the patent law logic according to which “the construction of any other machine which acts upon the same principle, however its structure may be varied, is an infringement”²⁰⁴ is just as applicable to copyright law.

Arguments such as these were increasingly employed during the second half of the century by voices who demanded that the scope of patent protection be expanded. Curtis did not write his 1849 and 1854 editions in a vacuum. The position he was advocating began to gather force among courts and judges with real implications for their views about the scope and character of patent protection. The 1849 *Parker v. Hulme*²⁰⁵ was one of the earliest judicial articulations of the patents for principles view. Judge Kane

²⁰⁰ *Id.* at 15-16.

²⁰¹ *Id.*, at 10.

²⁰² *Id.*, at 17.

²⁰³ See *supra* Chapter 3, sec. C(1)(d).

²⁰⁴ *Story v. Holcombe*, 23 F. Cas 173 (C.C.D. Oh. 1847). Nevertheless in patent law Mclean adopted the narrower equivalents interpretation of the principle as the essence of the protectable invention and rejected the broader notion of patenting principles irrespective of structure. See the discussion of the *Tatham* case, *infra* text accompanying notes 209-215.

²⁰⁵ 18 F. Cas. 1138 (C.C.E.D. Pa. 1849).

instructed the Jury in the case that a claim for “the propulsive effect of vortical motion of water in a reaction wheel, operating by its centrifugal force - and so directed by mechanism as to operate in the appropriate direction” was valid and covered patentable subject matter.²⁰⁶ The opinion contained a strong pronouncement as to the character and scope of the invention:

“All machines may be regarded as merely devices, by the instrumentality of which the laws of nature are made applicable and operative to the production of a particular result. He who first discovers that a law of nature can be so applied, and having devised machinery to make it operative, introduces it in a practical form, to the knowledge of his fellow-men, is a discoverer and inventor of the highest grade - not merely of the mechanism, the combination of iron, brass, and wood, in the form of levers, screws or pulleys - but the force which operates through the mechanical medium - the principle... and this title as a discoverer he may lawfully assert, and secure to himself by letters patent; thus establishing his property, not only in the formal device for which mechanical ingenuity can at once, as soon as the principle is known, imagine a thousand substitutes - some as good, others better, perhaps all dissimilar, yet all illustrative of the same principle, and depending on it - but in the essential principle which his machine was the first to embody, to exemplify, to illustrate, to make operative, and to announce to mankind.”²⁰⁷

Kane denied that this was “to patent an abstraction.” “It is rather,” he said, “to patent the invention as the inventor has given it to the world, in its full dimensions and extent; nothing less, but nothing more.”²⁰⁸

The new trend to abstract the scope of invention as to cover principles was not uniformly accepted. It entailed a series of divisions and clashes over the meaning of invention. The 1853 *Le Roy v. Tatham*²⁰⁹ decided in the Supreme Court produced such a clash over the new notion of patenting

²⁰⁶ *Id.*, at 1141.

²⁰⁷ *Id.*

²⁰⁸ *Id.* See also *Detmold v. Reeves*, 7 F. Cas. 547 (C.C.E.D.Pa. 1851).

²⁰⁹ 55 U.S. 156 (1853).

principles. The plaintiff in *Tatham* held a patent for a pipe manufacture machine based not on the traditional cast pipes, made by casting liquid lead, but rather on wrought pipes, created by shaping heated solid lead. In the Circuit Court Justice Samuel Nelson, utilizing the ambiguous language of the patent's specification, instructed the jury that "even if the mere combination of machinery in the abstract is not new, still, if used and applied in connection with the practical development of a principle, newly discovered, producing a new and useful result, the subject is patentable."²¹⁰ Justice Nelson was consistent in this view. In another circuit court case a year earlier he instructed the jury that "although the mere abstract conception would not have constituted the subject-matter of a patent, yet, when it is reduced to practice by any means, old or new, resulting usefully, it is the subject of a patent, independently of the machinery by which the application is made."²¹¹

Thus, when the case was appealed the Supreme Court was directly faced with an argument of the new brand according to which the subject matter of a particular patent was not a concrete structural design but rather a general principle; not a particular machine for making wrought pipes but any machine based on the abstract principle of shaping heated lead. The court was sharply divided on the question of the patentability of principles. Justice McLean, writing for the court, complained that "[t]he word principle is used by elementary writers on patent subjects, and sometimes in adjudications of courts, with such a want of precision in its application, as to mislead."²¹² The opinion unequivocally denied that principles, rather than a concrete apparatus or process, could be patented. It did so by identifying the "principle" with the fundamental natural truths or powers that according to the first axiom of patent jurisprudence could not be monopolized. "A principle, in the abstract," McLean wrote "is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." Nor could anyone, including the first discoverer, claim an exclusive right in a natural abstract "power" such as the "steam power," "electricity, and... any other power in nature, which is alike open to all."²¹³ Instead patents were limited to a particular "processes used to extract, modify, and concentrate natural agencies" which "constitute the invention."²¹⁴

²¹⁰ *Id.* at 174.

²¹¹ *Foote v. Silsby*, 9 F. Cas. 385, 387 (S.D.N.Y. 1851).

²¹² 55 U.S. 174.

²¹³ *Id.*, at 175.

²¹⁴ *Id.*

McLean provided two reasons for this limit on the scope of patentable invention. The first was conceptual-metaphysical. Since “the elements of the power exist” he explained “the invention is not in discovering them, but in applying them to useful objects.” In other words, at most the inventor could only be seen as the discoverer rather than the creator of general natural principles. The second reason was more explicitly policy oriented. It restated the pervasive fear of the monopolization of knowledge. A patent “for an effect, or the result of a certain process,” McLean explained, “would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws.”²¹⁵

Writing for the three dissenters²¹⁶ was none other than Justice Nelson, who, sitting as a Circuit Judge, formulated the disputed jury instruction. Nelson produced a forceful argument in favor of patenting principles. The first part of his argument was devoted to proving that the essence of the invention at issue was the general principle rather than a particular apparatus. “[T]he leading feature of the invention,” he explained, “consists in the discovery of a new property in the article of lead.”²¹⁷ Nelson’s argument created a clear hierarchy between the essential principle and the incidental apparatus: “The discovery of this new element or property led naturally to the apparatus, by which a new and most useful result is produced. The apparatus was but incidental, and subsidiary to the new and leading idea of the invention.”²¹⁸ Nelson, went on to translate this distinction to terms of value: “Strike out this new property from their description and from their claim, and nothing valuable is left. All the rest would be worthless. This lies at the foundation upon which the great merit of the invention rests.”²¹⁹ This line of argument led to the conclusion that “[t]he thing invented, and intended to be claimed, is too apparent to be mistaken.”²²⁰ Nelson defined it as “not simply... the apparatus employed by the patentees, but... the embodiment or employment of the newly-discovered property in the metal, and the practical

²¹⁵ *Id.*

²¹⁶ The court divided five to three, since Justice Curtis did not sit in the case “having been of counsel for the defendants in error, upon the letters-patent drawn in question.”

²¹⁷ *Id.*, at 180.

²¹⁸ *Id.*

²¹⁹ *Id.*, at 182.

²²⁰ *Id.*

adaption [sic] of it, by these means, to the production of a new result, namely, the manufacture of wrought pipe out of solid lead.”

Locating the invention on this high level of abstraction, Nelson had to face the inevitable question: “is this the proper subject-matter of a patent?”²²¹ The affirmative answer was based on an argument that was a mirror-image of McLean’s. “And why should not this be the law?”²²² Nelson asked. If the majority identified the inventor’s contribution with a particular design or apparatus, the dissent argued just the opposite: “To hold, in the case of inventions of this character, that the novelty must consist of the mode or means of the new application producing the new result, would be holding against the facts of the case, as no one can but see, that the original conception reaches far beyond these.”²²³ As for the “mode or means” with which the majority identified the invention, the dissent explained that these were “but incidental, and flowing naturally from the original conception; and hence of inconsiderable merit.”²²⁴ Second, if the majority invoked the fear of monopolizing knowledge, Nelson dismissed the objection of patenting an “element of nature.”²²⁵ The patentee, he wrote “is protected only in the enjoyment of the application for the special purpose and object to which it has been newly applied by his genius and skill. For every other purpose and end, the principle is free for all mankind to use.”²²⁶ Thus, instead of rejecting the rule against patenting abstract truths the argument embraced it and mobilized its justificatory power. Finally, Nelson appealed to the conventional argument of substantial protection. If inventors were limited to a particular design, he explained it would be found that “the world had altogether mistaken the merit of their discovery; that, instead of the originality and brilliancy of the conception that had been unwittingly attributed to them, the whole of it consisted of some simple mechanical contrivances which a mechanician of ordinary skill could readily have devised.”²²⁷

²²¹ *Id.*, at .183.

²²² *Id.*, at 187.

²²³ *Id.*

²²⁴ *Id.*

²²⁵ *Id.*

²²⁶ *Id.*

²²⁷ *Id.*, at 188.

The Supreme Court's decision in *Tatham* received a rather broad coverage²²⁸ which uniformly presented it as standing for the firm proposition that abstract "principles" or mere "effects" could not be patented. In reality, the decision demonstrated the elasticity of the universally accepted rule against patenting abstract truths or laws of nature, and the fact that within the joint framework very different positions appeared as to the scope of patent protection.

A cluster of patent cases that attracted even more public attention and demonstrated the same point, was making its way through the courts as *Tatham* was being decided. What came to be known as "The Great Telegraph Case" was in fact a series of different cases, litigated in various federal courts and involving a variety of devices accused of infringing Samuel Morse's telegraph patent.²²⁹ The technical details of the competing devices and of the various legal arguments were complex and they varied from one case to another, but in all cases the issue of the scope of patentable invention was repeated as a major question. Morse himself was very conscious of the issue. In his writings he formulated and reformulated the definition in order to capture what he saw as the essence of his invention, and, not less important, in order to stifle possible competition. In his drafts he would try such formulas as "Telegraphic Speech by Electricity" or even the "possibility of marking or printing intelligible characters at any distance by means of any power whatever."²³⁰ According to his biographer Morse was preoccupied with this issue "until the end of his life."²³¹

In the court cases it was the broad eighth claim in Morse's patent that invoked the question of patentability. It famously read:

²²⁸ See: *principles of Patents – Important Decision*, 8(30) SCI. AM. 238 (April 9 1853).

²²⁹ The main reported cases are: *Morse v. O'Rielly*, 17 F. Cas. 871; (C.C.D.Ky. 1848); *Bain v. Morse*, 2 F. Cas. 394, (C.C.D.C. 1849); *Smith v. Ely*, 22 F. Cas. 533 (C.C.D.Ohio 1849); *Smith v. Downing*, 22 F. Cas. 511 (C.C.D.Mass. 1850); *Smith v. Clark*, 22 F. Cas. 487 (C.C.D.Mass. 1850); *French v. Rogers*, 9 F. Cas. 790 (C.C.E.D.Pa. 1851); *O'Rielly v. Morse*, 56 U.S. 62 (1854). The cases also involved a complex array of personal, business and professional relationships and rivalries between Morse and other inventors, entrepreneurs and lawyers. See: KENETH SILVERMAN, *LIGHTENING MAN: THE ACCURSED LIFE OF SAMAUEL F.B. MORSE* (2003).

²³⁰ Silverman, *supra* note 229, at 302.

²³¹ *Id.*

“I do not propose to limit myself to the specific machinery, or parts of machinery, described in the foregoing specifications and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed, for making or printing intelligible characters, letters, or signs, at any distances, being a new application of that power, of which I claim to be the first inventor or discoverer.”²³²

Here was an attempt to patent a “principle,” if there ever was one, and the various courts dealing with the cases had to decide the issue.

The Judges who faced the question were deeply divided. In the first major case decided in 1848 in Kentucky Judge Monroe accepted, albeit as an alternative ground, plaintiff’s argument that “Morse’s patents embrace [sic] both the result and the process,”²³³ because the ‘result in such cases is, in truth, the invention; and if another person can step in and by other means arrive at the same result, he may deprive the inventor of the entire benefit of his study and labor.’²³⁴

Two years later, however, Justice Levi Woodbury wrote a forceful decision that rejected Morse’s attempt to patent broad principles.²³⁵ In order to save the validity of the patent Woodbury, somewhat disingenuously, constructed the patent as claiming only a specific apparatus. He did so because he found a broader claim of “a mere principle” obviously void. “The patent,” he wrote, “must be in order to possess validity, not for the principle, but for the mode, machine or manufacture, to carry out the principle and to

²³² 56 U.S. 112.

²³³ 17 F. Cas. 871, 873.

²³⁴ *Id.*, at 872. See also 1 *The Western Law Journal* 102 (1848).

²³⁵ *Smith v. Downing*, 22 F. Cas. 511 (C.C.D.Mass. 1850). Interestingly the case involved a bizarre conflict between Morse his assignee- Smith- and Smith’s lawyer. Smith deeply resented Morse for refusing to pay his lawyer’s fees and to testify in the trial. He avowed to take revenge of Morse and to expose his “*profound ignorance* of the laws of Electro-Magnetism.” Silverman, *supra* note 229, at 316. Morse would later accuse Smith of sabotaging the patent lawsuit and sue to stop him from cooperating with Morse’s bitterest foe- O’Rielly. The lawsuit failed.

reduce it to practice;”²³⁶ and as to “seeking to cover, by a patent, a new principle, without reference to any mode or method of enforcing it, the patent laws are well settled never to permit it.”²³⁷ In what was becoming a conventional move, Woodbury appealed to the specter of the monopolization of knowledge to justify his decision. If principles were patented, he wrote, the outcome would be that:

“... after one invention as to the same subject, principle, or art, halt and bar all further advances on the same subject. It would petrify everything as it stood, to the great loss of mankind, and in derogation of both private and public rights to advance human improvement and human power. It would also render the first improver a monopolist, and exclude the exercise or reward of further genius, science and labor in the same line, however useful, and however much needed, beyond what has already been accomplished.”²³⁸

It took another year before Judge Kane produced a no less forceful opinion that upheld Morse’s broad claim and empathically justified patenting general principles.²³⁹ Morse, he said, “declared the existence of a new art, asserted his right in it as its inventor and owner, and announcing fully its nature and merits, invoked in return the continued protection of the laws. From this time his title was vested as patentee of the art”²⁴⁰ Kane constructed a category of patents for “arts” as covering broad abstract subject matter not grounded in a concrete design or structure. Textually, he grounded his

²³⁶ 22 F. Cas. 514.

²³⁷ *Id.* Woodbury also found that the device at issue- the House telegraph- did not infringe the patent under its narrower construction, and that the two devices rather than being equivalents were “unlike as ‘a goose-quill is to a printing-press.’” *Id.* at 519-521. The enraged Morse would later write that “I can come to no other conclusion than that [Woodbury] is either corrupt and has been bribed in some way, or that he has exhibited a profoundness of ignorance of the nature of the subject.” Silverman, *supra* note 229, at 317.

²³⁸ 22 F. Cas. 519.

²³⁹ French v. Rogers, 9 F. Cas. 790 (C.C.E.D.Pa. 1851);

²⁴⁰ *Id.* at 793.

approach in the words “new and useful art” in the statute²⁴¹ and even in the constitutional text reference to the “useful arts.” But the argument was not merely a textual one. Kane described the “art” as a superior brand of invention, having the worthiest claim for protection: “Nor can we see that there is any reason of policy, which should deny protection to an art, while extending it to the machinery, or processes, which the art teaches, employs, and makes useful. Why should the type, or the ink, or the press itself, be dignified beyond the art, to which they minister in such humble subordination, and without which they are rubbish?”²⁴²

Describing the “story of our race” as a progress narrative consisting of the discovery and developments of “arts,” Kane asked “who will say that the transition between these epochs, that signalize the moral and intellectual progress of mankind, should not be marked by a memorial as stately as the first clipping of a cut-nail, or the compounding of a new variety of liquid blacking; or that the men, to whom we owe them, should not be dealt with as liberally, or at least as justly by the state?”²⁴³ From Kane’s perspective a broad patent for an “art” was justified on the basis of a hierarchy between inventors and inventions. The discoverer of an “art” was located on a higher plane than the mere creators of devices. Accordingly such a person was entitled to control over his inferiors. As Kane put it:

“They are, no doubt, all of them inventors; as was the man who first cast type in a mold, or first bent metal in the practical semblance of a grey goose-quill, or first devised sympathetic ink, that the curious in letter writing might veil their secrets from the profane. All these toiled ingeniously and well, to advance or embellish a pre-existing art. But they had no share in the discovery of the art itself, and can no more claim to share the property, which its discovery may have conferred on another, than

²⁴¹ Kane distinguished the more “liberal” American statutory regime from the British one where the Statute of Monopolies limited patentable subject matter to “new manufactures.” Even there, he argued, “the judges of that kingdom find a warrant, in this limited expression, for sustaining patents for an art, and even for the renewed discovery of an art that had been lost.” *Id.*, at 794.

²⁴² *Id.*

²⁴³ *Id.*

he who has devised some appropriate setting for a gem can assert an interest in the gem itself.”²⁴⁴

By 1853 Morse’s patent produced widely diverging judicial opinions as to the scope of patentable invention. The *Scientific American* took a strong position on the question bashing Kane whose opinion it called “an extraordinary document” and praising Woodbury. “There can be no such a thing as an art apart from a process,” an editorial declared and concluded “[r]ecording messages without any reference to the means of doing so, is a mere abstraction.”²⁴⁵ In another article the *Scientific American* appealed to the fear of monopolizing of knowledge and declared “[i]f the spirit of Judge Kane’s decision be carried out, it will raise a barrier to improvements in the arts and sciences, and defeat the very object of our Patent Laws.”²⁴⁶ The writer of the article seized upon the trope of protecting inventors and turned it around against Kane. The decision, he said, leads to “the miserable conclusion” of “placing the barbaric Chinese mode of printing over the splendid discoveries of Gutenberg.” It is, the article concluded, “a daring presumption against the general rights of inventors,” and “many poor and honest inventors have been deprived unjustly of their rights by such decisions.”²⁴⁷

In another exchange over the pages of the magazine, Amos Kendall,²⁴⁸ Morse’s close business associate and representative, claimed that a party who discovered a new principle and reduced it to practice, “secure the principle, though... it included every mode of applying the principle or agent as to produce the specified result.”²⁴⁹ Kendall appealed to the usual justifications: “he who discovers a principle, and renders it valuable to society” is “the most useful and meritorious of all inventors;” and any other rule would “permit another, who would have never thought of the subject but for my discovery (which may be used in a thousand modes), to come in and

²⁴⁴ *Id.*

²⁴⁵ *Great Telegraph Case- Uncertainties of Law*, 7(9) SCI. AM. 67 (Nov 15 1851).

²⁴⁶ *Telegraph- Principles of Patents- Judge Kane’s Decision*, 7(23) SCI. AM. 181 (Feb 21, 1852).

²⁴⁷ *Id.*

²⁴⁸ Kendall was an experienced Jacksonian politician. He served as the Secretary of the Treasury and as Postmaster.

²⁴⁹ *Principles of Patents*, 8(22) SCI. AM. 170 (Feb 12, 1853).

take it from me by a new mode.” The *Scientific American*, citing a British case, replied that “[t]he policy of an inventor, is to ask for a patent for what he has invented and not to fence himself with wide claims.”

The question finally arrived to the Supreme Court on appeal from the Kentucky decision by Judge Monroe. By this time the arguments were well rehearsed. Morse’s counsel repeated the claim that “[h]e who discovers a principle and devises one mode by which the same can be rendered practically useful, is entitled to a patent which shall protect him to the full extent of his invention and against all other devices for using it.”²⁵⁰ On the other side, R.H. Gillet argued that “[t]his is the most important question raised in this case. Its decision will determine whether our patent laws really promote the progress of the useful arts ... whether the principle of nature not invented by man can be monopolized by one to the exclusion of others.”²⁵¹ Gillet described the plaintiff as claiming “that a power provided by the Ruler of the universe can be patented to or monopolized by other man,” and called it “bold intrusion upon the common property of man.”²⁵² The conventional concern about the monopolization of knowledge was bundled with the argument, suggested by the *Scientific American*, that protection of inventors required principles to remain free. “Inventors cannot prosper under such a construction,” Gillet said, “They must be allowed the free use of what God has created to mould and fashion it for man’s use, or their energies will cramp and wither, and their faculties rust, without benefiting mankind, or aiding, as they may have done, in the great work of the world’s improvement.”²⁵³

Chief Justice Taney writing for the court rejected Morse’s argument and invalidated his broad claim. The border between two doctrinal mechanisms that were clearly distinguished in defendant’s arguments²⁵⁴ was sometimes

²⁵⁰ 56 U.S. 86 (1854).

²⁵¹ RANSOM H. GILLET, FIRST TELEGRAPH CASE BEFORE THE UNITED STATES SUPREME COURT: SKETCH OF THE OPENING ARGUMENT OF R.H. GILLET ON THE APPEAL OF O’RIELLY FROM THE DECISION OF JUDGE MONROE IN KENTUCKY 19 (1853).

²⁵² *Id.*

²⁵³ *Id.*

²⁵⁴ SALMON P. CHASE, THE ELECTRIC TELEGRAPH SUBSTANCE OF THE ARGUMENT OF S.P. CHASE BEFORE THE SUPREME COURT OF THE UNITED STATES 19 (1853).

blurred in Taney's opinion. The first was the rule that a patentee must adequately describe his claimed invention in the specification in a way that would enable others to make and use it. The second was the permissible subject matter protectable by a patent. However, whatever was the exact formal doctrinal grounding, Taney was clear about the substantive conclusion:

“No one, we suppose will maintain that Fulton could have taken out a patent for his invention of propelling vessels by steam, describing the process and machinery he used, and claimed under it the exclusive right to use the motive power of steam, however developed, for the purpose of propelling vessels. It can hardly be supposed that under such a patent he could have prevented the use of the improved machinery which science has since introduced; although the motive power is steam, and the result is the propulsion of vessels. Neither could the man who first discovered that steam might, by a proper arrangement of machinery, be used as a motive power to grind corn or spin cotton, claim the right to the exclusive use of steam as a motive power for the purpose of producing such effects.”²⁵⁵

The defendant- O’Rielly- won the battle and lost his war. While invalidating the claim Taney devised a doctrinal construct in order to save Morse’s other narrower patent claims.²⁵⁶ On the basis of those claims and applying the more traditional doctrine of equivalents he found that the “Columbian telegraph” used by O’Rielly was an infringing device.²⁵⁷

Justice Grier wrote a strong dissent.²⁵⁸ Like Kane, Grier seized upon the statutory term “art,” defining it as applicable “to all those cases where the

²⁵⁵ 56 U.S. 113.

²⁵⁶ Taney ruled that under the circumstances it was not too late for Morse to explicitly disclaim the broad claim and amend his patent as to cover only a specific design. *Id.* at 127.

²⁵⁷ *Id.* at 132.

²⁵⁸ According to the report Grier was the only dissenter, while Justices Wayne and Nelson dissented only as to the decision not to allow Morse to recover his cost. If this report is not mistaken or misleading, it is puzzling why Justice Nelson who in the previous year wrote a sharp dissent professing

application of a principle is the most important part of the invention, and where the machinery, apparatus, or other means, by which the principle is applied, are incidental only and not of the essence of his invention.”²⁵⁹ In such cases, Grier explained, “the essential agent in the invention” is not the “application of the mechanical devices” but rather “the new application of the operative element.”²⁶⁰

Locating the “essence” of the invention was accompanied by the two conventional justifications for broadening the scope of protection. First, Grier described the hierarchy of inventors and inventions: “He who first discovers that an element or law of nature can be made operative for the production of some valuable result, some new art, or the improvement of some known art; who has devised the machinery or process to make it operative, and introduced it in a practical form to the knowledge of mankind, is a discoverer and inventor of the highest class. The discovery of a new application of a known element or agent may require more labor, expense, persevering industry, and ingenuity than the inventor of any machine.”²⁶¹ Second, Grier appealed to the concern of substantial protection to the patentee. “A construction of the law which protects such an inventor, in nothing but the new invented machines or parts of machinery used in the exercise of his art, and refuses it to the exercise of the art itself,” he wrote, “annuls the patent law... To look at an art as nothing but a combination of machinery, and give it protection only as such, against the use of the same or similar devices or mechanical equivalents, is to refuse it protection as an art... It is viewing a statue or a monument through a microscope.”²⁶²

Grier made it clear that he did not reject the rule against patenting abstract truths. Rather like all advocates of patenting principles he embraced it and interpreted it as to justify his position. “The mere discovery of a new element, or law, or principle of nature, without any valuable application of it to the arts,” he explained, “is not the subject of a patent.” On the other hand, Morse’s claim was not for an abstraction because “he who takes this new

a strong support for the patentability of principles did not dissent. One possible explanation may be the fact that he was appeased by the fact that the actual outcome was in favor of Morse and an infringement was found.

²⁵⁹ 56 U.S. 130.

²⁶⁰ *Id.*, at 133.

²⁶¹ *Id.*, at 132.

²⁶² *Id.*, at 133.

element or power, as yet useless, from the laboratory of the philosopher, and makes it the servant of man; who applies it to the perfecting of a new and useful art, or to the improvement of one already known, is the benefactor to whom the patent law tenders its protection.”²⁶³

The decision of the Supreme Court in *O’Rielly v. Morse* was commonly seen as setting patent doctrine straight and marking the final triumph of the traditional view that denied the patentability of broad “principles.”²⁶⁴ In practice the whole series of telegraph cases demonstrated the malleability of the conceptual framework of the invention that developed at the first part of the century. Using the two axioms of patent jurisprudence, widely different positions as to the scope of invention could be constructed and articulated. Moreover, a series of conventional justifications and arguments gradually appeared and was deployed by advocates of the various positions.

After *O’Rielly* the straightforward argument of patentability of principles largely disappeared from practical discourse in the courts, although not from the more theoretical treatises and commentaries.²⁶⁵ Courts were usually hostile to direct attempts to broaden the concept of the invention akin to that of Morse. The 1864 *Burr v. Duryee*²⁶⁶ nicely demonstrates this trend. The case involved a patent for “a new and useful improvement in the machine for making hat-bodies,” a broadly phrased patent claim²⁶⁷ and an argument that a competing device of a different structure which achieved a similar effect was infringing. Writing the opinion for a unanimous Supreme Court was none other than Justice Grier— the dissenter in *O’Rielly v. Morse*. Grier produced a sharp opinion strongly criticizing what he called plaintiff’s “first experiment in the art of expansion by an equivocal claim which may be construed a claim for the result or product of the machine, or for its principle

²⁶³ *Id.*, at 133.

²⁶⁴ See *The Late Telegraph Decision*, 9(24) SCI. AM. 189 (Feb 25, 1854); *The Great Telegraph Case* 9(28) SCI. AM. (22 March 25 1854).

²⁶⁵ See *supra* note 164.

²⁶⁶ 68 U.S. 531 (1864).

²⁶⁷ The relevant claim in the reissued patent read “What is claimed herein as the invention of said Wells is forming bats of fur fibers by throwing the fur in properly regulated quantities, substantially as herein described.” *Id.* at 567-568.

or mode of operation.”²⁶⁸ Grier called plaintiff’s argument “a flagrant abuse of the term ‘equivalent.’”²⁶⁹ He concluded that “[n]o one who reads the two specifications, or inspects the two machines, can aver that they contain the same combination of mechanical devices.”²⁷⁰ Moreover, the opinion flatly rejected all attempts to define the object of patent protection in abstract terms:

“In this case we have an attempt to convert an improved machine into an abstraction, a principle or mode of operation, or a still more vague and indefinite entity often resorted to in argument, an ‘idea.’ Those who use the latter term seem to have no fixed idea of what they mean by it. But it may be used as successfully to mystify a plain matter as the words used in the specification.”²⁷¹

Grier did not entirely recant his views in *O’Rielly*. Rather he outlined a distinction between “discoveries” and “improvements.” The former was “the category of those inventions which consist in a new application of certain natural forces to produce a certain result to which they had never before been applied, and which, when once pointed out, required no invention to construct devices for its application.”²⁷² The latter consisted of “labor-saving machine, which is a mere combination of certain mechanical devices to produce a desired manufacture in a cheaper or better manner.”²⁷³ Grier strongly implied, albeit not entirely consistently,²⁷⁴ that broad patents for discoveries, Morse’s being the prime example, were justified.²⁷⁵ A patent

²⁶⁸ *Id.*, at 568.

²⁶⁹ *Id.*, at 573.

²⁷⁰ *Id.*

²⁷¹ *Id.*, at 577.

²⁷² *Id.*, at 568.

²⁷³ *Id.*

²⁷⁴ While implicitly defending his views in the *O’Rielly* dissent Grier also did not hesitate to cite the majority opinion in that case in order to support his own. *Id.* at 576-577.

²⁷⁵ In his opinion Grier referred to Morse twice. Once by mentioning “the application of the electro-galvanic fluid to the art of telegraphic writing” *id.*, at 569; and a second time explicitly saying that “Morse was certainly the first who successfully applied the element of electromagnetism to telegraphing” *id.*, at 576.

for a machine, however extended only to the “peculiar combination of devices which distinguish it from other machines” and not to “a principle or an idea.”²⁷⁶

Despite the distinction, it was Grier’s strongly professed aversions to mystifications through abstractions that captured the general spirit of courts.²⁷⁷ Commenting on *Burr* in his patent treatise Walker remarked that “the Supreme Court has ever since had a positive tendency to disregard whatever is abstract and intangible in questions of infringement and to base its conclusions upon the concrete features of the issues at bar.”²⁷⁸

All of this did not mean that legal discourse settled around a stable definition of the protected invention. Nor were courts and commentators, despite the rejection of “abstractions,” uniform in constructing “inventions” on a low level of abstraction. Instead, while the direct attempt to claim “principles” was uniformly rejected, the basic dynamics of the telegraph cases persisted. Opposing interests, parties and scholars would go on using the flexible framework of patent discourse in order to deploy competing visions of patentability and of the invention. The borderline of patent protection remained shifting and unstable. The main difference was that the different constructions now largely avoided new formulas such as patenting “ideas” or “principles” and instead creatively used the familiar lingual and doctrinal forms.

This basic dynamics of renouncing the earlier attempts to claim abstract subject matter while creatively using existing doctrinal resources in

²⁷⁶ *Id.*, at 570.

²⁷⁷ See e.g. *Corning v. Burden*, 56 U.S. 252, 268 (1854) (“But it is well settled that a man cannot have a patent for the function or abstract effect of a machine, but only for the machine which produces it”); *Steam Gauge & Lantern Co. v. St. Louis Railway Supplies Mfg. Co.*, 25 F. 491, 492 (C.C. E.D. Missouri 1885) (“The party supposes he has discovered a principle, and he thinks that any sort of device which covers that principle is within the terms of his patent. This court does not admit that. It is the device by which he may avail himself of the beneficial influence of his principle, and this court always restricts a party to his device.”); *Excelsior Needle Co. v. Union Needle Co.*, 32 F. 221, 224 (1885); *Reay v. Raynor*, 19 F. 308, 310 (S.D.N.Y. 1884) (“function or mode of operation does not seem to be patentable apart from the machinery”).

²⁷⁸ Walker, *supra* note 105, at 268.

order to continue tinkering with the scope of invention is apparent in the leading patent treatises of the late nineteenth century. The long and often complex discussions of patentability and infringement convey a sense of tremendous efforts to reconcile the many forces within patent law pulling in different directions. Albert H. Walker, for example, writing in 1889 adhered to the basic framework of patents that consolidated earlier in the century. The patentability section that opens the treatise strongly denies the patentability of “laws of nature” that “can never be invented by man, though they may be discovered by him.”²⁷⁹ The infringement section, much later in the treatise, deals with the principle that “a change of form does not avoid an infringement”²⁸⁰ and with the doctrine of equivalents and its mysteries.

However, even as Walker was denying the patentability of “laws of nature” he was faced with four cases²⁸¹ in which the Supreme Court interpreted and upheld patents on a high level of abstraction, refusing to exempt defendants who employed very different structures and devices. With some dismay, Walker inquired what could distinguish those cases from *O’Rielly v. Morse* or between “the claims of Morse on the one hand, and the claims of Harley, Whitney, Tilghman and Bell on the other.” “The difference,” Walker wrote, did not “consist in anything outside of the use of laws of nature, because all five claims extended to accomplishing results by means of such law or laws, regardless of the particular apparatus used in the respective processes.”²⁸² Indeed “the apparatus described by Harley, Whitney, Tilghman and Bell” was not “claimed as their sole respective inventions, any more than the particular telegraph described by Morse was made essential to his eighth claim.”²⁸³ Eventually, Walker could find only one “radical difference” between Morse’s invalidated claim and those upheld by the Supreme Court. In the four cases each of the patentees “produced a process which utilized several laws of nature” and each claimed “the use of

²⁷⁹ *Id.*, at 3.

²⁸⁰ *Id.*, at 285.

²⁸¹ The cases were: *McClurg v. Kingsland*, (1843); *Mowry v. Whitney*, (1871); *Tilghman v. Proctor*, 102 U.S. 707 (1880); *Telephone Cases*, 126 U.S. 531 (1888). All four cases involved process patents. This was not completely incidental as process patents were at the forefront of the shifting borderline of patentability at the late nineteenth century. See *infra*, sec. B(1)(c).

²⁸² Walker, *supra* note 105, at 13.

²⁸³ *Id.*, at 13-14.

all those laws in the order and method described.’²⁸⁴ Morse, on the other hand, “also made an invention which utilized several laws of nature, but instead of claiming his combined and methodical use of all of those laws, his eight claim was construed as confined to one of them alone.”²⁸⁵

Thus, in order to reconcile it with other decisions, the celebrated *Morse* case which epitomized the great maxim of unpatentability of principles was boiled down to a hairsplitting distinction. It hinged, according to Walker, on the fact that Morse claimed only the use of the Electric current for purposes of communication, instead of the use of both the electric current and electro-magnetism.²⁸⁶ The conceptual maneuver demonstrates the basic dialectics of patent discourse at the end of the century. It was characterized by a strict adherence to the rule against patenting “laws of nature” or “abstractions” and a rejection of direct attempts to claim such subject matter. At the same time, however, the outer-limits of patentability and of the “invention” remained fluid, and in some contexts they were expanded and abstracted. This brought about the need, at least when grand synthesis of the field was attempted, to resort to perplexing and fine distinctions such as the one between patenting laws of nature and patenting a combination of laws of nature.

William C. Robinson’s 1890 massive treatise, *The Law of Patents*,²⁸⁷ showed similar tendencies, albeit using a more complex analytical style. The treatise is a classic example of the scholarly conceptualist style of late nineteenth century legal thought. For Robinson the concept of invention was to be the Archimedean vantage point from which the rest of patent law’s principles and rules would flow deductively. As he put it: “The importance of these propositions... cannot be overestimated... To them may be reduced most of those rules which, before the nature of the mental part of the inventive act was clearly understood, had obtained titles of their own, as if they were the ultimate verities of Patent Law. As we go forward they will solve for us all our apparent difficulties, and furnish us a basis for the classification of those decisions through which the courts have gradually

²⁸⁴ *Id.*, at 14.

²⁸⁵ *Id.*

²⁸⁶ *Id.*, at 15.

²⁸⁷ Robinson, *supra* note 99.

wrought their way toward these essential and imperishable truths.”²⁸⁸ With the “True Nature of an Invention, but Recently Disclosed”²⁸⁹ as the key for the synthesis of the essential and imperishable truths of patent law, it is little wonder that Robinson spent hundreds of pages defining and refining the concept.

Robinson constructed an intellectual entity called “the idea of means” which he described as “the result of the inventive act and, therefore... the essence of the invention.”²⁹⁰ “[T]he idea of means,” he explained, is “the intellectual essence of that artificial method by which the inventor has applied to some determinate end, the natural force.”²⁹¹ Thus, the invention was constructed as an intellectual essence, halfway between a concrete material form and the abstract “natural force.” In effect Robinson incorporated into his conceptualist analysis the two familiar axioms of patent discourse. First, the “idea of means” was different from the abstract principle. Whatever phrase judges used to refer to it a “natural power or energy” could not be patented.²⁹² “A principle, in this sense,” Robinson explained, “is a necessary factor in every means which produces physical effects... but it is in itself no true invention, nor can it be protected by a patent.”²⁹³

The second axiom of substantial protection was also incorporated into the concept of the “idea of means.” The concept was not limited to one concrete design but rather encompassed “the spirit of the invention.”²⁹⁴ The invention was thus presented as an intellectual essence that encompasses a manifold of material embodiments and persists despite mere changes of form. Here Robinson supplied a description of the invention which is striking in its similarity to contemporaneous accounts of the copyrighted work:

²⁸⁸ *Id.*, at 156. See also: *id.*, at 132-133 (“And here arise the fundamental question upon whose answer all other doctrines of the Patent Law are based: What is the essence of invention?”).

²⁸⁹ *Id.*, at 114.

²⁹⁰ *Id.*, at 133.

²⁹¹ *Id.*, at 199.

²⁹² Robinson mentions “an elementary truth,” “a principle of science,” “a property of matter,” “an element of matter,” “a law of nature,” and the “root and ground of science.” *Id.*, at 194.

²⁹³ *Id.*, at 195.

²⁹⁴ *Id.*, at 198.

“... this principle is the true subject-matter of the patented invention. Whatever forms of tangible expression it receives through the varied skill and industry of the mechanic, this idea and the essence still remain unchanged. The exclusive right of the inventor is co-extensive with the limits of the original conception, and though it spirit may be clothed with many different bodies the individuality of the invention is not disturbed nor its identity destroyed.”²⁹⁵

Robinson created a subtle concept of the invention from which all rules were to follow. The concept was so constructed that it simultaneously assured that all basic knowledge remained unappropriated, while protection extended to broad and nebulous area, well beyond a concrete design. This could be achieved through the paradoxical yet powerful image of super-individuality combined with a multiplicity of forms. “An invention,” Robinson wrote, “is necessarily a unit. The idea of means, which is its essence, is one, complete, invariable. Though capable of practical embodiment in instruments of different forms, or in operations involving actions of apparently different character, its individuality is not affected and its identity remains unchanged.”²⁹⁶ Just like the work in copyright law, the invention was looming up in patent law as a mysterious entity claiming both super-individuality and unlimited flexibility, accompanied by a vast potential for expansion.

c. Arts and Processes

The rise of the concept of invention as an intellectual essence embodying a multiplicity of forms was not limited to theoretical-academic discussions. In their more practical daily business, courts continued to struggle with questions of patentability and infringement and showed similar tendencies. One of the main doctrinal areas where the malleability of the concept of invention was strongly manifested was process-patents. Process patents, that is to say patents which protect not a particular product design but rather a series of actions or operations for achieving a useful end, were a fertile soil for such conceptual and doctrinal maneuvers. As a strict logical matter there is little difference between inventions consisting of products or

²⁹⁵ *Id.*, at 201.

²⁹⁶ *Id.*, at 215.

processes. Either of them could be defined on various levels of abstraction. Nevertheless, process patents, that by definition covered not “machines” or “devices” but rather the more self-evident abstract “actions” or “methods,” often seemed to supply a less materially bound starting point. Thus they were particularly susceptible to the notion of an intellectual essence unbound from any concrete form.

In Britain the patentability of methods, independent of a “manufacture” remained a hotly contested issue well into the nineteenth century. This was apparent in the various opinions of the judges in the seminal *Boulton & Watt v. Bull*²⁹⁷ and in the views of many influential commentators and judges who continued to use an assortment of doctrinal techniques in order to deny the patentability of methods.²⁹⁸ It was not until the 1842 *Crane v. Price* that the question was finally settled.²⁹⁹ The difficulties in accepting methods as a patentable subject matter reflected the vestiges of older views and the gradual nature of the coming to terms with the new concept of ownership of an intangible abstract “object.”

Ostensibly, the United States patent regime did not undergo a similar process. American patent law was free of most of the old doctrinal devices and interpretations that inhibited the acceptance of process patents in Britain. Moreover, the very first patent Act of 1790 listed “Useful Art” as an independent category of patentable subject matter along side ‘Manufacture, Engine, Machine or Device.’³⁰⁰ A similar statutory category persisted throughout the century. This led late nineteenth century commentators to observe that as far as the question of process patents was concerned in “the Patent Law of the United States no such problems have arisen” because processes were always recognized “as having the same title for protection as a machine or an article of manufacture.”³⁰¹

In reality things were murkier during the first part of the century. Early American courts sometimes recognized patents in subject matter that decades later was identified by commentators as “processes,” but such decisions neither used the terms process or method, nor identified a clear

²⁹⁷ 126 Eng. Rep. 651 (C.P. 1795).

²⁹⁸ See: Chapter 1, sec. I(C)(4)(a).

²⁹⁹ 134 Eng. Rep. 239.

³⁰⁰ 1790 Patent Act, at §1.

³⁰¹ 1 Robinson, *supra* note 99, at 238.

distinct category of subject matter.³⁰² Moreover, the statutory category of an “art” was not uniformly understood as synonymous with a method or a process. Phillips, for example, followed in his 1837 treatise the English tradition and discussed “methods” and “processes” under the rubric of “manufacture,” while providing a separate cursory discussion of the American statutory category of “art.”³⁰³ Even in the 1853 *Corning v. Burden*,³⁰⁴ one of the first cases to clearly analyze the modern concept of a process-patent, Justice Grier still explained that “A process, eo nomine, is not made the subject of a patent in our act of Congress. It is included under the general term ‘useful art.’ An art may require one or more processes or machines in order to produce a certain result or manufacture.”³⁰⁵

To some extent these were niceties of formal classifications. Yet, around the middle of the century the ambiguity and the open-ended character of the term “art” were utilized by those who strove to expand the borders of patentability. As described, one of the forms of the arguments in the debate over the patentability of broad “principles” was that inventors, such as Morse, discovered whole “arts” rather than specific “machines,” and hence were entitled to property rights in these broad arts rather than specific devices. Thus, Judge Kane while upholding Morse’s broad claim in *French v. Rogers* explained that he “declared the existence of a new art, asserted his right in it as its inventor and owner” and that “his title was vested as patentee of the art”³⁰⁶ Similarly Justice Grier based his *O’Rielly* dissent on the statutory category of an “art.” He interpreted the term as encompassing subject matter broader and more abstract than either a “machine” or a “process.” “An art,” he wrote, “may employ many different machines, devices, processes, and manipulations, to produce some useful result.”³⁰⁷ His conclusion was that

³⁰² See for example: *Kneass v. Schuylkill*, 14 F. Cas. 746 (C.C.D.Pa. 1820); *McClurg v. Kingsland* 42 U.S. 202 (1842).

³⁰³ Phillips, *supra* note 60, at 82-95, 109-113.

³⁰⁴ 56 U.S. 252 (1853).

³⁰⁵ 267. See also *Smith v. Downing*, 22 F. Cas. 511, 514 (C.C.D.Mass.1850) (“In the English patent acts, the word ‘art’ is not used at all. And in ours, as well as in our constitution, the word art means a useful art, or a manufacture which is beneficial”).

³⁰⁶ 9 F. Cas. 790, 793 (C.C.E.D.Pa. 1851).

³⁰⁷ 56 U.S. 131-132.

“[t]he statute gives the inventor of an art a monopoly in the exercise of it as fully as it does to the inventor of a mere machine.”³⁰⁸

The attempt to capitalize on the ambiguity and fluidity of the concept of an “art” and construct it as a legal category of broad subject matter, was ultimately unsuccessful, as was the companion argument about the patentability of principles. The term “process” gradually received a more technical, rigidly defined interpretation and with time came to be regarded as completely synonymous with the statutory category of an “art.” Nevertheless, the interpretation and application of process-patents remained one of the more hotly contested grounds where competing visions of patentability were constructed and deployed. It was not incidental that when in 1889 Walker discussed four cases that by protecting broad and abstract subject matter led him to conclude that the use of “several laws of nature“ combined was patentable, all four involved process-patents. By unmooring the invention protected by the patent from any particular structural design, process-patents were an attractive conceptual-doctrinal tool for attempts to abstract and expand patentability, especially after the patentability of principles argument was defunct. A section of Robinson’s 1890 treatise was entitled “An Art the most Comprehensive of Inventions.” The reason for this, he explained, was that “it can be patented as such without reference to the specific instruments engaged or the specific objects in which its effects may be produced”³⁰⁹ and hence “its outer limits are less easily discernable than those of any other class of operative means.”³¹⁰

Patentees and their lawyers were quick to try and push the obscure “outer limits” of process patents in order to expand the scope of protection. The most common tactic was attempting patents not merely for a “machine” but for a “process” or an “art” even when the invention consisted of a new device or apparatus. This potentially allowed the patentee to argue infringement even when defendants used very different structural designs, based on the claim that the essence of the “process” was protected

³⁰⁸ *Id.*, at 133. See also: Curtis, *supra* note 75, at 124 (The term art “applies to all those cases, where the application of a principle is the most important part of the invention, and where machinery, apparatus, or other means by which the principle is applied, is incidental only and not of the essence of the invention.”); Justice Woodbury’s elaborate rejection of this argument in *Smith v. Downing*, 22 F. Cas. 511, 514 (C.C.D.Mass.1850).

³⁰⁹ 1 Robinson, *supra* note 99 at 243-244.

³¹⁰ *Id.*, at 246-247.

irrespective of the apparatus used. There gradually appeared two strands of court decisions in response to such tactics.

The first strand of cases involved judges who were troubled by the potential of process-patents to detach the scope of protection from a particular structural design and strove to circumscribe it through their legal interpretations. The early definition of a process-patent represented this first brand of judicial reaction. In the 1854 *Corning v. Burden* Justice Grier defined a process as follows: “where the result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations, are called processes.”³¹¹ In other words the definition envisioned two neatly distinct subsets of patentable inventions. The one included machines and devices, the other extended to non-mechanical methods such as chemical reactions. That the two were meant to be sharply distinguished was clear from the emphasis that processes include only “all methods or means which are not effected by mechanism or mechanical combinations.”³¹²

The upshot of this definition was to block the most common attempts to use process-patents for purposes of scope expansion. Under an assumed strict distinction between machines and processes it was hard for patentees to smuggle in mechanical devices as processes in the hope of a broader scope of protection. This became apparent in *Corning* where it was found that “the agent which effects the pressure is a machine or combination of mechanical devices.”³¹³ A patentee, the court said, “cannot describe a machine which will perform a certain function, and then claim the function itself, and all other machines that may be invented to perform the same function.”³¹⁴ A long series of later cases adopted *Corning’s* definition of a process and applied its logic to keep process-patents in check.³¹⁵

³¹¹ 56 U.S. 267.

³¹² *Id.*, at 268.

³¹³ *Id.*, at 269.

³¹⁴ *Id.*

³¹⁵ See e.g.: *Mackay v. Jackman*, 12 F. 615, 619 (S.D.N.Y. 1882) (“The new effect was due to the operation of the machine. The patentability belonged to the machine, and not to the boot or shoe, as appeared before.”); *Brainard v. Cramme*, 12 F. 621, 622 (C.C.N.D.Y. 1882) (“It is difficult to appreciate any practical benefit which is obtained by the patentee by calling his patent a process patent instead of one for the machine;”); *Goss v. Cameron*, 14 F.

Furthermore even when process-patents did fall within the boundaries of the strict definition, some courts still showed suspicion toward the abstract character of these patents and their obscure object of protection. The most conspicuous of these occurrences was the 1862 *Morton v. New York Eye Infirmary*³¹⁶ known also as *the Ether Case*. The patentee in this case discovered the anesthetic effect of large quantities of ether, whose general “intoxicating” influence was previously known. He tried to claim the use for surgical purposes of “the process of rendering the system insensible to pain by the inhalation of ether” in certain quantities.³¹⁷ This was certainly a process that satisfied the strict definition’s requirements by not involving any mechanical apparatus. As far as the court was concerned, however, exactly therein lay the problem. A process of this sort seemed too abstracted from any physical device or action to be patentable. What is the process which is here set forth?” the court asked and answered: “The process of inhalation of the vapor, and nothing else. To couple with it the effect produced by calling it a process of rendering the system insensible to pain, is merely to connect the results with the means.... The means, that is the process of inhalation of vapors, existed among the animals of the geologic ages preceding the creation of our race. That process, in connection with these vapors, is as old as the vapors themselves... We have, after all, only a new or more perfect effect of a well-known chemical agent, operating through one of the ordinary functions of animal life.”³¹⁸ The court, in other words, refused to regard the abstract element of specified quantities as “means” that could constitute a patentable invention. Instead it found it to be “the application of a well-known agent, by well-known means.”³¹⁹

576, 578 (C.C.N.D.Ill. 1882); (“The only ground upon which this claim can be sustained at all is that it is a claim for diagonal printing, to be accomplished by the means shown, and not for diagonal printing as a result, nor can it be held to cover a mere mode of working or manipulating a common printing-press when no material changes are made in its mechanism”); *Hatch v. Moffitt*, 15 F. 252 , 253 (C.C.D.Mass. 1853); See also Walker, *supra* note 105, at 7 (a process is “an operation performed by rule, to produce a result, an which is or may be performed otherwise than by any particular machinery, or is performed by means not solely mechanical”).

³¹⁶ 17 F. Cas. 879 (S.D.N.Y . 1862).

³¹⁷ *Id.*, at 883

³¹⁸ *Id.*

³¹⁹ *Id.*

Thus, although by 1862 there was no question as to the general patentability of processes, *Morton* echoed the more traditional mentality toward process-patents. The decision recoiled from the self-evident abstractness of such subject matter and tried to limit it, at least in the more extreme cases where it was not grounded in an ostensibly tangible mechanism or action. As the court put it, somewhat poetically, the claimed process was merely a “naked discovery” that “may be the soul of an invention, but it can not be the subject of the exclusive control of the patentee, or the patent law, until it inhabits a body, no more than can a disembodied spirit be subjected to the control of human laws.”³²⁰

A similar approach was apparent in what was known as the rule against patenting a double-use. The gist of this doctrine was that a new use of a known invention could not be patented. The rule that was vigorously applied around the middle of the century,³²¹ expressed the general aversion of courts toward regarding a mere “use” detached from any physical apparatus as an independent invention. Despite the formal existence of process-patents, courts simply did not consider the possibility that a new “use” could itself be patentable as a process, despite the absence of any new mechanical variations.³²² Toward the end of the century the doctrine still existed and was

³²⁰ *Id.*, at 882. Remnants of such aversion to the more abstract forms of processes could sometimes be seen even at the end of the century. See *Wall v. Leck*, 66 F. 552, 555 (9th Cir. 1895) (a process-patent for “the old process of fumigating trees by means of an oiled tent and hydrocyanic acid gas... made successful ‘provided the fumigation is done at night’” found invalid due to claiming “[a] mere naked principle, a law of nature, or property of matter.”)

³²¹ See *Whittemore v. Cutter*, 29 F. Cas. 1123, 1124 (C.C.D.Mass. 1813); *Ames v. Howard*, 1 F. Cas. 755, 757 (C.C.D.Mass. 1833); *Howe v. Abbott*, 12 F. Cas. 656 (C.C.D.Mass. 1842); *Bean v. Smallwood*, 2 F. Cas. 1142 (C.C.D.Mass. 1843); *Conover v. Roach* (1857); *Bray v. Hartshorn* (1860); *Curtis*, *supra* note 75, at 119-124. *Morton v. New York Eye Infirmary* can be seen as a double-use case, but the opinion does not explicitly use this exact form of argument.

³²² In the older cases courts usually dealt with and invalidated patents that attempted to claim patents for machines on the basis of a new use. When much later the possibility of a process-patent for a new use was recognized, this fact made it easier to reconcile the new approach with the old cases. It is significant, however, that around the middle of the century no court suggested or considered the possibility that new uses could be patented as processes. Nor did patent lawyers try to pursue that option. In *Howe v. Abbott*, 12 F. Cas. 656 (C.C.D.Mass. 1842) the double-use rule was casually

applied, but it was so riddled with exceptions that little coherence was left in it.³²³ In 1890 Robinson introduced order into the subject which, he saw as “unnecessarily confused” due to “the failure to distinguish properly between inventions and their uses.”³²⁴ A new invention or a new “idea of means” could consist not in “the art or instrument itself” but in “the manner of its use.”³²⁵ When such new manner existed the new invention was “generally a process.”³²⁶ Thus, the decline of the old form of the double-use rule and the late-century synthesis marked a new willingness to embrace the process as truly distinct from any structural design.

A second strand of cases which appeared during the last part of the century developed a very different approach toward process-patents. One important aspect of this shift was the gradual appearance of a slightly modified definition of a process. The most important change was the decline of any attempt to sharply distinguish processes and mechanical devices. Following this new brand of cases, Robinson defined a process as “an act or series of acts performed by some physical agent upon some physical object, and producing in such object some change either of character or of condition.”³²⁷ Missing from the definition was the previous limitation that the means must be other than mechanical ones. In the 1876 *Cochrane v. Deener* Justice Bradley supplied a similar definition and added “[t]he machinery pointed out as suitable to perform the process may or may not be new or patentable.”³²⁸ The change of definition was subtle. Indeed, the older *Corning v. Burden* was still often cited. Nevertheless, omitting a mutually-exclusive sharp distinction between processes and mechanical devices was significant. It opened the door to the most common tactic of claiming new apparatuses as processes in an attempt to expand the scope of protection. This maneuver was especially lucrative, in view of the general perception that a process “is so far

applied to a process-patent, but the case did not raise the general possibility of claiming any new use as a process.

³²³ Walker, *supra* note 105, at 39.

³²⁴ 1 Robinson, *supra* note 99, at 378.

³²⁵ *Id.*, at 364.

³²⁶ *Id.*, at 377.

³²⁷ *Id.*, at 230.

³²⁸ 94 U.S. 780, 788 (1876). See also *Boyd v. Cherry*, 50 F. 279 (C.C.D.Iowa 1883).

abstract that it is capable of contemplation by the mind apart from any one of the specific instruments by which it is performed.”³²⁹

A second aspect of the newer brand of cases was a growing willingness to interpret and apply process-patents on a high level of abstractness as to encompass a broad scope of protection. The recurring underlying principle of such interoperations was the notion that a process consists of an intellectual essence completely detached from particular instruments or devices. In the words of Robinson, the process’ “essence remains unchanged, whatever variation takes place in its instruments.”³³⁰

One of the most dramatic demonstrations of this trend was supplied by the Supreme-Court cases involving the Tilghman patent. In the 1874 *Mitchell v. Tighman* a majority of the court found that the patented invention was a “process of manufacturing fat-acids and glycerin from fatty or oily substances by the action of water at a high temperature and pressure.”³³¹ Nevertheless, the court interpreted the patent narrowly and found a series concrete devices and elements to be “material and indispensable conditions of the patented method.”³³² Defendant who used a somewhat different apparatus was allowed to escape under the rule that “one who afterwards discovers a method of accomplishing the same object, substantially and essentially differing from the one described, has a right to use it.”³³³

Six years later in *Tilghman v. Proctor*, involving the very same patent, Justice Bradley explained that “[u]pon the renewed consideration which has been given to the subject, the court is unanimously of opinion, contrary to the decision in the Mitchell case, that the patent of Tilghman must be sustained as a patent for a process, and not merely for the particular mode of applying and using the process pointed out in the specification”³³⁴ The fatal flaw of *Mitchell* was that “sufficient consideration was not given to the fact that the patent is for a process, and not for any specific mechanism for carrying such process into effect.”³³⁵ The sharp turn of the court was based on the concept

³²⁹ 1 Robinson, *supra* note 99, at 230-231.

³³⁰ *Id.*, at 250.

³³¹ 86 U.S. 287, 379-380 (1874).

³³² *Id.*, at 388.

³³³ *Id.*, at 392.

³³⁴ 102 U.S. 707, 708 (1881).

³³⁵ *Id.*, at 710.

of the principle as an essence unmoored from instrumentalities. “The apparatus for performing the process was not patented, and was not material.”³³⁶ Bradley wrote, and hence “surely the identity of the process was not changed by thus changing the form of apparatus.”³³⁷ The rest of the opinion analyzed a long list of differences of the devices used by defendant and dismissed each of them as “immaterial” to the process. Thus *Tilghman v. Proctor*, especially when contrasted to *Mitchell*, was a powerful example of the new willingness of courts to interpret process patents broadly, and of the potential of such patents to encompass large and abstract scope.

Tilghman v. Proctor and the rise of broad process-patents made some wonder whether the old ghost of patents for “principles” was being resurrected. Of course, by 1870 nobody was willing to subscribe to the mid-century argument of the patentability of principles. The *Tilghman* court cited *O’Rielly* in length in order to distinguish processes from principles.³³⁸ Nevertheless, much of the broad and abstract scope of protection that was formerly claimed using claims for “principles” was now being let in through the backdoor of processes, interpreted as not limited by specific “instrumentalities.” In 1884, after surveying the recent process cases, Judge Drummond commented bewilderedly:

“It is to be regretted that the difficulty inherent in the subject is so great that a more intelligible distinction has not been made, for it must be admitted that the application of the rule which has been established by the supreme court to other cases, as they hereafter arise, may cause embarrassment, for there must be a method by which the principle or law which has been discovered is applied; and, if that method is immaterial, then it is difficult to understand why it does not become substantially a patent for the discovery of the principle or the law of nature.”³³⁹

Such candid bewilderment was rare. The *Tilghman* opinion was more representative in firmly rejecting patents for principles while interpreting the process as to encompass much of the scope of protection previously claimed

³³⁶ *Id.*, at 722.

³³⁷ *Id.*, at 720.

³³⁸ *Id.*, at 726.

³³⁹ *New Process Fermentation Co. v. Maus*, U.S. 20 F. 725 (C.C.N.D.Ind. 1884).

under this head. A similar tendency appeared when Robinson, who devoted much energy to distinguishing unpatentable principles from patentable processes discussed *Tahtham v. Le Roy*, one of the important mid-century principle cases. While utterly rejecting Justice Nelson's argument for principle-patents, Robinson found that the broad subject matter for which protection was sought was, in fact, patentable as a method. "Where the discovery relates to new susceptibilities in the object, and consists in the perception that it may be affected in a new way by the application to it of a force not hitherto known as capable of producing this effect upon it," Robinson wrote, "the direction of such force upon this object is a new and substantive invention and may be patented as a process... without reference to the particular instruments employed."³⁴⁰ This was a rather complicated way of saying that after all "principles" were sometimes patentable, as long as they were called a "process."

These two aspects of the newer brand of patent cases prepared the ground for the mammoth patent litigation of the late century: the *Telephone Cases*. This series of cases demonstrated how discarding the process-machine distinction coupled with a broad interpretation of process-patents created potential protection for expansive and abstract "inventions." As usual, the complex conceptual and doctrinal debates were triggered and shaped by the clash of rivalrous business interests, with the extremely lucrative control of an emerging national communication infrastructure at stake.

When Bell's lawyers drafted his patent they were presented with a dilemma. The obvious motivation was to capture as broad a ground as possible, as to enable maximum control and suppress all local competition and rival devices. Looming high was, however, Morse's famous failure (at least from the narrow legal perspective), and the firm unassailable rule against patenting principles. How could one exclude virtually any attempt of competition and any device relevant to the market while not claiming broad "principles?"

To a late nineteenth century skilful patent lawyer³⁴¹ the answer was obvious. The rising category of process-patents was the most promising

³⁴⁰ 1 Robinson, *supra* note 99, at 193 note 3.

³⁴¹ Justice Gray remarked in one of the Massachusetts cases that "[t]he draughtsman of the specifications has exhibited as clear and accurate a comprehension of the rules of the patent law, as the inventor has of the force of nature with which he was dealing." 15 F. 448, 450-451 (C.C.D.Mass. 1883).

avenue for solving the dilemma and claiming abstract subject matter. Accordingly Bell's telephone was claimed not only as a device but also as a process. The broadest fifth claim of the patent was a process-claim which read as follows:

“the method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth.”³⁴²

This was a dangerous gambit, stretching the outer limits of protection by coming dangerously close to claiming “abstract principles.” When the infringement cases, involving a variety of devices some of which were very different from Bell's, started streaming to the courts Bell's counsel had to walk a thin line. Their task was to sustain the broadest possible interpretation of the claim that would not limit it to a particular set of structural variations, while denying that this constituted patenting “principles.”³⁴³

The tactic for maintaining this balance was hinged on the fact that the claim was for a process. The process supplied a valuable middle-ground since it was conceived as encompassing many specific devices, yet somehow being more concrete than the forbidden “principle.” The various circuits dealing with the cases adopted this reasoning.³⁴⁴ Justice Gray wrote one of the more significant of those opinions in the Massachusetts case.³⁴⁵ Ironically, he started the opinion that did more than any other before to obscure the line between a principle and a process by observing that “[f]ew legal rules have been oftener misunderstood and misapplied than the maxim that you cannot

³⁴² Cited in 126 U.S. 1, 531 (1887).

³⁴³ The various cases involved other challenges to the telephone patents. The novelty of the invention was attacked, and there was also a claim of fraud at the Patent Office.

³⁴⁴ The more important cases are: *American Bell Tel. Co. v. Spencer* (C.C.D.Mass. 1881); *American Bell Tel. Co. v. Dolbear*, 15 F. 448 (C.C.D.Mass. 1883); *American Bell Tel. Co. v. Dolbear*, 17 F. 604 (C.C.D.Mass. 1883); *American Bell Tel. Co. v. People's Tel. Co.*, 22 F. 309 (S.D.N.Y. 1884); *American Bell Tel. Co. v. Molecular Tel. Co.*, 32 F. 214 (S.D.N.Y. 1885); *American Bell Tel. Co. v. Globe Tel. Co.*, 31 F. 729 (S.D.N.Y. 1887).

³⁴⁵ *Dollbear*, 15. F. 448.

patent a principle... [b]ut the confusion of this subject has been... cleared up.”³⁴⁶ While “[t]here can be no patent for a mere principle,... natural force or a scientific fact,” Gray explained, the inventor of “a process by which a certain effect of one of the forces of nature is made useful to mankind... is entitled to a patent for the process of which he is the first inventor, and is not restricted to the particular form of mechanism or apparatus by which he carries out that process.”³⁴⁷ Since Bell’s patent was “clearly not intended to be limited to a form of apparatus, but embraces a method or process”³⁴⁸ the conclusion followed that “the essence of his invention consists not merely in the form of apparatus which he uses, but in the general process or method of which that apparatus is the embodiment.”³⁴⁹ As a result the protected invention extended to any device that used “undulatory vibrations of electricity to correspond with those of the air, and transmitting them to a receiving instrument capable of echoing them.”³⁵⁰

This was broad indeed. Arguing before the Supreme Court, counsel for one of the appellants called it a “dangerous- I was going to say wild- theory of patentable invention.”³⁵¹ The court was not impressed. Chief Justice Waite, writing for the majority, sustained the broad interpretation of the claim and refused to limit Bell’s patent to a concrete structural design. Moreover, in Waite’s elaboration of process-patents the old ghosts of patenting an “art,” that were supposedly put to rest with the post-bellum aversion to patenting principles and the more technical definition of a process, came back to haunt patent law.

Bell, Waite reasoned, was both an inventor and a discoverer. His discovery of an art consisted in “changing the intensity of a continuous electric current, so as to make it correspond exactly to the changes in the density of the air caused by the sound of the voice.”³⁵² His invention was specific means of “making it useful.”³⁵³ This entitled Bell for two sorts of

³⁴⁶ *Id.*, at 449.

³⁴⁷ *Id.*

³⁴⁸ *Id.*, at 450.

³⁴⁹ *Id.*, at 454.

³⁵⁰ *Id.*

³⁵¹ Tel. Cases, 126 U.S. 1, 497 (1888); see also *id.*, at 151.

³⁵² *Id.*, at 532.

³⁵³ *Id.*, at 533.

protection, “as discoverer, for the useful art, process, method of doing a thing he has found; and as inventor; for the means he had devised.”³⁵⁴ The patent for the art was not limited to “the particular means employed for using it.”³⁵⁵ “Surely a patent for such a discovery,” Waite wrote, “is not to be confined to the mere means he improvised.”³⁵⁶

This reasoning was a return to the mid-century arguments of patenting a discovery or an art under a very thin cover of a “process.”³⁵⁷ Yet, this brand of arguments was supposed to be long dead after the *Telegraph Cases* and their aftermath. The court could not afford a frontal attack on this orthodoxy. It religiously cited *O’Rielly* and the rule against patenting principles.³⁵⁸ But what was the difference between the broad claim of Morse and that of Bell? The difference, Waite said, was that Morse’s eighth claim was for “the use of magnetism as a motive power, without regard to the particular process with which it was connected.”³⁵⁹ In contrast Bell’s claim was “not for the use of the current of electricity in its natural state as it comes from the battery, but for putting a continuous current in a closed circuit into a certain specified condition suited to the transmission of vocal and other sounds.” Thus Bell claimed only the use of electricity “in that condition,”³⁶⁰ namely “the art of creating changes in intensity in a continuous current of electricity, exactly corresponding to the changes of density in the air caused by the vibrations which accompany vocal or other sounds, and of using that electrical condition thus created for sending and receiving articulate speech telegraphically.”³⁶¹

The distinction was very thin. It stretched the outer-limits of process-patents as to hopelessly blur their borderline with abstract principles. When faced with this theory during argument, the objections of counsel for appellants frantically oscillated between amusement and horror. The broad

³⁵⁴ *Id.*

³⁵⁵ *Id.*

³⁵⁶ *Id.*, at 539.

³⁵⁷ *Id.*, at 537 (appellants argument ignores the fact that the patent is “first for a process”).

³⁵⁸ *Id.*, at 534.

³⁵⁹ *Id.*

³⁶⁰ *Id.*

³⁶¹ *Id.*, at 533-534.

interpretation of the fifth claim, Lowrey argued, results in “a Monopoly of a Scientific Fact or a Law of Nature.”³⁶² What Bell discovered “was not that electrical undulations *can* (as if there were some choice on the part of the inventor), but that they *do*, transmit sound by conforming themselves to the characteristics of the energy which creates the sound.”³⁶³ Such a claim, he said, amounted to claiming “the electrical transmission of speech under the form of a pretended description of how nature does it!”³⁶⁴ Similarly, Browne commented on Justice Gray’s decision in Massachusetts that “The learned Justice misunderstood. It is not a question of *the only way* to transmit speech by electricity. Producing electrical changes upon the line corresponding to the sonorous air changes is not *a way* of transmitting speech by electricity. *It is doing it*. It is that in which the electrical transmission of speech consists. It is the alternative form of word for the same thing.”³⁶⁵ Browne went on to argue that this was patenting a principle by merely calling it a process. The fifth claim, he argued, “while denying Mr. Bell a patent *in terms* for the use of electricity to transmit speech, gives it to him *in substance* by giving him a patent for that which is done necessarily, in the nature of things, *ex vi termini*, whenever speech is transmitted by electricity... He has changed the words of his claim but not the thing claimed.”³⁶⁶ Lowrey summed it up sarcastically: “To allow a patent claim for such discovery might be likened to a claim for raising wheat by the germination of the seed: *leaving mankind free to produce wheat by all other methods!*”³⁶⁷

All of this was to no avail. Chief Justice Waite simply repeated his observation that the patent was for a process and not a principle. “It may be that electricity cannot be used at all for the transmission of speech except in the way Bell has discovered,” he said, “but that does not make his claim one for the use of electricity distinct from the particular process.”³⁶⁸

The *Telephone Cases* were the epitome of process-patents discourse as it developed toward the end of the century. They forcefully demonstrated two important aspects of this doctrinal area. Firstly, it became clear that process-

³⁶² *Id.*, at 207

³⁶³ *Id.*, at 208

³⁶⁴ *Id.*

³⁶⁵ *Id.*, at 498.

³⁶⁶ *Id.*, at 498.

³⁶⁷ *Id.*, at 210.

³⁶⁸ *Id.*, at 535.

patents formed the new doctrinal center where the outer-limits of patentability could be explored and expanded. While old-style direct arguments about patenting principles were sure to fail; many courts were receptive to broad and abstract claims of processes. A skillful lawyer and a willing court could validate process claims, describing the invention on a very high level of abstraction and ensuring a broad scope of control. Often, this was the case even when the abstract process claimed encompassed the same or almost the same scope that was previously denied as claiming a principle.

Secondly, the *Telephone Cases* exposed the extent to which the whole principle/process distinction was malleable and manipulable. The great constitutive axiom of patent law that abstract principles and laws of nature are never patentable turned out to be an obscure and shifting line. This was evident in the fact that both parties were arguing within the common framework premised on the non-patentability of principles and the patentability of processes. Nevertheless, counsel for appellants on the one hand and Bell's lawyers as well as the court on the other had radically different versions of what in the case at hand fell under each category. In the court opinion it was the naked use of electricity for purposes of communication that constituted the principle and the correlation between electric current and air vibrations that formed the process. In the competing account, however, "the principle or scientific fact involved" was that "the electrical condition of the wire vary with the varying conditions of the air, brought about by speech."³⁶⁹ In contrast the process was a concrete set of structures or actions to achieve this condition. From this perspective, the specific methods used by Bell and some of his competitors, while sharing the same principle, varied greatly. The fundamental principle/process distinction turned out to be an elusive set of rhetorical tools that in skilful hands could produce radically different outcomes. Moreover, the Supreme Court showed willingness to interpret the process as to encompass a scope of protection that was little different than what was previously claimed under the title of "principle."

At the end of the nineteenth century process-patents became one of the main arenas where conflicts of interest and conceptual maneuvers relating to the concept of the invention took place. Although competing interpretations of process-patents existed even late in the century, in the age in which the patentability of principles argument was unanimously rejected, this brand of patents proved to be a most promising alternative track for attaining broad

³⁶⁹ *Id.*, at 161.

scope of protection. Implied in such doctrinal maneuvers was an abstract and broad notion of the protected invention. There was no inherent logical characteristic that necessitated this more abstract interpretation of process-patents. Theoretically “steps” or “elements” of a process could be construed on varying degrees of abstraction in exactly the same way that applied to the “components” of a “machine.” Nevertheless, it seems that the more self-evident “immateriality” of the process made it particularly susceptible to the reasoning of protecting intellectual “essences” irrespective of “instrumentalities.” Hence it was the very characteristic of the process- its manifest abstractness- which made it particularly suspect as an invention to early English and American judges, that by the end of the century placed it at the forefront of patent doctrine and theory.

d. Patentability, Property and Ideology

Is there any general pattern in the nineteenth century development of the complex doctrines of patentability and infringement and of the concept of the invention embedded in them? What should we make of the tortuous path of patentability rules, the doctrine of equivalents, the struggle over patents for “principles” and the late century rise of the process-patent? I would argue that similar to copyright law doctrines, these legal structures had a semi-ideological character. Their development simultaneously served an important function in the new consolidating scheme of patent law and provided a pool of rhetorical and classificatory mechanisms through which to filter the emerging reality created by patent law and mediate associated concerns and anxieties.

One important aspect of the patentability and infringement doctrines that emerged during the nineteenth century was the function of boundary-drawing. These doctrines came to serve this function in a transforming field, whose older mechanisms were swept away. In the old English patent tradition the patent was a case-specific privilege to exercise a “trade” premised on serving a specific public interest. The boundary-setting mechanisms of the patent grant were integral to this scheme. They consisted mainly of ad-hoc policy deliberations and compromises embedded in revocation procedures and causes of action such as “inconveniency.”³⁷⁰ Since the mid-eighteenth century, however, this scheme was gradually supplanted by that of a patent as a general right of ownership of an intellectual entity, the invention. The old

³⁷⁰ See *supra* Chapter 1, sec. I(A)(3)(c).

boundary-setting mechanisms and procedures, embedded in the old scheme, degenerated and disappeared.

In the United States, most of these traditional English mechanisms did not exist to begin with, at least as far as the federal regime was concerned. The new concept of invention as an intangible object, however, raised nagging questions regarding the boundaries of the invention. Where exactly does one's "invention" start and where does it end? The answer seemed much less self-evident than when asked in the context of one's plot of land.

Moreover, the refinement of notions of the invention as an intellectual essence capable of manifestation in a manifold of forms, and attempts of interested parties to deploy such arguments exposed the almost unlimited potential for expansion of the new concept. This raised a previously non-existent ever-present concern about the monopolization of "knowledge" or "science." Rules of patentability and of infringement were constructed as an essential regulatory means for controlling the scope of patent protection. Designating some subject matter as unpatentable and limiting the patent's coverage to equivalent devices were the doctrinal tools for keeping the nebulous entity of the "invention" and the control power attached to it in check.

These new doctrinal-conceptual structures had another aspect. They did not only regulate the scope of patent protection; they also constituted a certain image of patent law that mediated deep concerns associated with the new system of owning knowledge. When patents were reconceptualized at the late eighteenth century as ownership of knowledge, the old fears of the ills of "monopolies" associated with the concept of trade privileges were supplemented by a new anxiety. At the center of this new anxiety was the specter of private appropriation of public knowledge.³⁷¹ During the nineteenth century this concern was sometimes framed in terms of allowing breathing space for subsequent innovation or of fear that patents might retard instead of promote progress.³⁷² Frequently, however, the concern had ethical undertones. Owning knowledge conjured the specter of "owning science" or of private control of what was often referred to as "the common property of mankind."³⁷³ Patents carried now not just the potential of abusive

³⁷¹ One of the earliest examples is *Boulton & Watt v. Bull*, 126 Eng. Rep. 651 (C.P. 1795).

³⁷² See e.g. *Le Roy v. Tatham*, 55 U.S. 175.

³⁷³ See e.g. *Detmold v. Reeves*, 7 F. Cas. 547, 549.

monopolies, but also the danger of individual control of that which prevalent social ethos presented as “belonging” to society as a whole.

Rules of patentability did not simply perform the function of restricting patents to their proper sphere. They created a picture of social reality in which patents were, by definition, so restrained. But in what sense did this picture have an ideological aspect? To some extent, in a similar way to the idea/expression dichotomy in copyright law,³⁷⁴ there appeared a widening rift between the actual social outcomes of patent doctrine and its self-representation. As the nineteenth century progressed abstract patents that created an unprecedented scope of private control over knowledge were granted and upheld. Bell’s patent and the *Telephone Cases* were the epitome of a patent breadth unimaginable early in the century. At the same time the grand rule that abstractions and natural principles could never be patented achieved a central status in patent doctrine and was frequently trumpeted. Moreover, it was usually exactly in those occasions in which new levels of abstractness and breadth were upheld, that allegiance to the rules against patenting abstractions was most forcefully declared. Doctrinal reality and doctrinal rhetoric were often disjoined. Nevertheless, this phenomenon was somewhat less acute than in the area of copyright where the gap between the rise of the idea/expression dichotomy on the one hand and expanding subject matter, entitlements and scope of protection on the other was more radical.

The more glaring disjunction between patent doctrine and its self-representation was in the very idea of firm and stable borders to patentability. Rules of patentability were often presented and conceived as delimiting two utterly distinct zones, the difference between which was one of kind rather than of degree. As Robinson, put it in 1890, using the two meanings of the term “principle” to denote these two spheres:

“A principle, in this sense, thus differs *toto coelo* from a principle considered as a force. The latter is the operative energy; the former is the means in which the latter operates. One is created by the author of the universe; the other owes its origin to human ingenuity. One belongs equally to all mankind; the other is the exclusive property of him who has devised it, until it pleases him to give it to the world.”³⁷⁵

³⁷⁴ See *supra* Chapter 3, sec. C(1)(d).

³⁷⁵ 1 Robinson, *supra* note 99, at 199-200.

The two-sphere image of patentibility was particularly suited to deal with the anxiety of private control of public knowledge. It presented a diametric opposition between that which was the ultimate object of private property and that which could never be. The one comes to the world as a result of the effort of the “creative genius.” The other is “not the product of the inventive skill” but rather “exists in nature independently of human effort.”³⁷⁶ The one is capable of appropriation by an individual. The other “is wholly beyond his control” and “lacks the essential attribute of private property- the capability of exclusive appropriation by an individual to his own use.”³⁷⁷ Such sharp distinctions made the possibility of controlling public knowledge unlikely and doomed to fail by virtue of its very absurdity. In the words of Robinson, “all endeavors to confine it to himself are at once futile and unjust.” Rather “[i]t exists for all men” and the law “does not suffer any man to debar others of the use of that which nature has bestowed on all.”³⁷⁸

The doctrinal reality of patent protection as it developed during the nineteenth century was, of course, diametrically opposed to this image of two completely different and separate spheres divided by a firm and bright line. The scope of patent protection was fluid, unstable and open to various interpretations. Rather than a clear dividing line, rules of patentability turned out to be a shifting and flexible front. They supplied an arsenal of resources for constructing competing visions of the invention and of patentability. Such competing visions were pitted against each other and succeeded each other in different periods. The unpatentable “natural principles” of one period became patentable inventions a few decades later. In this respect, the self-perception of patent law, as embedded in doctrines of patentability and infringement, was a mirror image of its reality.

2. The Invention and the Genius: Inventing Non-Obviousness

The twin-concept and the logical counterpart within patent discourse of the notion of invention was that of the inventor. By 1790 the rhetoric of patents in America was saturated with a new image of the inventor. The traditional image of the entrepreneur who engages in a new and socially beneficial economic activity did not completely disappear. But it was coupled

³⁷⁶ *Id.*, at 196.

³⁷⁷ *Id.*, at 196.

³⁷⁸ *Id.*, at 196-197.

by a new representation of the inventor as a genius who using his intellectual capacities creates original “inventions.” The late eighteenth century state grants tended to include both images, oscillating between arguments about “encouragements of arts, manufactures, and commerce”³⁷⁹ and the need to “encourage men of learning and genius to publish and put in practice such writings and discoveries as may do honor to their country and service to mankind.”³⁸⁰ In 1792 Joseph Barnes wrote of patents as “*mental property*”³⁸¹ which he defined as “*products of genius*, which consists in discoveries in sciences, and in the useful arts.”³⁸² The introduction to Thomas Fessenden’s 1810 first American patent treatise is full of references to the “author of new and useful invention” and to the “fruits of his ingenuity” which is “the work of his hands and the offspring of his intellect.”³⁸³

This new focus of patent discourse on the new image of the inventor was reflected, to some extent, in the American patent regime right from its inception. Unlike Britain American patent law was not encumbered with entrenched doctrinal structures fashioned under the influence of earlier notions of inventorship, for the simple reason that prior to 1790 there was no American patent law. Thus some of the doctrinal structures that were created for the first time in the ideological climate of the late eighteenth century were much more reflective of the modern notion of the inventor than their British counterparts.

One example was the question of patents of importation, that is to say, patents in new technology not “invented” in the modern sense, but rather imported into the country. The importer was just as much an inventor as the developer under the old scheme, but not so under the new image of the genius creator. Britain would follow the traditional rule of patents of importation

³⁷⁹ 1780 Pennsylvania patent to Henry Guess. X STATUTES AT LARGE OF PENNSYLVANIA FROM 1682 TO 1801 131 (James T. Mitchell & Henry Flanders eds. 1896-1911); Bugbee, *supra* note 4, at 86.

³⁸⁰ V STATUTES AT LARGE OF SOUTH CAROLINA 71 (Thomas Cooper ed. 1837-1868); Bugbee, *supra* note 4, at 95.

³⁸¹ JOSEPH BARNES, TREATISE ON THE JUSTICE, POLICY AND UTILITY OF ESTABLISHING AN EFFECTUAL SYSTEM FOR PROMOTING THE PROGRESS OF USEFUL ARTS, BY ASSURING PROPERTY IN THE PRODUCTS OF GENIUS 6 (1792).

³⁸² *Id.* at 4.

³⁸³ THOMAS GREEN FESSENDEN, AN ESSAY ON THE LAW OF PATENTS FOR NEW INVENTION xxxvii (1810).

well into the nineteenth century.³⁸⁴ In contrast the American 1790 regime and its successors refrained from expressly including the importer of technology as a potential grantee of patents alongside the inventor in the modern sense, apparently with a conscious intention to exclude such patents.³⁸⁵ Despite some early ambiguity³⁸⁶ and some controversy about this question that would keep resurfacing for decades to come,³⁸⁷ the dominant view that

³⁸⁴ The traditional precedent in England that formally declared the legality of the existing practice of patents of importation was *Edgeberry v. Stephens*, 91 Eng. Rep. 387 (K.B. 1691). This would be good law in Britain well into the nineteenth century.

³⁸⁵ During the legislative process of the Patent Act of 1790 language that expressly mandated patents of importation was added to the statute's draft and later was struck out. Walterscheid, *supra* note 4, at 121, 125-128, 137. This legislative history seems to strongly suggest that the possibility of patents of importation was contemplated and rejected. As Walterscheid points out, although the deletion of patents of interpretation from the bill may have been in part due to constitutional concerns, claims by modern commentators that the use of the phrases "inventors" and "discoveries" in the constitutional clause was meant to exclude patents of interpretation are most probably anachronistic and baseless. *Id.*, at 94-97. See e.g. K.B. Lutz, *Are the Courts Carrying Out Constitutional Public Policy on Patents?*, 34 J. PAT. OFF. SOC. 773 (1952).

³⁸⁶ In his January 8, 1790 address on the state of union Washington spoke of "the expediency of giving effectual encouragement as well as to the introduction of new and useful inventions from abroad, as to the exertion of skill and genius in producing them at home." III DOCUMENTARY HISTORY OF THE FIRST FEDERAL CONGRESS OF THE UNITED STATES OF AMERICA, HOUSE OF REPRESENTATIVE JOURNAL 253 (L.G. De Pauw et al. eds., 1977). See also Walterscheid, *supra* note 4, at 109-112. Washington's address was prior to the legislative developments of adding and deleting patents of importation from the first Act's bill.

³⁸⁷ In 1816 Oliver Evans argued that the 1793 Patent Act encompassed importation patents. OLIVER EVANS, EXPOSITION OF PART OF THE PATENT LAW BY A NATIVE BORN CITIZEN OF THE UNITED STATES 60-61 (1816). In 1810 Thomas Fessenden conceded that patents of importation did not exist in the United States, but strongly argued in favor of changing the law in this regard. Fessenden, *supra* note 74 at 213-216.

appeared early on was that the only beneficiary of the patent regime was the “true inventor” and not the mere importer.³⁸⁸

Things were somewhat murkier regarding the development of priority of invention rules and procedures, but the overall pattern was similar. Despite some engagement with the question during the legislative process, the 1790 statutory regime remained completely silent on the issue.³⁸⁹ To the best of our knowledge, the Patent Board, while it existed, did its best to avoid deciding priority disputes.³⁹⁰ In contrast, the 1793 regime included a detailed “arbitration” system for determining priority of invention in cases of disputes (a procedure that would later be known as “interference”).³⁹¹ The arbitration system was limited in significance, toothless and probably ineffective.³⁹²

³⁸⁸ See *Reutgen v. Kanowrs*, 20 F. Cas. 555, 556 (C.C.D.Pa. 1804); *Dawson v. Follen*, 7 F. Cas. 216 (C.C.Pa. 1808); *Evans v. Eaton*, 8 F. Cas. 846, 853 (C.C.D.Pa. 1816). Walterscheid, *supra* note 4, at 372-382. It is quite possible that at least some of the earliest patents granted in the United States were in fact patents of importation. See *id.*, at 379.

³⁸⁹ Although during the legislation process several suggestions were considered and provisionally adopted as to the procedure of determining priority of invention, the 1790 Act as enacted ended up being completely silent on both procedure and substantive standard. See E. C. Walterscheid, *Priority of Invention: How the United States Came to Have a ‘First to Invent’ Patent System*, 23 *AIPLA Q.J.* 263, 283-291 (1996). Walterscheid also suggests that the early elaborate engagement in the United States with the question of priority rules may have been induced by Fitch and Rumsey that had been involved in a patent competition on the state level for years and saw the new federal regime as an opportunity for a final determination. Walterscheid, *supra* note 4, at 90. This is not unlikely. However, it is no less important to notice the significance of the fact that to begin with a main axis of the competition between the two revolved around the question of priority.

³⁹⁰ When the issue of priority came before the Patent Board with the high profile struggle over the steamboat patent involving no less than four claimants (John Fitch, James Rumsey, Nathan Read, John Stevens) the Board most probably avoided making a priority determination and simply issued four patents, presumably not overlapping in coverage. Walterscheid, *supra* note 4, at 184-194; Walterscheid, *supra* note 389, at 296-297.

³⁹¹ 1793 Patent Act, §9. Walterscheid, *supra* note 389, at 301-306.

³⁹² Walterscheid, *supra* note 389, at 309-313. In 1816 Justice Story ruled that a refusal to participate in the priority arbitration process was not a ground for voiding a patent. *Stearns v. Barret*, 22 F. Cas. 1175 (C.C.D.Mass. 1816).

Moreover, the statute was still completely silent regarding the substantive standard for deciding questions of priority. It was only in 1836 that an effective system of interferences was put into place, and what became a hallmark of American patent law- a first to invent standard- was clearly legislated.³⁹³ Nevertheless the early engagement with the question of priority and the creation of a detailed institutional mechanism for dealing with it is indicative of the rising importance of the modern notion of the inventor. Significant in this respect is also the fact, that, to the best of our knowledge, the substantive standard employed in interferences under the 1793 system was a first to invent one, or more probably various versions of this standard.³⁹⁴ Again the difference from the situation in Britain during the same period is telling. Although the Statute of Monopolies mandated that patents could be granted only to the “true and first inventor”³⁹⁵ by the late eighteenth century there were not yet in Britain clear rules and procedures for determining priority.³⁹⁶ When such rules consolidated there during the nineteenth century they gave priority to the first person to file a patent application rather than to the first to invent.³⁹⁷

Thus the modern image of the inventor was placed at the center of American patent law at its very genesis. Nevertheless, despite an abundance of rhetoric and the appearance of a few doctrinal-institutional expressions, in 1790 legal discourse was only beginning to digest and shape the concept of the inventor. To be sure, American patent law was all about inventorship. But what exactly were the legal implications of this fact and who exactly was legally recognized as an inventor? What were the essential characteristics that made someone an inventor in the eyes of the law? Elaborate doctrinal structures for dealing with such fundamental questions would only gradually develop during the nineteenth century. The trope of the inventor would be used, manipulated and deployed by interested parties, judges and commentators. The doctrines they would produce and transform throughout the century would not be a mere expression of a preexisting ideological concept that dominated American patent law from its inception. Rather it

³⁹³ 1836 Patent Act.

³⁹⁴ Walterscheid, *supra* note 389, at 309.

³⁹⁵ 21 James I cap. 3., §6.

³⁹⁶ See Walterscheid, *supra* note 389, at 265-269.

³⁹⁷ See Godson, *supra* note 120, at 54-55; Hindmarch, *supra* note 128, at 31 (“he shall be deemed the first inventor of a new manufacture who shall first give, or contract by a patent to give, a knowledge of it to the public.”).

would be concretizing, reshaping and pouring new content into that ideological image.

a. The Genius between Novelty and Utility

The legal doctrine that eventually came to be most identified with the new constituting image of the inventor was non-obviousness, the requirement that patentable invention would embody a substantial advancement and not a mere obvious variation in light of existing knowledge in the field. Yet for more than half a century no such requirement existed in American patent law. Traditional English patent law certainly did not have a non-obviousness or a similar requirement at the time. The post Statute of Monopolies framework was based on the old notion of invention that equally applied to any introducer of a new useful trade to the realm. Accordingly the central governing concept there was novelty, the straightforward requirement that the invention be new to the realm. Despite the late eighteenth century changes and the rise of a new concept of invention, English law, caught up in the legal-conceptual relics of the past, was slow to change in this regard. By the early nineteenth century it still clung to the conspicuously old-style doctrine of patents of importation and showed little tendency of developing explicit doctrinal mechanisms for articulating the new concept of the inventor.

American patent law was less encumbered with such remnants from the past and attempts to introduce and use doctrinal expressions of the new notion of the inventor started early on. There were occasional early attempts to introduce such doctrines, some of which bear striking resemblance to what much later would become the non-obviousness requirement. Nevertheless, such straightforward attempts were unsuccessful. It would be only in the 1851 *Hotchkiss v. Greenwood*³⁹⁸ that an explicit and independent non-obviousness standard would be directly adopted for the first time. Moreover it would be only after the Civil War that *Hotchkiss* and its non-obviousness standard would be truly widely accepted and become a dominant feature of patent doctrine.³⁹⁹

³⁹⁸ 52 U.S. 248 (1851).

³⁹⁹ K. Burchfiel, *Revising the "Original" Patent Clause* 2 Harv. J. L. Tech. 191 (1989). Burchfiel is accurate in identifying that the non-obviousness standard in its modern sense was never accepted in judicial decisions until *Hotchkiss* and that it became significant only after the Civil War. As I explain below he is somewhat less accurate in failing to explain how novelty

As early as 1791 the bill, that would eventually become the Patent Act of 1793, contained some prerequisite of invention separate from novelty. It provided as a defense for infringement the showing that “the same is so unimportant and obvious that it ought not to be the subject of an exclusive right.”⁴⁰⁰ However, this language, for reasons that remain unknown, was not included in the final enacted version of the 1793 Act. The next known major attempt to raise a direct obviousness defense of this sort happened in the 1825 *Earle v. Sawyer*.⁴⁰¹ In the circumstances of the case there could be no novelty challenge since “[t]here was no evidence in the case to show, that any person had ever, before the plaintiff’s asserted invention, applied a circular saw in any manner to the plaintiff’s old machine.”⁴⁰² Defendant had to turn to other resorts and one promising option was the new central concept of the inventor. Thus the report tells us that in trial “[t]here was considerable conflict of testimony in the cause (which was left to the jury), as to the question whether the application of the circular saw to the old machine was an invention or not.”⁴⁰³ Defendant’s argument was, in essence, that being an inventor required more than merely producing something that did not exist before. Thus he argued that the “combination itself is so simple, that, though new, it deserves not the name of an invention”⁴⁰⁴ and that it “was so obvious to mechanics, that one of ordinary skill, upon the suggestion being made to him, could scarcely fail to apply it in the mode which the plaintiff had applied his.”⁴⁰⁵

doctrine during this period, though different in important respects, engaged closely related themes associated with the new idea of the inventor. Burchfiel also rightly explains that the modern notion that non-obviousness is grounded in the constitutional clause and forms part of the clause’s limitation on Congress’s power to legislate in the field of patents is of an even more recent origin. As Burchfiel explains obscure references to the constitutional language in the context of non-obviousness and later direct articulation of grounding obviousness on the constitutional level appeared only in the late nineteenth century.

⁴⁰⁰ H.R. 121. reprinted in Walterscheid, *supra* note 4, at 470.

⁴⁰¹ 8 F. Cas. 254 1825.

⁴⁰² *Id.*

⁴⁰³ *Id.*, at 255.

⁴⁰⁴ *Id.*

⁴⁰⁵ *Id.*

Justice Story restated the argument exactly in terms that presented the activity of inventing as characterized by some quality which goes beyond novelty:

“It is not sufficient, that a thing is new and useful, to entitle the author of it to a patent. He must do more. He must find it out by mental labor and intellectual creation. If the result of accident, it must be what would not occur to all persons skilled in the art, who wished to produce the same result. There must be some addition to the common stock of knowledge, and not merely the first use of what was known before... An invention is the finding out by some effort of the understanding. The mere putting of two things together, although never done before, is no invention.”⁴⁰⁶

Yet Story went on to flatly reject the argument and deny that the legal meaning of inventing required anything beyond existing statutory requirements of novelty and utility. “It is of no consequence, whether the thing be simple or complicated; whether it be by accident, or by long, laborious thought, or by an instantaneous flash of mind, that it is first done,” he wrote, rather “[t]he law looks to the fact, and not to the process by which it is accomplished. It gives the first inventor, or discoverer of the thing, the exclusive right, and asks nothing as to the mode or extent of the application of his genius to conceive or execute it.”⁴⁰⁷

The reasons that motivated Story to reject the inventive quality argument remain unknown, since he opted for a formal reasoning grounding the decision in the statute’s text which only required the invention be “new and useful.” One can speculate that the inventive quality argument threatened to challenge the framework of patent law as free from all substantive judgments of value that Story had painstakingly toiled to construct since 1814. If one had to meet a substantive qualitative criterion in order to being recognized as an inventor, courts would have to make judgments of this kind. The vision of the neutral market as the sole arbiter of value and reward could be jeopardized. Instead Story preferred to limit the statutory requirements to the seemingly neutral issue of novelty and leave all value evaluations to the market. Of course, there was also the explicit statutory requirement of utility. Yet by 1825 Story’s version of utility doctrine already reduced it to a

⁴⁰⁶ *Id.*

⁴⁰⁷ *Id.*, at 256.

minimum consistent with his market vision of patents.⁴⁰⁸ Accordingly when mentioning utility alongside novelty in *Earle* Story immediately added that “the degree of positive utility is less important in the eye of the law, than some other things, though in regard to the inventor, as a measure of the value of the invention, it is of the highest importance.”⁴⁰⁹

Whether this was indeed Story’s motivation remains speculative. It is clear, however, that the general rejection in *Earle* of the direct argument for an independent inventive quality requirement dominated the first half of the century. It was cited with approval by all significant commentators during this period.⁴¹⁰ Moreover, until the 1851 *Hotchkiss* there is no other reported case in which a defendant even tried to raise an objection identical to that discussed in *Earle*.⁴¹¹ This did not mean, however, that during this period attempts to elaborate and develop the new concept of inventorship or to use it strategically had ceased. On the contrary, active engagement with the meaning of the inventive act continued in patent discourse, albeit not in the form of an independent legal requirement.

The main doctrinal area where preoccupation with inventorship flourished before the Civil War was the requirement of novelty. The key feature of mid-century novelty doctrine that made it a fertile ground for grappling with the issue of invention was the fact that unlike its modern successor the requirement that a patentable invention be new was not interpreted narrowly as limited to cases of complete or nearly complete identity between a patented invention and an allegedly anticipating device. Rather, the notion that governed novelty discussions was that of “substantial novelty” or “substantial identity.” In fact, the entire doctrinal and conceptual framework that dealt with notions of identity developed simultaneously in the context of infringement and patentability on the one hand, and novelty on the other. Usually there was no clear demarcation between the two contexts. Despite some different doctrinal nuances, the generally accepted rule was that the same concepts and tests applied to determining whether there was anticipation of the invention by an earlier machine or art and to whether it was infringed by subsequent ones. Whether the invention was identical to another device or art, it was assumed, was the major issues in either case. It was only natural to apply the same criterion of identity. Hence, central

⁴⁰⁸ See *supra*, sec. A(3).

⁴⁰⁹ 8 F. Cas. 256.

⁴¹⁰ Phillips, *supra* note 60, at 127.

⁴¹¹ See also Burchfiel, *supra* note 399, at 190.

notions such as the rule of identity of “principle” rather than of mere “form” or mechanical equivalents, equally applied to determining infringement and novelty. Even the statutory language to which some early courts and commentators clung when developing the early doctrine of equivalents- that “simply changing the form or the proportions of any machine, or composition of matter, in any degree shall not be deemed a discovery”⁴¹²- was, obviously, taken from the novelty context.

The upshot of the “substantial similarity” understanding of novelty was that discussions of actual identity were often intertwined with notions of the nature and quality of the invention. Speakers often naturally moved back and forth between the question of whether a patented device was different in principle and not just form from earlier devices and the inquiry of whether it was a real invention as opposed to a mere alteration of an existing device. The answer to the question of “what is substantially new?” only too often turned out to be: “that which was created by a true inventor.” Sometimes, there was even use of the trope of “obviousness” in discussing such questions.

Phillips’ 1837 discussion of the substantial novelty requirement was a typical bundling together of notions of identity and questions of inventorship. The rule that “simply changing the form or the proportions of any machine, or composition of matter in any degree, shall not be deemed a discovery,”

⁴¹² 1793 Patent Act, §2. This connection between the statutory language, the early doctrine of equivalents and the later non-obviousness requirement led Walterscheid to conclude that: “the doctrine of equivalents is merely an interpretation of the language of Section 2 of the 1793 Act... It was a further restriction on novelty as interpreted under the Act of 1793 and a significant step toward the development of the modern requirement that an invention must be unobvious to be patentable.” Walterscheid *supra* note 4, at 390. This statement is not false but it confuses and obscures in an unfortunate manner several issues that for analytical purposes are better kept separate, although in the period’s discourse such strict distinctions were not always maintained and diffusion from discussions of one issue to the other did occur. Section 2 of the 1793 Act referred to the novelty criterion. Since the test of identity for purposes of novelty and infringement were usually thought of as identical, early nineteenth century courts sometimes used the section by way of analogy in defining the test of substantial similarity for purposes of infringement. These decisions later developed into the modern doctrine of equivalents. On the novelty side, notions about a need for substantial differences later developed into the non-obviousness requirement.

Phillips explained, is “but the branch of a more general rule in giving a construction to the law, namely, that any change or modification of a machine or other patentable subject, which would be obvious to every person acquainted with the use of it, and which makes no material alterations in the mode and principle of its operation , and by which no material addition is made, is not a ground for claiming a patent.”⁴¹³ The formally excluded question of an inventorship turned out to be hidden in the requirement of novelty and its concepts of difference and identity.

The mid-century inventive quality criterion that stealthily crept in through the requirement of novelty was different in important respects from the post Civil War non-obviousness doctrine. The *Earle* inventive quality argument used the image of the genius inventor without taking apart its different intertwined strands of meaning. Saying that one had to be an inventor referred to some notion of intellectual ability or mental labor demonstrated in the invention. But it also invoked the related idea of a particularly valuable technological advancement. The mark of genius was both intellectual capacity or skill and the creation of valuable knowledge. Story’s decision did not analyze these nuances. It rejected wholesale any requirement of inventive quality. The development of substantial novelty doctrine, however, related differently to these two strands of meaning. Judges and commentators embraced Story’s ruling, inasmuch as it meant the rejection of any requirement of demonstrating intellectual labor. *Earle* was read as standing for the proposition that “the sufficiency of the invention depends not upon the labor, skill, study or expense applied or bestowed upon it.”⁴¹⁴ Yet the common doctrinal discussion of novelty also adopted, often quite explicitly, the criterion of significant valuable advancement or contribution.

When they considered the novelty of an invention or questions of identity, courts often reduced the inquiry to the issue of the degree of improvement over previously existing technology. In fact, the regularly applied rule was that substantial novelty occurred when the change of an existing form produced new substantial or more than trivial value. This was not the only test of substantial novelty, but nevertheless a strong line of cases

⁴¹³ Phillips, *supra* note 60, at 125-126. See also *Hovey v. Stevens*, 12 F. Cas. 609, 612 (C.C.D.Mass. 1846) where the question of novelty was described as inquiring whether the variation is “a very obvious change to any mechanic” or “a change of principle, or is any thing which is new in principle; or whether one mode is not a mere equivalent for the other.”

⁴¹⁴ Phillips, *supra* note 60, at 127.

identified novelty with “new and greater advantage”⁴¹⁵ or with “a “better, cheaper, or quicker method.”⁴¹⁶ The issue of identity and the degree of added value tended to merge in this way, or as one court put it “[a]n improvement upon an old contrivance, in order to be of sufficient importance to be the subject of a patent, must embody some originality, and something substantial in the change producing a more useful effect and operation.”⁴¹⁷

The analytical identification of novelty with substantive improvement reached its purest form in Curtis’ 1854 treatise. When coming to discuss the requirement of novelty, Curtis explained that it was necessary “to consider somewhat in detail what amount of invention is essential.”⁴¹⁸ He began by expressing his allegiance to the *Earle* orthodoxy according to which “it is of no consequence whether a great or small amount of thought, ingenuity, skill labor or experiment has been expended, or whether it was discovered by mere accident.”⁴¹⁹ Next, however, there came an important qualification: “It may not be necessary that there should be positive evidence of design, thought or ingenuity, but it is necessary that the possibility of these qualities having been exercised should not be excluded by the character of the supposed invention.”⁴²⁰

What was the point of this subtle and rather odd test of potential-
ingenuity? It was simply a somewhat fancy expression of the principle that
guided Curtis’ entire analysis of novelty, namely, the requirement of actual
substantive improvement. As Curtis explained:

⁴¹⁵ *Hovey v. Stevens*, 12 F. Cas. 612.

⁴¹⁶ *Whitney v. Emmet*, 29 F. Cas. 1074, 1078 (C.C.E.D.Pa. 1831). See also: *Treadwell v. Bladen*, 24 F. Cas. 144, 146 (C.C.E.D.Pa. 1831).

⁴¹⁷ *Hall v. Wiles*, 11 F. Cas. 280, 283 (S.D.N.Y. 1851) (also “the question is, whether the plaintiff’s carriage, as constructed by him, is a substantial improvement, for the purpose for which it is used;” “the jury have a right to take into consideration, in connection with the change, the result which has been produced. Because, the result, if greatly more beneficial than it was with the old contrivance, reflects back, and tends to characterize, in some degree, the importance of the change”).

⁴¹⁸ Curtis, *supra* note 75, at 26.

⁴¹⁹ *Id.*, at 27.

⁴²⁰ *Id.*, at 28.

“... the utility of the change, and the consequences resulting therefrom may be such, as to show that the inventive faculty may have been at work; and in such cases though in point of fact, the change was the result of accident its utility and importance will afford the requisite test of the amount of invention involved in the change.”⁴²¹

This equated novelty with substantive improvement. “There are many cases,” Curtis explained, “where the materiality and novelty of the change can be judged of only by the effect on the result; and this effect is tested by the actual improvement.”⁴²² For Curtis, as for many antebellum courts, novelty became synonymous with “beneficial results, superior to what had been before attained”⁴²³ or with “the utility of the change.”⁴²⁴

This understanding of novelty ran directly in the face of the vision of patent law as leaving all substantive value judgments to the market that Story tried to construct in his early utility decisions. While those decisions were designed to detach patent rights from case-specific evaluations by courts of actual social value offered by particular inventions,⁴²⁵ novelty as based on substantial improvement made patents contingent on exactly such evaluations. In other words, the dominant understanding of novelty during the first half of the century was congruent with the lingering strand of thought that saw case-specific substantive social value judgments by organs of the state as an integral part of patent grants rather than with the market-based patent right envisaged by the line of thought led by Story.⁴²⁶ Ironically, courts and commentators enthusiastically cited *Earle* and went on to implement it in a way diametrically opposed to its author’s vision of the patent regime.

Thus, prior to the Civil War patent discourse by no means remained free of constitutive notions of the inventor. Doctrinally such notions were

⁴²¹ *Id.*, at 29.

⁴²² *Id.*, at 30.

⁴²³ *Id.*, at 31.

⁴²⁴ *Id.*, at 36.

⁴²⁵ See *supra*, sec. A(3).

⁴²⁶ An anecdote that demonstrates this is the fact that Curtis discussed *Langdon v. DeGroot*, 14 F. Cas. 1099– the decision that formed the strongest declaration of the traditional concept of substantive utility- as part of his analysis of substantive novelty. Curtis, *supra* note 75, at 39-40.

incorporated into the requirement of novelty. As a matter of substance their focus was the concept of a true invention as marked by the contribution of new substantial social value. While the image of the genius inventor bundled together the notion of intellectual activity of a particular kind and that of useful social results, early patent law emphasized the latter. The change in *Hotchkiss* and the later independent non-obviousness doctrine was not in introducing a requirement of inventive quality or in the assumption that inventions are marked by some special character. The transformation was in shifting the focus of such assumptions. The peculiar mark of invention would come to be described as detached from questions of substantive social value. If antebellum patent jurisprudence emphasized substantive social value and downplayed the character of the intellectual activity involved, post-bellum thinking would try to banish questions of substantive utility and to identify the mark of invention with a postulated more “objective” quality of the mental activity of inventing. The transformation of doctrinal concepts of invention was thus parallel to the change of utility doctrine. The dominant feature of both was the decline and denial of any criterion of substantive social value.

b. The Rise of Non-Obviousness

At the time it was decided the 1851 *Hotchkiss v. Greenwood* was hardly conceived as a cosmic event in American patent law. The decision that introduced for the first time an independent non-obviousness requirement was not immediately applied as a general standard of patentability. In many later cases courts adhered to traditional substantial novelty analysis and simply ignored the new independent non-obviousness requirement.⁴²⁷ Even when *Hotchkiss* began to take root it was at first conceived as applicable only to a limited category of “substitution of material” cases⁴²⁸ and its incompatibility with the *Earle* rule was often overlooked.⁴²⁹ It was only after the war that the new non-obviousness standard was applied across the board and rose to prominence.

⁴²⁷ See Burchfiel, *supra* note 399, at 204-207.

⁴²⁸ *Id.*, at 206.

⁴²⁹ Curtis, for example, devoted in 1854 one short section to discussing *Hotchkiss*, without mentioning its incompatibility with the rule of *Earle* that he enthusiastically cited beforehand. Curtis, *supra* note 75, at 47.

Nevertheless, since *Hotchkiss* later came to be seen as the watershed line it is useful to notice its internal dynamics that gave birth to the modern non-obviousness standard. The two opinions in the case- the majority by Justice Nelson and the dissent by Justice Woodbury- represent exactly the modern and the traditional approaches to the meaning of invention in patent doctrine. The difference between the two was not that the one introduced notions of the inventorship into patent doctrine while the other ignored such concepts altogether. The dividing line between the majority and the dissent was, rather, different emphasis in conceiving and describing the peculiar mark of inventing and inventors. While the dissent clung to the traditional identification of invention with actual advancement or with added social value, the new approach attempted to construct a criterion free from value judgments which appealed not to the added social value of the invention but to the character of the creative activity and to whether it involved the use of the “inventive faculty.”

At issue in *Hotchkiss* was a patent for a doorknob the novelty of which consisted in using clay rather than metal. The trial court instructed the jury that if “no more ingenuity or skill required to construct the knob in this way than that possessed by an ordinary mechanic acquainted with the business, the patent was invalid.”⁴³⁰ Justice Woodbury in his dissent rejected this instruction. The crucial fact to which he appealed numerous times in his opinion was that the new knobs were doubtless “better and cheaper.” The “true test of its being patentable,” Woodbury said was not whether “an ordinary mechanic could have made or devised it,” but rather “if the invention was new, and better and cheaper than what preceded it.”⁴³¹ Woodbury was deploying the traditional view of invention as substantial added-value that dominated the first half of the century. This view rejected a legal requirement of demonstrating a peculiar skill or intellectual capacity. According to Woodbury “it is manifest that the skill necessary to construct it, on which both the court below and the court here rely, is an immaterial inquiry, or it is entirely subordinate to the question, whether the invention was not cheaper and better.”⁴³² At the same time, however, it identified the legally relevant quality of invention as actual increase in social value. Thus inventions made “without the exercise of great skill, which are still in themselves both novel and useful... are entitled to protection by a patent,

⁴³⁰ 52 U.S. 265.

⁴³¹ *Id.*, at 268. See also *id.*, at 269 (“But it is impossible for an invention to be merely colorable, if, as claimed here, it was better and cheaper”)

⁴³² *Id.*, at 269.

because they improve or increase the power, convenience, and wealth of the community.”⁴³³

Justice Nelson, writing for the majority, took a different tack. The premise of his opinion was that the device at issue was indeed a substantial improvement. “Now it may very well be,” Nelson wrote, “that, by connecting the clay or porcelain knob with the metallic shank in this well-known mode, an article is produced better and cheaper than in the case of the metallic or wood knob.”⁴³⁴ The conclusion, however, was that “this, of itself, can never be the subject of a patent,” because “the difference is formal, and destitute of ingenuity or invention.”⁴³⁵ The new doctrinal element, that remained somewhat obscure in the analysis, was interpreting inventive quality as a requirement independent of and additional to novelty, what would become known as non-obviousness. The more crucial move, however, was, supplying a new account of the essential mark of invention. If traditional legal doctrine emphasized actual added-value, Nelson’s account shifted the center of gravity to a particular kind of intellectual skill or activity. The point was not whether the new doorknob was better, but whether it could be said to be the product of the “inventor.” As Nelson put it: “more ingenuity and skill... were required... than were possessed by an ordinary mechanic acquainted with the business, there was an absence of that degree of skill and ingenuity which constitute essential elements of every invention. In other words, the improvement is the work of the skilful mechanic, not that of the inventor.”⁴³⁶

The shift in the legal meaning of the inventive quality criterion remained somewhat obscure in *Hotchkiss* itself.⁴³⁷ Yet, when the initially underappreciated case was picked up after the Civil War and as the non-obviousness requirement rose to dominance the transformation became more conspicuous. During the last part of the century legal discourse developed and read into the non-obviousness requirement a conscious concept of the

⁴³³ *Id.*, at 269.

⁴³⁴ *Id.*, at 266.

⁴³⁵ *Id.*

⁴³⁶ *Id.*, at 267.

⁴³⁷ At one point in his dissent Justice Woodbury read the court’s opinion not as rejecting evaluations of substantive value but rather as eschewing his criterion of relative improvement over the existing art in favor of a more demanding standard of whether the invention is “valuable or material enough per se.” *Id.*, at 269.

inventive quality that attempted to banish considerations of substantive value to the periphery of patent law. The unique mark of inventorship would come to be identified with the exercise of the “inventive faculty,” which in turn would be separated from questions of substantive improvement.

In some of the earlier cases the line between the traditional analysis of inventive quality as part of substantial novelty and the new independent non-obviousness requirement was blurred. However, reversing the earlier approach, post-Civil-War courts increasingly construed the requirement of “invention” as separate from and independent of the other prerequisites of patentability. The rule became that “[n]ovelty and utility must indeed characterize the subject of a patent; but they alone are not enough to make anything patentable... things to be patented must be invented things, as well as new and useful things.”⁴³⁸ Toward the end of the century some courts would even suggest that the independent invention requirement is grounded on the constitutional level. Thus in the 1885 *Thompson v. Boisselier* Justice Blatchford remarked that “[t]he provision of the Constitution, Art. 1, sec. 8, subdivision 8, is, that the Congress shall have power ‘to 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.’ The beneficiary must be an inventor and he must have made a discovery.”⁴³⁹

Treatises would now have, usually at their outset, long sections devoted to “invention.”⁴⁴⁰ There appeared an independent fundamental requirement that to merit a patent “a thing must be the product of some exercise of the inventive faculties.”⁴⁴¹ This requirement was usually interpreted as the necessary outcome of the foundation of patent law in inventorship and inventions. These two concepts were conceived as having essential characteristics, which in turn were reflected in the law. “An invention,” it was explained, “in that it is an invention, possess certain

⁴³⁸ Walker, *supra* note 105, at 21. See e.g. *Thompson v. Boisselier*, 114 U.S. 11 (1884); *Gardner v. Herz*, 118 U.S. 191 (1884).

⁴³⁹ *Thompson v. Boisselier*, 114 U.S. 11. See also: *Gardner v. Herz*, 118 U.S. 180, 191-192 (1886); *Johnston v. Woodbury*, 96 F. 421, 434 (C.C.N.D.Cal. 1899). None of these opinions, however, clearly stated that a Congressional legislation that failed to require a non-obviousness standard would be unconstitutional. For a somewhat of an overstatement of this last point see: Burchfiel, *supra* note 399, at 172.

⁴⁴⁰ See e.g. Walker, *supra* note 105, at 20.

⁴⁴¹ *Id.*, at 21.

attributes without which it could not be an invention,- attributes which the law cannot alter, and which it cannot ignore.”⁴⁴²

What exactly was this essential character that defined inventors and how did the new requirement differ from the earlier substantial novelty standard? The essential mark of the inventor was usually described as “exercise of the inventive faculties,”⁴⁴³ which in turn entailed connotations of creative mental abilities and intellectual capacity. As Robinson put it: “the word ‘inventors’ in our law... is confined to those by whom creative skill and genius have been exercised. It is the exercise of this creative skill alone which is here recognized as an inventive act, and only the result of such an act... is an invention.”⁴⁴⁴ Following *Hotchkiss*, the common trope used in legal discourse to convey this idea was the antinomy of the “mechanic” and the “inventor.” No matter how skilled and proficient was the “mechanic,” it was often explained; there was a difference of kind from the “inventor.” The essential difference was the employment of intellectual creativity rather than mere technical skill.⁴⁴⁵ Again Robinson supplied an apt summery of this idea. “[T]he mental faculties employed in the inventive act,” he wrote, “are the *creative* not the *imitative* ones.”⁴⁴⁶

⁴⁴² 1 Robinson, *supra* note 99, at 114; See also *id.*, at 115 (a patentable invention has “essential characteristics which every invention must possess.”)

⁴⁴³ *Pearce v. Mulford*, 102 U.S. 112, 118 (1880).

⁴⁴⁴ 1 Robinson, *supra* note 99, at 105.

⁴⁴⁵ See for example: *Pickering v. McCullough*, 104 U.S. 310 (1881) (“the objections can be sustained only as to minor matters of detail in construction, not affecting the substance of the invention claimed, and could be removed by mere mechanical skill, without the exercise of the faculty of invention”); *Vinton v. Hamilton*, 104 U.S. 485, 492 (1881) (“The application to a cupola furnace, for the purpose of drawing off the cinder, of the cinder notch used in the blast furnace... would occur to any practical man... In making this application there was no invention”); *Morris v. McMillin*, 112 U.S. 247 (1884) (“It is plain... that no such ingenuity as merited the issue of a patent was required for this improvement, but only the ordinary judgment and skill of a trained mechanic.”); *Pearl v. Ocean Mills*, 19 F. Cas. 56, 59 (C.C.D.Mass. 1877) (“No more difficult task is imposed upon the court in patent causes than that of determining what constitutes invention, and of drawing the line of distinction between the work of the inventor and the constructor”).

⁴⁴⁶ 1 Robinson, *supra* note 99, at 116.

The main difference between the antebellum substantial novelty standard and the non-obviousness requirement with its emphasis on the “inventive faculty” was a shift away from the criterion of added social value. Although this concept did not disappear altogether, it was assigned to the periphery rather than the core of non-obviousness analysis. The new aphorism governing this area became: “not all improvement is invention.”⁴⁴⁷ The change was not immediate or completely unequivocal. Some influential cases continued to bundle non-obviousness and the mark of inventorship with actual substantial improvement. Thus, Justice Bradley in his important opinion in *Atlantic Works v. Brady*⁴⁴⁸ wrote:

“The process of development in manufactures creates a constant demand for new appliances, which the skill of ordinary head-workmen and engineers is generally adequate to devise, and which, indeed, are the natural and proper outgrowth of such development... To grant to a single party a monopoly of every slight advance made, except where the exercise of invention, somewhat above ordinary mechanical or engineering skill, is distinctly shown, is unjust in principle and injurious in its consequences... The design of the patent laws is to reward those who make some substantial discovery or invention, which adds to our knowledge and makes a step in advance in the useful arts. Such inventors are worthy of all favor. It was never the object of those laws to grant a monopoly for every trifling device, every shadow of a shade of an idea, which would naturally and spontaneously occur to any skilled mechanic or operator in the ordinary progress of manufactures. Such an indiscriminate creation of exclusive privileges thuds rather to obstruct than to stimulate invention. It creates a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies, which enable them to lay a heavy tax upon the industry of the country,

⁴⁴⁷ Walker, *supra* note 105, at 21; Pearce v. Mulford, 102 U.S. 118 (“But all improvement is not invention, and entitled to protection as such”); Slawson v. Railroad Co., 107 U.S. 649, 653 (1882) (“not every improvement embodies a patentable invention”); Rosenwasser v. Berry, 22 F. 841, 843 (C.C.D.Maine 1885) (“Not every improvement is invention”).

⁴⁴⁸ 107 U.S. 192 (1882).

without contributing anything to the real advancement of the arts.”⁴⁴⁹

This identified the intellectual product of the “ordinary head-workmen and engineer” with “slight advance” and “trifling device;” while characterizing the product of “inventors” as contributing “to the real advancement of the arts.”

This strand of thought never completely disappeared from patent law, but it was overshadowed by a dominant new tendency to separate the “inventive faculty” from questions of substantial added-value and circumscribe the role of the latter in non-obviousness doctrine. The 1885 *Hollister v. Benedict*⁴⁵⁰ is illustrative of this trend. In its opinion the Supreme Court apparently conceded that the patented system “affords the government a very effectual protection against the perpetration of fraud in connection with the collection of the tax on distilled spirits.”⁴⁵¹ Nevertheless, the system failed the non-obviousness standard and was found not a true invention. “The idea of detaching that portion of the stamp, with the double effect of destroying the stamp by mutilation and preserving the evidence of the identity of the package on which it had been first placed in use,” the court said, “seems to us not to spring from that intuitive faculty of the mind put forth in the search for new results, or new methods, creating what had not before existed, or bringing to light what lay hidden from vision; but, on the other hand, to be the suggestion of that common experience, which arose spontaneously and by a necessity of human reasoning, in the minds of those who had become acquainted with the circumstances with which they had to deal.”⁴⁵² The court thus distinguished added social value from the inventive skill. It concluded that its value notwithstanding, the improvement at issue “is but the display of the expected skill of the calling, and involves only the exercise of the ordinary faculties of reasoning upon the materials supplied by a special knowledge, and the facility of manipulation which results from its habitual and intelligent practice; and is in no sense the creative work of that inventive faculty which it is the purpose of the Constitution and the patent laws to encourage and reward.”⁴⁵³ Another court summed up this idea succinctly: “It is invention of what is new, and not comparative superiority,

⁴⁴⁹ *Id.*, at 200.

⁴⁵⁰ 113 U.S. 59, 72, 73 (1885).

⁴⁵¹ *Id.*, at 71-72.

⁴⁵² *Id.*, at 72.

⁴⁵³ *Id.*

or greater excellence, in what was before known, which the law protects, as exclusive property; and it is that alone which is secured by patent.”⁴⁵⁴

Walker’s 1889 discussion of non-obviousness demonstrated the same drive to sever any necessary connection between non-obviousness and substantial increase in social value. Walker discussed various clusters of non-obviousness cases. Regarding each of them he found that the major decisions that found patented inventions obvious did so despite manifest, sometimes remarkable, improvements in social value. Thus for instance regarding cases in which the improvement consisted in known devices made from superior materials he remarked that “in each of the leading cases which established this rule the decision was made in spite of the undeniable superiority of the new manufacture over those which preceded it.” The reason for invalidating these patents, he explained, was that “though specifically new and highly useful, the things covered by them were found not to be invented things: were held to be only the result of judgment and skill in the selection and adaptation of materials and not the product of the inventive faculties of those who

⁴⁵⁴ *Smith v. Elliott*, 22 F. Cas. 529, 530 (S.D.N.Y. 1872). Also: “there are many changes which may be suggested by the judgment or taste of the manufacturer, or by the particular uses to which the article produced is to be applied, which are not invention; and many exhibitions of superior skill, in producing an article of greater excellence, which are not invention” *id.*, at 531. See also *Klein v. Seattle*, 77 F. 200, 204 (9th Cir. 1896) (“although such changes are highly advantageous, and far better and more efficacious and convenient, does not make the improved device patentable. In order to be patentable, it must embody some new idea or principle not before known. It must, as before stated, be a discovery, as distinguished from mere mechanical skill or knowledge.”); *Grant v. Walter*, 148 U.S. 547, 556 (1893) (patented device does not “involve anything more than mechanical skill, and does not constitute invention... The advantages claimed for it, and which it no doubt possesses to a considerable degree, cannot be held to change this result, it being well settled that utility cannot control the language of the statute.”); *Christy v. Hygeia Pneumatic Bicycle Saddle Co.*, 93 F. 965, 969 (4th Cir. 1899); *Lettelier v. Mann*, 91 F. 909, 915 (C.C.S.D.Cal. 1899) (“While utility is a circumstance to be considered in determining the question of novelty, it is not necessarily conclusive of the question”).

produced them.⁴⁵⁵ The same pattern repeated in Walker's treatment of all the non-obviousness cases.⁴⁵⁶

If substantial added-value was increasingly seen as not being a sufficient condition for invention, occasionally it was also explained that it was not even a necessary one. "The magnitude of the result which flows from the inventive act," Robinson wrote in 1890, "furnishes no test by which its merits are determined."⁴⁵⁷ Thus "[t]he advance made by the inventor may be slight, the benefit conferred upon the public may be small, but though these considerations influence the recompense which he eventually receives, they do not affect the intrinsic character of the creative act."⁴⁵⁸ What mattered was only "[t]he exercise of the inventive faculties."⁴⁵⁹

All of this did not mean that questions of utility disappeared altogether from the non-obviousness analysis. Despite consistent attempts to purge the requirements of inquires of substantive social value this aspect of invention refused to depart. In fact, just as non-obviousness was being distinguished from substantive utility the latter returned through the backdoor as an evidentiary criterion. Thus, a long series of post-war cases established the principle that strong proof of an invention's substantive value may create an evidentiary presumption of non-obviousness. In 1882, for example, the Supreme Court ruled that "[i]t may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention."⁴⁶⁰ It went on to find that "[i]t was certainly a new and useful result to make a loom produce fifty yards a day when it never before had produced more than forty."⁴⁶¹ Many other cases declared the same

⁴⁵⁵ Walker, *supra* note 105, at 27.

⁴⁵⁶ See e.g.: *id.*, at 28 (the claimed invention's "utility was great and was unquestioned"); *id.*, at 29 (obviousness despite "several points of superiority over all former" products); *id.*, at 30 (obviousness despite "superiority of the patented stoves"); *id.*, at 34-45 (no invention despite the fact that "[t]he utility of the return-flue boiler in that combination was much greater than that of the fire box boiler").

⁴⁵⁷ 1 Robinson, *supra* note 99, at 130.

⁴⁵⁸ *Id.*, at 130-131.

⁴⁵⁹ *Id.*, at 131.

⁴⁶⁰ Loom Co. v. Higgins, 105 U.S. 580, 591 (1882).

⁴⁶¹ *Id.*, at 591-592.

rule.⁴⁶² In some instances the rapidness of the circular movement from denying utility as the measure of invention to admitting it as an evidentiary presumption was dazzling. Thus in 1898 the Court of Appeals for the Seventh Circuit ruled that “It is not enough that a thing shall be new, in the sense that in the shape or form in which it is produced it shall not have been before known, and that it shall be useful, but it must, under the constitution and statute, amount to an invention or discovery.”⁴⁶³ The very next sentence, however, explained that “[i]n determining whether a new combination of old elements constitutes invention, the most important and controlling considerations are the intrinsic novelty and utility of the concrete invention.”⁴⁶⁴

However, the return of substantive utility to the non-obviousness analysis, or rather the fact that it never left, was only part of the story. The difference between the old substantial novelty criterion and the new non-obviousness analysis with its evidentiary presumption was not purely formalistic and devoid of consequences. While previously utility was at the very core of the requirement of invention, now it was assigned to its periphery. There were two significant doctrinal expressions to this fact.

First, alongside the acceptance of utility as an evidentiary presumption there also existed a firm suspicion toward this criterion and a recurring demand to circumscribe the weight accorded to such considerations.⁴⁶⁵ Typical of this approach was Justice Brown’s remark in

⁴⁶² See e.g. *Smith v. Goodyear Dental Vulcanite Co.*, 93 U.S. 486, 495 (1877) (“Undoubtedly, the results or consequences of a process or manufacture may in some cases be regarded as of importance when the inquiry is, whether the process or manufacture exhibits invention, thought, and ingenuity”); *Washburn & Moen Mfg. Co. v. Haish*, 4 F. 900, 909 (C.C.N.D. Ill. 1880); *Hill v. Biddle*, 27 F. 560 (C.C.E.D.Pa. 1886) (“While it is true that the utility of a machine, instrument, or contrivance, as shown by the general public demand for it when made known, is not conclusive evidence of novelty and invention, it is nevertheless highly persuasive in that direction, and, in the absence of pretty conclusive evidence to the contrary, will generally exercise controlling influence”).

⁴⁶³ *Kelly v. Clow*, 89 F. 297 , 303 (7th cir. 1898).

⁴⁶⁴ *Id.*

⁴⁶⁵ See e.g. *Stanley Works v. Sargent*, 22 F. Cas. 1054, 1055 (C.C.D.Conn. 1871) (“Utility is not an infallible test of originality... but the effect produced by the change is often an appropriate though not a controlling consideration

McClain v. Ortmyer that “[w]hile this court has held in a number of cases... that in a doubtful case the fact that a patented article had gone into general use is evidence of its utility, it is not conclusive even of that- much less of its patentable novelty.”⁴⁶⁶ Another court pointed out in 1896 that “every case depends upon the state of the art, the character of the improvements, the results accomplished, the methods used, the changes made, etc. The fact that a patented device has gone into general use, and has displaced other devices, is evidence of its value and usefulness, and is always of importance in considering the question whether the device or machine is patentable. But the fact that the patented device has gone into general use, while evidence of its utility, is not conclusive evidence of its patentable novelty.”⁴⁶⁷ It concluded that a patented invention “may, in fact, embrace utility and novelty in a high degree, and still be only the result of mechanical skill, as distinguished from

in determining the character of the change itself”); *Smith v. Goodyear Dental Vulcanite Co.*, 93 U.S. 486, 495-496 (1877) (“We do not say the single fact that a device has gone into general use, and has displaced other devices which had previously been employed for analogous uses, establishes in all cases that the later device involves a patentable invention. It may, however, always be considered”); *Christy v. Hygeia Pneumatic Bicycle Saddle Co.*, 93 F. 965, 969-970 (4th Cir. 1899) (though it “must be conceded that the sales were phenomenally large, and that the evidence shows the Christy saddle was received with great favor by those who used the bicycle; and also it may be admitted that it not only added to their comfort, but contributed to their safety. But still we do not think that it follows that, therefore, invention was required to design and construct it.”); *Lovell Mfg. Co. v. Cary*, 147 U.S. 623, 636 (1893) (“while, ‘in a doubtful case, the fact that a patented article had gone into general use is evidence of its utility, it is not conclusive even of that, much less of its patentable novelty.’”); *Grant v. Walter*, 148 U.S. 547, 557 (1893) (“The advantages claimed for it, and which it no doubt possesses to a considerable degree, cannot be held to change this result [of obviousness], it being well settled that utility cannot control the language of the statute, which limits the benefit of the patent laws to things which are new as well as useful. The fact that the patented article has gone into general use is evidence of its utility, but not conclusive of that and still less of its patentable novelty.”).

⁴⁶⁶ *McClain v. Ortmyer*, 141 U.S. 419, 429 (1891).

⁴⁶⁷ *Klein v. Seattle*, 77 F. 200 (9th Cir. 1896).

invention”⁴⁶⁸ and went on to uphold a determination of obviousness despite finding of utility and market success.

This strand of cases strove to limit the power of the utility presumption and to avoid its taking over non-obviousness. “[T]he test of invention,” one court explained, “is mental conception, not larger sales, or improved results, or benefits conferred on mankind. All these are evidence of invention, but not invention.” Moreover to hold that an invention “is patentable for the reason the benefit to mankind is valuable and extensive, is to reward every mechanic for exercising his skill, not his mental conceptions, by a monopoly, and is a misconception and works a perversion of the patent laws.”⁴⁶⁹

Similarly, Walker in his treatise treated the evidentiary presumption of substantive utility as a residual test of last resort. “Want of invention,” he wrote, “if it really exists in the particular process or thing can nearly always be detected” by applying non-obviousness rules that do not rely on utility.⁴⁷⁰ Utility, according to Walker, should be considered only in cases when “the mind remains in uncertainty” and “the other facts in a case leave the question of invention in doubt.”⁴⁷¹ Only then “the fact that the device has gone into general use and has displaced other devices... is sufficient to turn the scale in favor of the existence of invention.”⁴⁷²

A second respect in which the use of utility as an evidentiary presumption differed from its role in the earlier substantial novelty analysis was in the standard employed to assess and conceptualize utility. When utility was argued in the context of the new non-obviousness requirement, the argument, almost always focused on market demand rather than on intrinsic substantive social value. The courts no longer tried to assess whether the invention was “beneficial.” Instead the question became whether it enjoyed

⁴⁶⁸ *Id.*, at 204.

⁴⁶⁹ *American Laundry Machinery Mfg. Co. v. Adams Laundry Mach. Co.*, 161 F. 556, 563 (N.D.N.Y. 1908).

⁴⁷⁰ Walker, *supra* note 105, at 38.

⁴⁷¹ *Id.*, at 38.

⁴⁷² *Id.*, at 38. See also: *Smith v. Goodyear Dental Vulcanite Co.*, 93 U.S. 486, 496 (1877) (“when the other facts in the case leave the question in doubt, it [utility] is sufficient to turn the scale”); *Duer v. Corbin Lock Co.*, 149 U.S. 216, 223 (1893) (“Were the question of patentability one of doubt this might suffice to turn the scale in favor of the patentee”).

“general public demand”⁴⁷³ or “large sales.”⁴⁷⁴ In this respect, the use of utility or rather market demand as an indicator was in fact completely harmonious with the general tendency of late nineteenth century patent law to purge the non-obviousness doctrine of questions of substantive social value.

By the end of the nineteenth century there consolidated a new complex legal-rhetorical structure that translated the claimed foundation of patents in the inventive activity of the genius into doctrinal terms. It differed from the earlier antebellum structure not merely in the formal fact that questions of invention were now dealt with not as part of the novelty requirement but as an independent non-obviousness criterion. The new structure of dealing with the question of invention was laden with internal tensions and conflicting commitments. The dominant drive within it, harmonious with the overall transformation of patent law, was to eliminate and purge the earlier identification of invention with substantive added social value. It emphasized instead a postulated inherent character of the inventive activity, captured in the antinomy of the mechanic and the inventor. At the very same time that non-obviousness celebrated the figure of the genius inventor it assigned notions of actual increase in social utility to the periphery of this concept. Substantive utility, however, was not severed from the concept of invention altogether. It remained lurking, somewhat suppressed, within the doctrinal structure, ready to be ceased upon and be deployed in

⁴⁷³ *Hill v. Biddle*, 27 F. 560.

⁴⁷⁴ *Eppinger v. Richey*, 8 F. Cas. 741, 744 (S.D.N.Y. 1877). See also: *Washburn & Moen Mfg. Co. v. Haish*, 4 F. 900, 909 (C.C.N.D.Ill. 1880) (“Tested by the rule of utility here suggested, this record abundantly shows that the device in question has been accepted by the public to an extent which has hardly heretofore followed the most successful inventions.”); *Magowan v. Packing Co.*, 141 U.S. 332, 343 (1891) (“a fact not to be overlooked and having much weight” is that the invention “went at once into such an extensive public use as almost, as almost to supersede all packings made under other methods” and “was put upon the market at a price from 15 to 20 per cent higher than the old packings, although it cost 10 per cent less to produce it”). A different interesting cluster of cases questioned the credibility of market success as an indicator of utility. See *McClain v. Ortmyer*, 141 U.S. 419, 428 (1891); *Duer v. Corbin Lock Co.*, 149 U.S. 216, 223 (1893); *Fox v. Perkins* 52 F. 205, 213 (6th Cir. 1892); *Billings & S Co. v. Van Wagoner & W Hardware Co.*, 98 F. 732, 734 (C.C.N.D.Ohio 1899). The conclusion that courts drew from such doubts, however, was not a return to assessments of actual social value but rather ignoring or according lesser weight to utility within the non-obviousness analysis.

specific cases. Substantive social utility was banished from the doctrinal concept of the inventor, only in order to return as an evidentiary presumption, only, in turn, in order to be conceived in “neutral” market success terms devoid of assessments of substantive social value.

C. Patents at the Dawn of the Twentieth Century

At the dawn of the twentieth century the modern conceptual framework of patents was in place. The late eighteenth century commercial privilege and the early twentieth century intellectual property right were radically different in two main respects. First, patents became general rights. The notion of a patent as an ad-hoc state grant or a “deal” between the state and private individuals, based on a particularistic and discretionary policy judgment as to the public interest disappeared. Patents were now part of a general regime of universal rights. Any person who fulfilled a uniform set of substantive and procedural criteria was entitled as matter of right, to a standard set of enforceable entitlements. The role of the state in the patent system in any of its relevant institutional facets was no longer to engage in case specific evaluations of the public interest and make discretionary decisions regarding the grant and its terms. Instead the ideal role of the state now became to certify or “examine” whether the uniform patentability conditions were met in a specific case and to enforce the standard patent entitlements. To be sure, considerations of the public good, or rather of what would now be known as “policy,” were not completely gone. Public policy debates remained relevant both to discussions of legislative reform and to judicial law making. But in the modern framework it would always be a generalizing and universalizing policy discourse. The focus of debates was no longer the desirability and the optimal terms of any particular patent but rather the general and uniform parameters of the regime as a whole.

Second, the subject matter of patents, the “object” in which entitlements were created ceased being the exercise of certain economic activities. The object of patent protection came to be conceived as an intangible informational entity. Patents were now rights in information. A set of conceptual devices was developed for defining these informational entities known as “inventions,” their boundaries and the scope of control in them created by patent law. A closely related set of concepts defined the special character of inventions that distinguished them from other kinds of information: their origin in an act of inventorship.

Saying that this came to be the modern framework of patent law does not mean, of course, that patent law did not change in important ways since 1900. The described framework is best understood as a set of conceptual tools shared and used by participants of modern patent discourse. This set of tools did not dictate any particular result or position on any specific issue or time. Rather it enabled a broad variety of competing positions and arguments in specific contexts as well as development or change over time. Categories of subject matter that in 1900 or even 1970 were considered abstract principles were regarded in 2000 as concrete patentable inventions. The point is rather that both in 1900 and 2000 the dominating relevant distinction in patent discourse was that between abstract principles and concrete inventions. In this sense much of the conceptual framework that consolidated during the nineteenth century is still taken for granted and still dominates and constructs our understanding of the curious modern practice of owning inventions.