REGENERATION IN AMERICAN PATENT LAW: STATUTORY SUBJECT MATTER

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I. INTRODUCTION

Scholars of a historical and jurisprudential bent have placed American law into periods or ages or eras according to the predominant mode of judicial reasoning during that time. Grant Gilmore in his "The Ages of American Law," concluded:

> There has even developed a consensus on what the first two periods were like. The pre-Civil War period was our Golden Age. . . . After the Civil War all the gold, by a sort of reverse alchemy, was transmuted into lead. The pre-Civil War Grand Style lost out to a Formal Style, which was as bad a way of deciding cases as the previous way had been good.[1]

Gilmore designated this "Golden Age" as the "Age of Discovery."[2] Roscoe Pound identified it as the "The Formative Era of American Law," our "classical period."[3] Karl Llewellyn defined the style of reasoning during this period as "the Grand Style."[4] Llewellyn summarized the characteristics of this style:

> The *type*-thinking of the time is to view precedents as welcome and *very* persuasive, but it is to test a precedent almost always against three types of reason before it is accepted. The reputation of the opinion-writing judge counts heavily (and it is right reason to listen carefully to the wise). Secondly, "principle" is consulted to check up on precedent, and at this period and in this way of work "principle" means no mere verbal tool for bringing large-scale order

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1 Grant Gilmore, *The Ages of American Law* 12 (Yale U. Press 1977).

2 *Id.* at 19-40.

3 Roscoe Pound, *The Formative Era of American Law* 12 (Little, Brown & Co. 1938).

4 Karl Llewellyn, *The Common Law Tradition: Deciding Appeals* 36 (Little, Brown & Co. 1960).

> into the rules, it means a broad generalization which must yield patent sense as well as order, if it is to be "principle." Finally, "policy," in terms of prospective consequences of the rule under consideration, comes in for explicit examination by reason in a further test of both the rule in question and its application.[5]

Lawrence Friedman, in his book "A History of American Law,"[6] elaborated on the Grand Style of judges of this period:

> [T]heir opinions were often little treatises, moving from elegant premise to elaborate conclusion, ranging far and wide over subject matter boldly defined. They were, at their best, far-sighted men, impatient with narrow legal logic. Marshall, Gibson, and Shaw could write for pages without citing a shred of "authority." They did not choose to base their decisions on precedent alone; law had to be chiseled out of basic principle; the traditions of the past were merely evidence of principle, and rebuttable. . . . Most of the great judges were scholarly men; a few were very erudite, like Joseph Story, who could stud his opinions with acres of citation – a thing Marshall tended to avoid. The great judges were creative, self-aware, and willing to make changes.[7]

G. Edward White, in his article "The Path of American Jurisprudence,"[8] captured the essence of this first period:

> The indigenous character of American jurisprudence is fully discernible by the middle of the nineteenth century. A uniquely broad definition of "common law," a reverence for natural right principles as embodied in the Constitution, and a high tolerance for judicial lawmaking in nonconstitutional and constitutional contexts, are evident.[9]

Along the same line was the conclusion of Morton Horwitz in his book, "The Transformation of American Law: 1780-1860,"[10] in discussing the "Emergence of an Instrumental Conception of Law" by the first two decades of the 19th Century:

> Law was no longer conceived of as an eternal set of principles expressed in custom and derived from natural law. . . . Instead, judges came to think of the common law as equally responsible with legislation for governing society and promoting socially responsible conduct. The emphasis on law as an instru-

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5 *Id.*

6 Lawrence W. Friedman, *A History of American Law* (2d ed., Simon & Schuster 1985).

7 *Id.* at 135.

8 G. Edward White, *The Path of American Jurisprudence*, 124 U. Pa. L. Rev. 1212 (1976) (reprinted in G. Edward White, *Patterns of American Legal Thought* 18 (The Michie Co. 1978)).

9 *Id.* at 1227.

10 Morton Horwitz, *The Transformation of American Law: 1780-1860* (Oxford U. Press 1992) [hereinafter *Horwitz I*].

> ment of policy encouraged innovation and allowed judges to formulate legal doctrine with the self-conscious goal of bringing about social change.[11]

Duncan Kennedy, in his article "Form and Substance in Private Law Adjudication,"[12] agreed that there are three periods that can be identified in American law. He described these periods, however, as the "Three Phases of the Conflict of Individualism and Altruism."[13] The first is the "Antebellum Period," where the tension is "Morality vs. Policy."[14] As he stated: "Individualism was at first not an ethic in conflict with the ethic of altruism, but a set of pragmatic arguments perceived as in conflict with ethics in general. Antebellum judges and commentators referred to these pragmatic arguments by the generic name of 'policy,' and contrasted it to 'morality.'"[15]

The next period is generally designated as the period of "formalism." Gilmore called this period "The Age of Faith."[16] Horwitz identified this as the era of "Classical Legal Thought."[17] Llewellyn termed this "The Formal Style,"[18] which became "the orthodox ideology."[19] He described this style as follows:

> That picture is clean and clear: the rules of law are to decide the case; policy is for the legislature, not for the courts, and so is change even in pure common law. Opinions run in deductive form with an air or expression of single-line inevitability. "Principle" is a generalization producing order which can and should be use be used to prune away those "anomalous" cases or rules which do not fit, such cases or rules having no function except, in places where the supposed "principle" does not work well, to accomplish sense – but sense is no official concern of a formal-style court.[20]

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11 *Id*. at 30; *see also* 16-30.

12 Duncan Kennedy, *Form and Substance in Private Law Adjudication*, 89 Harv. L. Rev. 1685 (1976); *see also* Daniel M. McClure, *Trademark and Unfair Competition: A Critical History of Legal Thought*, 69 Trademark Rep. 305 (1979) (applying Kennedy's analysis in the context of trademark and unfair competition law).

13 Kennedy, *supra* n. 12, at 1725-37.

14 *Id*. at 1725-28.

15 *Id*. at 1725.

16 Gilmore, *supra* n. 1, at 41-67.

17 Morton Horwitz, *The Transformation of American Law 1870-1960: The Crisis of Legal Orthodoxy* 9-31 (Oxford U. Press 1992) [hereinafter *Horwitz II*].

18 Llewellyn, *supra* n. 4, at 38.

19 *Id.*

20 Llewellyn, *supra* n. 4, at 38; *see* W.L. Twining, *Restatement of Grand Style and Formal Style as Theoretical Models*, 847 (7th ed., 2001) (providing an elaborate comparison of the Grand and Formal Styles).

Friedman supported Llewellyn's conclusion and added: "The style of the period was bombastic and repetitious: many case reports were filled with strings of useless citations; barren logic and bad English abounded."[21]

There seems to be a general agreement that the formal style declined and ended sometime between the World Wars. As concluded by Llewellyn:

> During the last three decades it has become clear that the Formal Style, though still of influence and moment, has yet lost its grip. . . . Today's typical appellate judge is interested first of all in getting the case decided *right*–within the authorities; and however he writes, it is the goal of rightness which give the main drive and direction to his labors.[22]

Kennedy called this period of formalism as one of "Classical Individualism," whose dominant characteristic is "Free Will."[23] He contrasted this with the earlier period: "Classical individualism rejected the idea that particular rules represented an ad hoc compromise between policy and altruist morality. Rather, the rules represented a fully principled and consistent solution both to the ethical and to the practical dilemmas of legal order."[24]

With the demise of formalism, Llewellyn designated the style of decision making at the time of his writing in 1960 as the "Style of Reason."[25] Gilmore, in his 1974 lectures, called this period "The Age of Anxiety."[26] Horwitz, writing in 1992, contrasts legal thought under formalism and in the "modern" era:

> Nothing captures the essential difference between the typical legal minds of nineteenth- and twentieth-century American quite as well as their attitude toward categories. Nineteenth-century legal thought was overwhelmingly dominated by categorical thinking–by clean, distinct, bright-line classifications of legal phenomena. . . . By contrast, in the twentieth century, the dominant conception of the arrangement of legal phenomena has been that of a continuum between contradictory policies or doctrines. Contemporary thinkers typically have been engaged in balancing conflicting policies and "drawing lines" somewhere between them. Nineteenth-century categorizing typically sought to demonstrate "differences of kind" among legal classifications; twentieth-century balancing tests deal only with "differences of degree."[27]

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21 Friedman, *supra* n. 6, at 622. Gilmore maintains that Friedman accepts Llewellyn's categorization; *see* Gilmore, *supra* n. 1, at 114-15 n. 8.

22 Llewellyn, *supra* n. 4, at 41.

23 Kennedy, *supra* n. 12, at 1728-31.

24 *Id.* at 1728.

25 Llewellyn, *supra* n. 4, Part II.

26 Gilmore, *supra* n. 1, at 68-98.

27 Horowitz II, *supra* n. 17, at 17.

The "modern" period as identified by Kennedy, writing in 1976, is that of "Modern Legal Thought," involving, in his words, "The Sense of Contradiction."[28] He described the dilemma of "modern legal thought":

> In private law, modern legal thought begins with the rejection of Classical individualism. Its premise is that Classical theory failed to show either that the genius of our institutions is individualist or that it is possible to deduce concrete legal rules from concepts like liberty, property or bodily security. For this reason, morality and policy reappear in modern discussions, in place of first principles and logic. The problem is that morality is no longer unequivocally altruist–there is a conflict of moralities. Nor is policy any longer unequivocally individualist–there are arguments for collectivism, regulation, the welfare state, along with the theory of economic development through laissez-faire."[29]

In sum, whatever differences there may be in naming the periods and their durations, some consensus does appear that there are three identifiable periods: the first "formative" period extending from the ratification of the Constitution to about the Civil War; a second "formalist" period extending from about the Civil War to between the World Wars, and a third "modern" period from the demise of the formalist era. Whether, we may now be in the "post-modern" era is well beyond the scope of the present inquiry, which is limited to patent law and a single–albeit important–issue within patent law.

As a working hypothesis one would be surprised if patent law did not generally follow the same jurisprudential patterns in the same general time frames as other areas of law. Indeed, this assumption would seem justified by the use of broad, general language in patent statutes over the entire period in question and hence by leaving it to the courts to interpret and elaborate upon undefined terms of art. This is confirmed by Professor Robinson in his classic treatise on Patent Law published in 1890: "Our patent acts have always depended upon common law principles for their construction and until recently have been uniformly treated as a part of that great body of theoretical and practical jurisprudence."[30]

One might, however, be somewhat suspicious that formalism might play a significantly greater role in patent law because of its technological and legal nature. To test this and the base hypothesis of the correspondence of patent law to general American law in its evolution through the identified jurisprudential periods, one particular issue in patent law has been selected. The issue is: What constitutes patentable subject matter?--the patent eligibility issue. That is, what

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28 Kennedy, *supra* n. 12, at 1731-37.

29 *Id.* at 1731.

30 William C. Robinson, I The Law of Patents for Useful Inventions 15 (1890).

may be patented irrespective of the subject matter's substantive merit in terms of novelty, utility, nonobviousness or value to society? This is a fundamental issue. As stated in *Kewanee Oil v. Bicron Corp.*, "no patent is available for a discovery, however useful, novel, and nonobvious, unless it falls within one of the express categories of patentable subject matter of 35 U.S.C. § 101."[31] Under § 101, an "invention" must qualify as a "process, machine, manufacture, [or] composition of matter"[32] to be eligible for consideration for the grant of a patent. These four categories are the only "patentable subject matter" (or, as sometimes called, "statutory subject matter") provided under the current 1952 Patent Act and have appeared in substantially the same terms in prior patent statutes. To qualify for patent protection, an invention must fall within at least one of these classes of invention. Hence, it is a rule of inclusion. As analogized in *In re Bergy II* by Judge Rich in his famous "*Anatomy of the Patent Statute*":[33]

> More strictly speaking, these cases involve only § 101. . . . Achieving the ultimate goal of a patent under those statutory provisions involves, to use an analogy, having the separate keys to open in succession the three doors of sections 101, 102, and 103, the last two guarding the public interest by assuring that patents are not granted which would take from the public that which it already enjoys (matters already within its knowledge whether in actual use or not) or *potentially* enjoys by reason of obviousness from knowledge which it already has.[34]

There are a number of reasons for selection of the patent eligibility § 101 issue instead of issues, such as, the standard of invention (nonobviousness) or statutory bars to a patent (public use or sale). These include the fact that the statutory language specifying the categories of patentable subject matter has remained substantially the same since the original patent enactment in 1790. The original language was "any useful art, manufacture, engine, machine, or device, or any improvement therein."[35] This was amended three years later, in 1793, to read: "[any] art, machine, manufacture or composition of matter, or any new and useful improvement [thereon]."[36] From then until now, the only additional modifications were to change the dated term "art" to "process" in the 1952 enactment[37] and to provide a definition for "process" to include "a new use

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31 416 U.S. 470, 483 (1974).

32 35 U.S.C. § 101 (2005).

33 596 F.2d 952, 959-64 (1979).

34 *Id.* at 960.

35 Patent Act of 1790, ch. 7, § 1, 1 Stat. 109 (1790).

36 Patent Act of 1793, ch. 11, § 1, 1 Stat. 318 (1793).

37 35 U.S.C. § 101 (2004) (discussed in history of law).

of a known process, machine, manufacture, composition of matter, or material."[38] This stability is in marked contrast to the "invention" issue.[39] Also, the categories of patentable subject matter constitute terms without further definition, thus requiring the courts to provide definitions in essentially a common law manner virtually unrestrained by statutory language and rules of statutory construction. In addition, technology has radically changed over the past two centuries mandating that the definitions of patentable subject matter be constantly reevaluated. Last, the body of law relating to this issue is reasonably manageable and is likely to be, assumedly, representative of the decision-making process with respect to other issues in the patent law of the time. Thus, the reasoning process with respect to the patent eligibility issue may, it is hoped, serve as a surrogate for patent law in general. This strength of this assumption must await further investigation.

Selecting patentable subject matter as the focus of this inquiry is not without its difficulties: First, the inclusion/exclusion issue must be resolved and either rules of inclusion and/or exclusion must be developed. Of particular concern is the question of undue breadth of protection being granted. This becomes of particular concern when the claimed invention involves the discovery of a law of nature, a natural phenomenon, a principle, or the conception of an "abstract idea." Additional difficulties are encountered when the invention is sought to be defined in terms of the "result" or "effect" produced or its "function." The tension was between whether a natural law, natural phenomenon, principle, idea, effect, function, or result was being claimed as the invention, or whether an application of one or more of the foregoing was being claimed to produce a useful invention.

A second problem in analyzing patentable subject matter is the change in 1870 in the patent-claiming system from "peripheral" to "central" claiming. Under the 1870 statute, "central" claiming was imposed, requiring inventors "to particularly point out and distinctly claim" their inventions.[40] Prior to this time "peripheral" claiming was the practice, using the omnibus form: "I claim the

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38 *Id.* at § 100(b).

39 Until the 1952 Act, the only statutory requirements for a patent were novelty and utility. The third requirement "invention" was a court-created standard. *See infra* nn. 237-49 and accompanying text.

40 Patent Act of 1870, ch. 230, § 26, 16 Stat. 198, 201 (1870) provided: "And he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery." The "particularly point out and distinctly claim" language is reflected in the current Act: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2.

invention as shown and described herein."[41] This claiming style required courts to determine what the "invention" was, including the statutory class of subject matter and the scope of protection to be afforded. The tension was often between whether the invention was a machine (more specifically, a particular embodiment of a machine) or whether the "invention" was an "art" (process/method), which would embrace all forms of machines capable of performing this particular "art" (process/method). Hence, the scope of protection to be granted was at the center of controversy. Should the patent be restricted to the specific machine or construed as an art covering all physical embodiments capable of performing the process producing the end product?

Third, while identifying the categories of "machine," "manufacture," "composition of matter" has been relatively straight-forward (except for living matter), what may qualify as an "art" or "process" has been considerably more problematic.[42] Chemical processes were easily recognized, but processes involving mechanical, electrical, and particularly mental steps continued to trouble the courts. The age of computers and software brought the matter to a head, with the difficult question to be resolved of whether computer programs were patentable subject matter. Should processes be limited to transformational ones, where a substance was changed in the course of the process to another (material) form? The question of whether living matter and computer programs should be protected was not addressed until the late 20th Century and proved to be highly contested and controversial. The tension was between judicial restraint and extending patent protection into newly evolving technology, including one which had a moral dimension.

Fourth, interrelated with the preceding issues were others that had to be worked out: the "mere function of the machine" doctrine, "product-by-process" claims, "new use" inventions, aggregations, printed matter, business methods, among others, including broadening reissue patents and a pattern of Supreme Court reversals in cases involving significant inventions. The tension was the

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41 *See Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 957-59 (Fed. Cir. 1987) (Newman, J., dissenting) (discussing the transition from central to peripheral claiming); *See also Ex Parte Fressola*, 27 U.S.P.Q.2d 1608 (B.P.A.I. 1993) (holding that omnibus claiming is impermissible under the 1952 Act). An excellent study of claiming practice under the statutes prior to the 1952 Act is found in Karl B. Lutz, *Evolution of the Claims of U.S. Patents,* 20 J. Pat. Off. Socy. 134, 377, 457 (1938).

42 *See generally* Annotation: William T. Goglia, *Supreme Court's Views as to What is Patentable Subject Matter under Federal Law as "Process," "Machine," "Manufacture," or "Composition of Matter"*, 65 L. Ed. 2d 1197 (1981) (placing Supreme Court cases in the various categories).

initial tendency to impose a restrictive rule limiting patent scope and then to liberalize that rule.

This article will undertake an analysis of the decision-making process of the courts in patent eligibility cases decided within the identified ages or periods. The primary focus, particularly in the formative and formalist periods, will be on decisions of the Supreme Court because of its direct review of such cases during these periods. The analysis will be directed principally to the reasoning of the courts in reaching their decisions in order to test the hypothesis that patent law tracks the general law during these periods and the underlying jurisprudence is consistent with other areas of the law. In short, the reasoning process, rather than the outcome, is the important aspect of the various cases in the various periods rather than the outcome, i.e. whether this period happens to be pro or anti-patent in the cyclic pattern that is seen over time.

An attempt will be made to identify patterns in the various periods. It, of course, cannot be expected that only one particular style of reasoning will be found in any given period. But one could expect some dominance of a particular style to evolve. Once the formative, formalist and modern eras are reviewed in detail, some general and particular conclusions will be drawn concerning the consistency of patent law in the confines of the patentable subject matter issue with the jurisprudence of the general law of corresponding periods.

II. OVERVIEW OF PERIODS

By historical accident, it would seem, there has been a major revision of the patent statutes corresponding roughly to the beginnings of the identified periods ("ages" or "eras") of American law. According to this pattern, the formative period (Golden Age, Age of Discovery, Grand Style) of patent law would begin with the first patent act of 1790.[43] This statute included an examination system with a most distinguished corps of Patent Examiners, comprising the Secretaries of State and War and the Attorney General. These distinguished gentlemen[44] no doubt found this task onerous, and the examination system was quickly replaced in 1793 with a registration system, which imposed on the courts the responsibility of determining patentability without any prior administrative filtering.[45] This registration system was abandoned in 1836, when a new

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43 Patent Act of 1790, ch. 7, 1 Stat. 109 (1790).

44 At the time, Thomas Jefferson was the Secretary of State; Henry Knox was the Secretary of the Department of War; and Edmund Randolph was the Attorney General.

45 Patent Act of 1793, ch. 11, § 3, 1 Stat. 318, 321-22.

patent statute created the Patent Office and a professional examination corps.[46] "Peripheral" claiming, however, was the practice under the 1836 statute, and the courts retained responsibility for discerning the "invention" from the patent disclosure. Shortly after the Civil War the Patent Act of 1870, imposing the requirement of "central" claiming, was enacted[47]; this revision could be seen as the signpost signaling the end of the formative era that led into the formalism that began to dominate American law. If the patent statutes are a guide, this second period (Formalism, Age of Faith, Classical Legal Thought, Formal Style) would then run roughly from the 1870 statute, through World War I to, at least, the Great Depression. Then came World War II, and, if the outcome of cases is taken into account, many would consider the time through the enactment of the current 1952 Patent Act to be the "dark age" of patent law. The modern period (Age of Anxiety, Modern Style of Reasoning) may be seen as beginning with the 1952 statute. Vestiges of the "dark age" continued, however, with judicial restraint limiting any expansion of patent protection, particularly with respect to the statutory classes. This restraint continued until the landmark case of *Diamond v. Chakrabarty*[48] in 1980, followed the next term by *Diamond v. Diehr*,[49] and the creation of the Federal Circuit in 1982.

While the historical correspondence of the patent statutory revisions is of some interest, it hardly provides evidence of the decision-making process of how courts decided cases under those statutes. There is always a time-lag with respect to patents, and patents are relatively long-lived. Thus, a patent issued under a particular statute may not be litigated for validity and infringement until many years later. Moreover, with respect to the patent eligibility issue, the statutory language has not been substantially changed since the original enactment in 1790. The task at hand requires a more detailed analysis of the cases decided during these periods. It should be noted that more extensive quotations from cases are included than otherwise might be expected. As judicial reasoning is the substance under consideration, it was felt that the reader would in many instances be better informed by the actual words of the courts rather than by a commentary on them.

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46 Patent Act of 1836, ch. 357, § 1, 5 Stat. 117 (1836).

47 Patent Act of 1870, ch. 230, § 26, 16 Stat. 198, 201 (1870). The 1870 Act was codified in 1874 as part of the "Revised Statutes" and the sections renumbered in the codification. Cases decided under the 1870 Act usually cite to the 1874 "revised statutes" sections.

48 447 U.S. 303 (1980) (holding living matter to be patentable subject matter).

49 450 U.S. 175 (1981) (opening the door for computer programs as patentable subject matter).

III. THE PERIODS-AGES-ERAS

A. Formative Period-Age of Discovery-The Golden Age-The Grand Style

The formative period may be divided into the tenures of the two dominant Chief Justices--John Marshall from 1801 until 1835 and Roger Taney from 1836 until 1864. The landmark case of *O'Reilly v. Morse*,[50] dealing with patentable subject matter, was not decided until the 1853 term, along with two other significant cases dealing with the eligibility issue.[51] Several decisions of the Marshall Court, however, shed considerable light on the Grand Style employed in patent cases. In this regard, the importance of Justice Story cannot be overstated. His tenure on the Court extended from 1811 until 1845; serving under both Chief Justices Marshall and Taney, and no doubt significantly influenced the Court's decision-making in patent cases.

1. The Marshall Court (1801-1835)

While not specifically involving the patent eligibility issue, the extended litigation involving the Evans' "hopper-boy" patent is an archetypical example of the formative era.[52] After Evans' patent expired, Congress enacted in 1808 the "Act for the relief of Oliver Evans," which extended the term of the expired patent for 14 years. In 1813, Chief Justice Marshall, sitting as a Circuit Justice in Virginia, held in *Evans v. Jordan* (*Evans* (1813))[53] that Evans, on the basis of this Act, could proceed against the defendant, who had constructed an allegedly infringing machine after the original patent expired and before Congress enacted the "relief" Act.[54] In 1815, this decision was affirmed by a

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50 56 U.S. 62 (1853).

51 *Winans v. Denmead*, 56 U.S. 330 (1853); *Corning v. Burden*, 56 U.S. 252 (1853).

52 *See* Edward C. Walterscheid, *To Promote the Progress of Useful Arts: American Patent Law and Administration, 1798-1836*, 347-54 (Rothman 1998) (discussing the Evans litigation and the special act of Congress).

53 8 F. Cas. 872 (D. Va. 1813).

54 The holding in *Evans* (1813) is stated as follows:

> It is, then, the opinion of the court, that the act for the relief of Oliver Evans, considered independent of any former patent, would authorize him to sustain an action for the use of his invention, after the date of his patent, although the machinery itself had been constructed before its date. Does the existence of a former patent affect the question of law? The court can perceive no ground upon which to rest an affirmative answer to this question. That construction of the constitution which admits the renewal of a patent, is not controverted.

unanimous Supreme Court, in *Evans v. Jordan* (*Evans* (1815)).[55] Rather interestingly Justice Washington observed:

> Although this Court has been informed, and the judge, who delivers this opinion knows, that the former patent given to Evans had been adjudged to be void by the Circuit Court of Pennsylvania, prior to the passage of this law, yet that fact is not recited in the law, nor does it appear that it was within the view of the legislature . . . .[56]

Evans then brought an infringement action against Eaton in the Circuit Court in Pennsylvania. The defendant, Eaton, prevailed in this case, *Evans v. Eaton* (*Evans* (1816)).[57] In the appeal to the Supreme Court in *Evans v. Eaton* (*Evans* (1818)),[58] the issue before the Court was whether the patent was for the entire machine or for a specific improvement of the machine. As concluded by Chief Justice Marshall:

> Taking the whole together, the court is of opinion, that the patent is to be constructed as a grant of the general result of the whole machinery, and of the improvement in each machine. Great doubt existed whether the words of the grant, which are expressed to be for an *improvement* or *improvements* only, should be understood as purporting to be a patent only for improvements; or should be so far controlled by the specification and petition . . . The majority of the court came at length to the opinion, that there is no substantial difference, as they are used in this grant, whether the words grant a patent for an improvement on a machine, or a patent for an improved machine; since the machine itself, without the improvement, would not be an improved machine. Although I did not concur in this opinion, I can perceive no inconvenience from the construction.[59]

> A renewed patent, then, has the same obligation, and confers the same rights, with an original patent. The inchoate property which vested by the discovery, is prolonged by the renewed patent, as well as by the original patent. There may be powerful reasons with the legislature for guarding a renewed patent, by restrictions and regulations, not to be imposed on original patents; but these reasons address themselves to the legislature only. If they have been overlooked or disregarded in the hall of congress, it is not for this court to set them up.

Id. at 874.

55 13 U.S. 199 (1815).

56 *Id.* at 204.

57 8 F. Cas. 846 (D. Pa. 1816).

58 16 U.S. 454 (1818).

59 *Id.* at 517 (emphasis added).

Evidently, the subtle difference is whether the invention was for the "improvement" per se or for the entire "improved machine." Nonetheless, the Chief Justice concluded:

> It is, then, the opinion of this court, that Oliver Evans may claim, under his patent, the exclusive use of his inventions and improvements in the art of manufacturing flour and meal, and in the several machines which he has invented, and in his improvements on machines previously discovered. In all cases where his claim is for an improvement on a machine, it will be encumbent on him to show the extent of his improvement, so that a person understanding the subject may comprehend distinctly in what it consists.[60]

The case was remanded to the Circuit court because of errors in the charge to the jury.

The problem of specifying the exact improvement later proved irremediable to Evans. In 1822, his "hopper-boy" invention came to a bad end. In the appeal after retrial of *Evans* (1818), the Court in *Evans v. Eaton* (*Evans* (1822)),[61] in an opinion by Justice Story, affirmed Justice Washington's holding that Evans was not the inventor of the whole machine, and the improvement to the machine was not adequately described. Even in the age of "central" claiming, a precise description of what was the intended invention was required.[62] It was clear, however, that whether construed as an improvement in a machine or an improved machine, both would fall within the category "machine" as included in the 1793 Act. In any event, the groundwork was laid that required the applicant to identify the invention with specificity.

More interesting, in the present context is the Appendix to the Chief Justice's opinion in *Evans* (1818) entitled "On the Patent Laws."[63] Although the Note is unsigned, it has been attributed to Justice Story[64] and certainly reflects his style and erudition. The Note constitutes essentially a primer on patent law and includes an extensive discussion of the Statute of Monopolies and leading British cases. In the context of patentable subject matter, the Note makes clear that a broad interpretation of the sole category "manufacture" in the British statute has been interpreted broadly: "The language of the statute is new manufacture; but the terms are used in an enlarged sense, as equivalent to new device or

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60 *Id.* at 517-18.

61 20 U.S. 356 (1822).

62 *See Evans v. Hettich*, 20 U.S. 453 (1822) (reaching the same result).

63 Note II is appended after the Judgment on the last page of the opinion. Because Note II is not paginated in the United States Reports, LEXIS pagination is used starting at 72.

64 *See* Walterscheid, *supra* n. 52, at 5, 5 n. 11.

contrivance, and apply not only to things made, but to the practice of making."[65] There is an extensive discussion of the Watt Steam Engine cases (*Boulton v. Bull*[66] and *Hornblower v. Boulton*[67]), to which the Note gave high praise: "Both of these cases were very elaborately discussed, and contain more learning on the subject of patents then can be found in any other adjudications, and are, therefore, deserving of the most accurate attention of every lawyer."[68] In any event, these cases seemed to fascinate the Court over the next half century.

An early example of the Grand Style in patent law is also found in the famous case of *Pennock v. Dialogue*,[69] decided in 1829. In *Pennock,* Justice Story established the policy-based principle that an inventor must file for a patent upon the public exploitation of the invention even though the Patent Act was silent on this point. After reciting the Patent Clause of the Constitution, Justice Story applied its instrumental policy:

> If an inventor should be permitted to hold back from the knowledge of the public the secrets of his invention; if he should for a long period of years retain the monopoly, and make, and sell his invention publicly, and thus gather the whole profits of it, relying upon his superior skill and knowledge of the structure; and then, and then only, when the danger of competition should force him to secure the exclusive right, he should be allowed to take out a patent, and thus exclude the public from any farther use than what should be derived under it during his fourteen years; *it would materially retard the pro-*

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65 Evans, 16 U.S. at app. 1, n. 2, **75-76. The Note continues:

> Under things made we may class, in the first place, new compositions of things, such as manufactures in the ordinary sense of the word; secondly, all mechanical inventions, whether made to produce old or new effects; for a new piece of mechanism is certainly a thing made. Under the practice of making, we may class all new artificial manners of operating with the hand, or with instruments in common use, new processes in any art, producing effects useful to the public. When the effect produced is some new substance, or composition, it would seem that the privilege of the sole working, or making, ought to be for such new substance, or composition, without regard to the mechanism or process, by which it has been produced, which, though perhaps also new, will be only useful as producing the new substance. When the effect produced is no new substance, or composition of things, the patent can only be for the mechanism, if new mechanism is used; or for the process, if it be a new method of operating, with or without old mechanism, by which the effect is produced.

Id.

66 2 H.Bl. 463 (1795), 126 Eng. Rep. 651 (1912).

67 8. Term Rep. 95 (1799), 101 Eng. Rep. 1285 (1909).

68 Evans, 16 U.S. at app. 1, n. 2, **81-82.

69 27 U.S. 1 (1829).

> *gress of science and the useful arts, and give a premium to those who should be least prompt to communicate their discoveries.*[70]

A vivid patent law example of Chief Justice Marshall's Grand Style, with overtones of natural law, is *Grant v. Raymond*,[71] decided in 1832. The issue before the Court was whether a "defective" patent could be reissued without statutory authority. An extended quotation from the opinion seems warranted to illustrate the Chief Justice's reasoning and style:

> It is equally true that the act of congress contains no words which expressly authori[z]e the secretary [of State] to issue a corrected patent, if the original, from some mistake or inadvertence in the patentee, should be found incompetent to secure the reward which the law intended to confer on him for his invention. The force of this objection and of the argument founded on it is felt. *If the new patent can be sustained, it must be on the general spirit and object of the law, not on its letter.* To promote the progress of useful arts . . . is the interest and policy of every enlightened government. It entered into the views of the framers of our constitution, and the 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," is among those expressly given to congress. This subject was among the first which followed the organization of our government. It was taken up by the first congress at its second session, and an act was passed authori[z]ing a patent to be issued to the inventor of any useful art. . . . [I]t cannot be doubted that the settled purpose of the United States has ever been, and continues to be, to confer on the authors of useful inventions an exclusive right in their inventions for the time mentioned in their patent. It is the reward stipulated for the advantages derived by the public for the exertions of the individual, and is intended as a stimulus to those exertions. The laws which are passed to give effect to this purpose ought, we think, to be construed in the spirit in which they have been made; and to execute the contract fairly on the part of the United States, where the full benefit has been actually received: if this can be done without transcending the intention of the statute, or countenancing acts which are fraudulent or may prove mischievous. The public yields nothing which it has not agreed to yield; it receives all which it has contracted to receive. The full benefit of the discovery, after its enjoyment by the discoverer for fourteen years, is preserved; and for his exclusive enjoyment of it during that time the public faith is pledged. *That sense of justice and of right which all feel, pleads strongly against depriving the inventor of the compensation thus solemnly promised, because he has committed an inadvertent or innocent mistake.*[72]

Basing the authority to reissue a patent on a "sense of justice and right" certainly is "grand." Even after statutory authority for reissuing patents was

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70 *Id.* at 19 (emphasis added).

71 31 U.S. 218 (1832).

72 *Id.* at 241-42 (emphasis added).

obtained, the courts found considerable difficulty in separating "innocent or inadvertent" mistakes from attempts by patentees to extend the scope of their patents as shall be seen.[73]

2. The Taney Court (1836 -1864)

Justice Story remained on the Court until 1845 and continued to make major contributions to this formative period of patent law. Of particular note is *Blanchard v. Sprague*,[74] a Circuit case, decided in 1839. Justice Story elaborated on the Constitutional principle that "to promote" implies a liberal construction of patents compared to the Statute of Monopolies, where patents for inventions constitute an exception to a general prohibition against monopolies.[75] He stated in *Blanchard*:

> Formerly, in England, courts of law were disposed to indulge in a very close and strict construction of the specifications, accompanying patents, and expressing the nature and extent of the invention. This construction seems to have been adopted upon the notion, that patent rights were in the nature of monopolies, and, therefore, were to be narrowly watched, and construed with a rigid adherence to their terms, as being in derogation of the general rights of the community. At present a far more liberal and expanded view of the subject is taken. Patents for inventions are now treated as a just reward to ingenious men, and as highly beneficial to the public, not only by holding out suitable encouragements to genius and talents and enterprise; but also as ultimately securing to the whole community great advantages from the free communication of secrets, and processes, and machinery, which may be most

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73 *See infra* text accompanying nn. 117-19 (discussing *Burr v. Duryee*).

74 3 F. Cas. 648 (D. Mass. 1839).

75 Justice Story expressed this idea several years earlier in *Ames v. Howard*, 1 F. Cas. 755, 756 (D. Mass. 1833):

> Patents for inventions are not to be treated as mere monopolies odious in the eyes of the law, and therefore not to be favored; nor are they to be construed with the utmost rigor, as strictissimi juris. The [C]onstitution of the United States, in giving authority to congress to grant such patents for a limited period, declares the object to be to promote the progress of science and useful arts, an object as truly national, and meritorious, and well founded in public policy, as any which can possibly be within the scope of national protection. Hence it has always been the course of the American courts, (and it has latterly become that of the English courts also,) to construe these patents fairly and liberally, and not to subject them to any over-nice and critical refinements. The object is to ascertain, what, from the fair sense of the words of the specification, is the nature and extent of the invention claimed by the party; and when the nature and extent of that claim are apparent, not to fritter away his rights upon formal or subt[]le objections of a purely technical character.

> important to all the great interests of society, to agriculture, to commerce and to manufactures, as well as to the cause of science and art. In America this liberal view of the subject has always been taken; and, indeed, it is a natural, if not a necessary result, from the very language and intent of the power given to congress by the constitution [1 Stat. 14] on this subject. 'Congress (says the constitution) shall have power to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right of their respective writings and discoveries.' Patents, then, are clearly entitled to a liberal construction, since they are not granted as restrictions upon the rights of the community, but are granted "to promote science and useful arts."[76]

The same year in *Ryan v. Goodwin*,[77] Justice Story used the Latin maxim "ut res magis valeat, quam pereat" to reinforce the view that the Constitution demanded a liberal construction of patents:

> Now, I take it to be a clear rule of our law in favor of inventors, and to carry into effect the obvious object of the constitution and laws in granting patents, "to promote the progress of science and useful arts," to give a liberal construction to the language of all patents and specifications, (ut res magis valeat, quam pereat), so as to protect, and not to destroy the rights of real inventors. If, therefore, there be any ambiguity or uncertainty in any part of the specification; yet, if taking the whole together, the court can perceive the exact nature and extent of the claim made by the inventor; it is bound to adopt that interpretation, and to give it full effect.[78]

In 1845, with the death of Justice Story, his erudition and comprehension of patent law was lost to the Court and to Chief Justice Taney, in particular.

The Taney years were busy ones for the Supreme Court in terms of patent cases. The liberal construction rule of Story came under attack in the early years of the Taney Court. Chief Justice Taney was ambivalent toward patents and seemed to lack an appreciation and understanding of the underlying principles and policies that had been painstakingly developed by the Marshall Court, particularly by Justice Story. In 1842, while Justice Story was still on the Court, Chief Justice Taney wrote the opinion in *Prouty v. Draper, Ruggles & Co.*,[79] which established the strict all-elements rule of patent infringement. The Chief Justice did not cite a single case in reaching this decision.[80] Yet, in *Hogg v. Emerson*,[81] decided in 1848, Justice Woodward stated for a unanimous Court:

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76 3 F. Cas. at 649-50.

77 21 F. Cas. 110 (D. Mass. 1839).

78 *Id.* at 112.

79 41 U.S. 336 (1842).

80 This was still in the age of peripheral claiming. Chief Justice Taney's reasoning is as follows:

The true rule of construction in respect to patents and specifications, and the doings generally of inventors, is to apply to them plain and ordinary principles, as we have endeavor[]red to on this occasion, and not, in this most metaphysical branch of modern law, to yield to subt[let]ies and technicalities, unsuited to the subject and not in keeping with the liberal spirit of the age, and likely to prove ruinous to a class of the community so inconsiderate and unskilled in business as men of genius and inventors usually are.[82]

Professor Friedman has observed that the courts began to become aware as the nineteenth century that patents could have anti-competitive effects.[83] He cited *Hotchkiss v. Greenwood*[84] as an early indication of this trend: "As early as 1850, Justice Samuel Nelson, speaking for the United States Supreme Court, enunciated a doctrine that cut down the number of potentially valid patents."[85] The standard for a patentable invention required "more ingenuity and skill . . . than were possessed by an ordinary mechanic acquainted with the business. . .

> The remaining question may be disposed of in a few words. The patent is for a combination, and the improvement consists in arranging different portions of the plough, and combining them together in the manner stated in the specification[] for the purpose of producing a certain effect. None of the parts referred to are new, and none are claimed as new; nor is any portion of the combination[] less than the whole claimed as new, or stated to produce any given result. The end in view is proposed to be accomplished by the union of all, arranged and combined together in the manner described. And this combination, composed of all the parts mentioned in the specification, and arranged with reference to each other, and to other parts of the plough[] in the manner therein described, is stated to be the improvement, and is the thing patented. The use of any two of these parts only, or of two combined with a third, which is substantially different, in form, or in the manner of its arrangement and connection with the others, is, therefore, not the thing patented. It is not the same combination[] if it substantially differs from it in any of its parts. The jogging of the standard into the beam, and its extension backward from the bolt, are both treated by the plaintiffs as essential parts of their combination for the purpose of brace and draft. Consequently, the use of either alone, by the defendants, would not be the same improvement, nor infringe the patent of the plaintiffs.

Id. at 341.

81 47 U.S. 437 (1848).

82 *Id.* at 485-86.

83 *See* Friedman, *supra* n. 6, at 435-38.

84 52 U.S. 248 (1850).

85 Friedman, *supra* n. 6, at 436.

."[86] There was a sole dissenter, Justice Woodbury, who would only require that the invention be "better" and "cheaper."[87]

From the middle of the century to after the Civil War, the Court continued to struggle to find a consistent scope for patents. In the 1852 term, Justice McLean, writing for the majority in *Le Roy v. Tatham (Le Roy I)*,[88] introduced a number of pernicious doctrines that continued to plague patent law into the late 20th century. An extended quote is necessary to capture its essence:

> The 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. It is admitted, that a *principle* is not patentable. A *principle*, in the abstract, 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 can an exclusive right exist to a new power, should one be discovered in addition to those already known. Through the agency of machinery a new steam *power* may be said to have been generated. But no one can appropriate this *power* exclusively to himself, under the patent laws. The same may be said of electricity, and of any other *power* in nature, which is alike open to all, and may be applied to useful purposes by the use of machinery. In all such cases, the processes used to extract, modify, and concentrate natural agencies, constitute the invention. The elements of the *power* exist; the invention is not in discovering them, but in applying them to useful objects. Whether the machinery used be novel, or consist of a new combination of parts known, the right of the inventor is secured against all who use the same mechanical *power*, or one that shall be substantially the same. A patent is not good for an *effect*, or the *result* of a certain process, as that 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. A new *property* discovered in matter, when practically applied, in the construction of a useful article of commerce or manufacture, is patentable; but the process through which the new property is developed and applied, must be stated, with such precision as to enable an ordinary mechanic to construct and apply the necessary process. . . . In the case before us, the court instructed the jury that the invention did not consist "in the novelty of the machinery, but in bringing a newly discovered principle into practical application, by which a useful article of manufacture is produced, and wrought pipe made as distinguished from cast pipe." A patent for leaden pipes would not be good, as it would be for an *effect*, and would, consequently, prohibit all other persons from using the same article, however manufactured. Leaden pipes are the same, the metal being in no respect different. Any difference in form and strength must arise from the mode of manufacturing the pipes. The new *property* in the metal claimed to have been

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86 52 U.S. at 267.

87 *Id.* at 271.

88 55 U.S. 156 (1852).

> discovered by the patentees, belongs to the process of manufacture, and not to the thing made.[89]

The case was remanded because the instruction was considered ambiguous for it was not clear whether the invention was for the machinery or for a process and not for a "*principle*," "*power*," "*effect*," "*result*," "*property*."

Justice Nelson (joined by Justices Wayne and Grier) dissented:

> Now the construction, which I understand a majority of my brethren are inclined to give to this patent, namely, that the patentees claim, as the originality of their invention, simply, the combination of the machinery employed, with great deference, seems to me contrary to the fair and reasonable import of the language of the specification, and also of the summary of the claim. The tendency of modern decisions is to construe specifications benignly, and to look through mere forms of expression, often inartificially used, to the substance, and to maintain the right of the patentee to the thing really invented, if ascertainable upon a liberal consideration of the language of the specification, when taken together.[90]

Upon remand, the court held in favor of the patentee construing the invention to be a process. This was unanimously affirmed by the Supreme Court in *Le Roy v. Tatham (Le Roy II)*[91] seven years after the original appeal. This same type of reversal is revisited in the famous *Tilghman* (soap process) cases[92] of 1873 and 1880 discussed below.[93]

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89 *Id.* at 174-76 (emphasis added).

90 *Id.* at 181.

91 63 U.S. 132 (1860). This was a unanimous decision. It is interesting to note that Justice McLean wrote the 1852 opinion and changed his view as did Chief Justice Taney and Justices Campbell, Catron, and Daniel. Justices Nelson, Grier, and Wayne had dissented in the first opinion. While not entirely clear, the rationale for the holding in *Le Roy II* appears to that the invention was the application of a principle in a process. As stated by Justice McLean:

> Principle is often applied to a machine to describe its movements and effect; and we are told that the originality of this invention did not "consist in the novelty of the machinery, but in bringing a newly-discovered principle into practical effect." [This was the instruction to the jury in *Le Roy I*.] Whether the new manufacture was the result of frequent experiments or of accident, it will be admitted that the process has been demonstrated to the satisfaction of all observers; and this has been done in the mode described.

Id. at 139.

92 *Mitchell v. Tilghman*, 86 U.S. 287 (1874); *Tilghman v. Proctor*, 102 U.S. 707 (1880); *see also Tilghman v. Proctor*, 125 U.S.136 (1888) (deciding the issue of damages).

93 *See infra* text accompanying nn. 126-131.

The next December term in 1853, the Supreme Court reviewed three significant cases relating to statutory subject matter--*O'Reilly v Morse,*[94] *Corning v. Burden*,[95] and *Winans v. Denmead*.[96] *Morse*, of course, is the landmark case on the issue of excluding "principles" from patent protection. *Corning* and *Winans*, however, illustrate the ambivalence of the Court concerning the distinction between machines and processes.

In *Morse*, the patentability of all the claims in issue was sustained except for the famous claim 8:

> Eighth. 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.[97]

At least in the spirit of the Grand Style, Chief Justice Taney provides two policy reasons for holding this claim invalid. The problem, however, was, as indicated by Justice Grier in dissent, that these reasons are incoherent in terms of generally established patent law principles. The first reason given by Chief Justice Taney was that this claim was just too broad. In his words:

> If this claim can be maintained, it matters not by what process or machinery the result is accomplished. For aught that we now know some future inventor, in the onward march of science, may discover a mode of writing or printing at a distance by means of the electric or galvanic current, without using any part of the process or combination set forth in the plaintiff's specification. His invention may be less complicated --less liable to get out of order -- less expensive in construction, and in its operation. But yet if it is covered by this patent the inventor could not use it, nor the public have the benefit of it without the permission of this patentee.[98]

Indeed, this is always the situation with so-called basic or fundamental patents. An earlier broad patent will block improvements on it from being exploited; however, it does not prevent patents from being granted on the improvements provided they satisfy the patent statute, particularly the "invention" or "nonobviousness" standard. As stated by Justice Grier (joined by Justices Wayne and Nelson) in dissent:

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94 56 U.S. 62 (1853).

95 56 U.S. 252 (1853).

96 56 U.S. 330 (1853).

97 56 U.S. at 113 (emphasis added).

98 *Id.*

> To say that a patentee, who claims the art of writing at a distance by means of elect[ro]-magnetism, necessarily claims all future improvements in the art, is to misconstrue it, or draws a consequence from it not fairly to be inferred from its language. An improvement in a known art is as much the subject of a patent as the art itself; so, also, is an improvement on a known machine. Yet, if the original machine be patented, the patentee of an improvement will not have a right to use the original. This doctrine has not been found to retard the progress of invention in the case of machines; and I can see no reason why a contrary one should be applied to an art.[99]

The second policy reason given by the Chief Justice is somewhat mystifying. He stated:

> Nor is this all, while he shuts the door against inventions of other persons, the patentee would be able to avail himself of new discoveries in the properties and powers of electro-magnetism which scientific men might bring to light. For he says he does not confine his claim to the machinery or parts of machinery, which he specifies; but claims for himself a monopoly in its use, however developed, for the purpose of printing at a distance. New discoveries in physical science may enable him to combine it with new agents and new elements, and by that means attain the object in a manner superior to the present process and altogether different from it. And if he can secure the exclusive use by his present patent he may vary it with every new discovery and development of the science, and need place no description of the new manner, process, or machinery, upon the records of the patent office. *And when his patent expires, the public must apply to him to learn what it is.* In fine he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent. The court is of opinion that the claim is too broad, and not warranted by law.[100]

Evidently, Taney was of the opinion that a patent claim was a living thing and grew to encompass later invented improvements. This would be consistent with his "too broad" argument that giving a patent such scope as that of claim 8 would unjustifiably bar improvements. The second thread of his argument is the mystifying one. It is not at all apparent why the public must apply to the inventor to learn anything before and certainly not after the patent has expired. After expiration, the public is free to exploit the previously patented (claimed) invention and any unpatented improvements.

Justice Grier countered the undue breadth argument with the instrumental policy of the Constitution:

> The claim of the patentee is . . . that he may be protected in the exercise of his art as against persons who may improve or change some of the processes or

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[99] *Id.* at 133-134.

[100] *Id.* at 113 (emphasis added).

> machines necessary in its exercise. The court, by deciding that this claim is too broad, virtually decides that such an inventor of an improvement may pirate the art he improves, because it is contrary to public policy to restrain the progress of invention. Or, in other words, it may be said that it is the policy of the courts to refuse that protection to an art which it affords to a machine, which it is the policy of the Constitution and the laws to grant.[101]

Chief Justice Taney evidently felt compelled to distinguish the Morse invention from that of Neilson for the blast furnace in the 1841 case of *Neilson v. Harford*[102] in the Court of Exchequer. He quoted from Baron Parke and concluded:

> We see nothing in this opinion differing in any degree from the familiar principles of law applicable to patent cases. Neilson claimed no particular mode of constructing the receptacle, or of heating it. He pointed out the manner in which it might be done; but admitted that it might also be done in a variety of ways; and at a higher or lower temperature; and that all of them would produce the effect in a greater or less degree, provided the air was heated by passing through a heated receptacle. And hence it seems that the court at first doubted, whether it was a patent for any thing more than the discovery that hot air would promote the ignition of fuel better than cold. And if this had been the construction, the court, it appears, would have held his patent to be void; because the discovery of a principle in natural philosophy or physical science, is not patentable.[103]

Evidently, in the Chief Justice's view, Morse was claiming a "principle," while Neilson was claiming the application of a principle. Taney would require that the invention claimed be disclosed with specificity or accordingly limited.[104]

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101 *Id.* at 134.

102 151 Eng. Rep. 1266 (1915).

103 56 U.S. at 115-16.

104 *See id.* at 119. Some of the broad language used in Taney's opinion was to prove troubling concerning the scope of process inventions. *See Risdon Iron & Locomotive Works v. Medart*, 158 U.S. 68 (1895), discussed *infra* text accompanying nn. 166-82. Taney does not quote the following sentence from Baron Parke in Nelson, whose appreciation may be extremely helpful in close cases:

> But, my Lord and my Brothers, after considerable hesitation, are of opinion that a construction may reasonably be put upon this clause which will support the patent; and though I myself still entertain great doubt whether such is the true construction, I am not prepared to say that it is not, and I am very glad that, in so meritorious an invention as this is admitted to be, in this view of the case, the plaintiff will not be deprived of his reward.

151 Eng. Rep. at 1274.

Whatever the theory, Morse had not invented all "*use*[s]" of "*electromagnetism, however developed,* for *making or printing intelligible characters, letters, or signs, at any distances . . . .*"[105] In modern theory, the issue would better be categorized as one of enablement rather than undue breadth and certainly not one of patentable subject matter.[106]

In *Corning v. Burden*,[107] the controversy continued between whether a machine or a process was being claimed. For a unanimous Court, Justice Grier, who had dissented in *Le Roy I* and *Morse,* tried to explicate the difference:

> It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical comnations. But the term process is often used in a more vague sense, in which it cannot be the subject of a patent. Thus we say that a board is undergoing the process of being planed, grain of being ground, iron of being hammered, or rolled. Here the term is used subjectively or passively as applied to the material operated on, and not to the method or mode of producing that operation, which is by mechanical means, or the use of a machine, as distinguished from a process. *In this use of the term it represents the function of a machine, or the effect produced by it on the material subjected to the action of the machine. 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.* It is by not distinguishing between the primary and secondary sense of the term "process," that the learned judge below appears to have fallen into an error. It is clear that Burden does not pretend to have discovered any new process by which cast iron is converted into malleable iron, but a new machine or combination of mechanical devices by which the slag or impurities of the cast iron may be expelled or pressed out of the metal, when reduced to the shape of puddlers' balls. . . . It is true that the patentee, after describing his machine, has set forth his claim in rather ambiguous and equivocal terms, which might be construed to mean either a process or machine. In such case the construction should be that which is most favorable to the patentee, 'ut res magis valeat quam pereat.' His patent having a title which claims a machine, and his specification de-

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105 56 U.S. at 113.

106 *See* Martin J. Adelman et al., Patent Law 460 (2d ed. 2003) ("This rejection would today be cast in terms of enablement: Morse had simply claimed far more than he had invented. A more recent decision *In re Cook*, 439 F.2d 730, 169 U.S.P.Q. 298 (CCPA 1971), covers much the same ground."). 35 U.S.C. §112, 1 requires:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

107 56 U.S. 252 (1854).

> scribing a machine, to construe his claim as for the function, effect, or result of his machine, would certainly endanger, if not destroy, its validity. His claim cannot change or nullify his previous specification with safety to his patent. *He 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.*[108]

While supposedly adhering to the maxim "*ut res magis valeat quam perea*," the Court concludes that the invention was a machine, for if it were construed as a process this might invalidate the patent as encompassing all machines that might perform that function. But the definition given of a process at the outset was: "It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical comnations."[109] The Court seemed to be unwilling to accept the concept that the same steps of a process may be performed by different machines.

The final case in the December 1853 term to be considered is *Winans v. Denmead*,[110] where the strong division in the Court, over the breadth to be afforded a patent, is vividly seen. The invention was for a train car for the transporting of coal, where the car was described as being "in the form of a frustum of a cone." This design permitted the weight of the load to be exerted equally in all directions. The defendant's car was octagonal and had a pyramidal base. In a five to four decision, the majority, in an opinion written by Justice Curtis, held in essence that all forms of the invention covered by inventor's principle were to be protected. As stated by Justice Curtis:

> Where form and substance are inseparable, it is enough to look at the form only. Where they are separable; where the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention--for that which entitled the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement; and it is not a defense, that it is embodied in a form not described, and in terms claimed by the patentee. . . . And, therefore, the patentee, having described his invention, and shown its principles, and claimed it in that form which most perfectly embodies it, is, in contempla-

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[108] *Id.* at 268-69 (emphasis added). Justice Grier also provides definitions and distinguishes machines from processes: The term machine includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result. But 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. A new process is usually the result of discovery; a machine, of invention. *Id.* at 267.

[109] *Id.* at 268.

[110] 56 U.S. 330 (1853).

> tion of law, deemed to claim every form in which his invention may be copied, unless he manifests an intention to disclaim some of those forms.[111]

This conclusion is based on the constitutional rationale for patents. On the other hand, the dissent (opinion by Justice Campbell, joined by Justices Catron, Daniel and the Chief Justice) raises concerns about the scope of protection afforded by such a construction and the problem of providing notice to the public of such a scope:

> The claim of to-day is . . . that an octagonal car is an infringement of this patent. 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?[112]

On the other hand, the introduction into the law of patentable subject matter of the concepts of "*principle/power/effect/result/property*" in *Le Roy I* and as applied in *Morse* appears to have destroyed the validity of one of the most beneficial inventions of all time in *Morton v. New York Eye Infirmary*,[113] decided in 1862. Dr. Morton had "discovered" that having patients inhale a sufficient quantity of ether would render them insensitive to pain, thus enabling surgery to be performed under the influence of the ether gas. The patent was invalidated on the ground as stated by Justice Nelson: "The effect alone was new, and to that only can the term 'discovery' apply. That this mere discovery, however novel and important, is not patentable, needs neither argument nor authority to prove."[114] It is, of course, far from apparent "why neither argument nor authority" is needed to proved this conclusion unless one accepts the proposition a priori. Justice Nelson further reasoned:

> We must, then, leaving the art of surgery to supply the evidence of its utility, contemplate the discovery as separated from the use to which it is applied. At this point the patent breaks down; for the specification presents nothing new except the effect produced by well-known agents, administered in well-known ways on well-known subjects.[115]

It is also not apparent why the discovery must be separated from the new use and why the new effect discovered does not support invention. It took until the 1952 Act to rectify this in the definition of a process: "The term 'proc-

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111 *Id.* at 343.

112 *Id.* at 347.

113 17 F. Cas. 879 (S.D.N.Y. 1862); *see* A. Samuel Oddi, *Un-Unified Economic Theories of Patents–The Not-Quite-Holy Grail*, 71 Notre Dame L. Rev. 267, 295-97 (discussing the background of the Morton case).

114 *Morton*, 17 F. Cas. at 882.

115 *Id.* at 882-83.

ess' means process, art or method, *and includes a new use of a known process, machine, manufacture, composition of matter, or material.*"[116]

It thus seems that formalist reasoning began to be interposed at a relatively early date as exemplified in *Le Roy I*, *Morse*, and *Morton*. This style of reasoning continued with seemingly increasing frequency as the formative period was ending around the Civil War. Perhaps this was to be expected in the age of "peripheral" claiming, when patent owners naturally sought to expand the scope of their patents. This was recognized by Justice Grier in *Burr v. Duryee*[117] decided in the December Term 1863, where he stated:

> Here we have the 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 or mode of operation. By this construction another inventor may be frightened from the course. But when challenged in a court of justice as too broad, the words, "*substantially as herein described*," may be resorted to as qualifying this claim of a function, result, or principle, and arguing that as the specification described a machine, it meant nothing more.[118]

He then concluded:

> We find here no authority to grant a patent for a 'principle' or a 'mode of operation,' or an *idea*, or any other abstraction. A machine is a concrete thing, consisting of parts, or of certain devices and combination of devices. The principle of a machine is properly defined to be 'its mode of operation,' or that peculiar combination of devices which distinguish it from other machines. A machine is not a principle or an idea. The use of ill-defined abstract phraseology is the frequent source of error. It requires no great ingenuity to mystify a subject by the use of abstract terms of indefinite or equivocal meaning. Because the law requires a patentee to explain the mode of operation of his peculiar machine, which distinguishes it from others, it does not authorize a patent for a "mode of operation as exhibited in a machine."[119]

It may be agreed that: "A machine is not a principle or an idea." On the other hand, a process is ethereal and the Court would rather construe an invention to be a specific machine rather than a far more encompassing process.

The problem of classification in the age of "peripheral" claiming was resolved in *Jacobs v. Baker*,[120] decided in 1869, at least in dicta, that if the invention *was not* a machine, a composition of matter, or a manufacture, it must be an "art." The invention evidently was a structure serving as a jail, con-

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116 35 U.S.C. § 100(b) (emphasis added).

117 68 U.S. 531 (1863).

118 *Id.* at 568.

119 *Id.* at 570.

120 74 U.S. 295, 297 (1869).

structed with secret passages and iron walls. The Court dismissed the categorization problem:

> But waiving all these difficulties as hypercritical, and assuming the correctness of the positions taken, that whatever is neither a machine, nor a manufacture, nor a composition of matter, must (*ex necessitate*) be "an art"; that a jail is a thing "made"; and that the patent is for the "*process* of making it," let us examine the case as presented by the bill and answer.[121]

The Court disposed of the patents in the case for lack of novelty. This seems to be the solution that Judge Rich finally arrived at in State *Street Bank & Trust Co. v. Signature Financial Group, Inc.*,[122] concluding that the really important issue with respect to a useful invention was whether it was new and nonobvious, not which pigeon hole it fit into.[123]

Yet there still were examples of the Grand Style. In *Rubber Co. v. Goodyear*,[124] decided in 1870, the Court sustained Goodyear's seminal patent, with Justice Swayne stating:

> A patent should be construed in a liberal spirit, to sustain the just claims of the inventor. This principle is not to be carried so far as to exclude what is in it, or to interpolate anything which it does not contain. But liberality, rather than strictness, should prevail where the fate of the patent is involved, and the question to be decided is whether the inventor shall hold or lose the fruits of his genius and his labors.[125]

Yet, only four years later, the Court reverted to a narrow scope of protection in *Mitchell v. Tilghman*,[126] in an opinion by Justice Clifford, who concluded:

> Limited, as explained by reference back to the descriptive parts of the specification, the claim may well be regarded as in due form, but it is quite clear that it would be invalid if it is not so limited, as it has always been held that a patent embraces nothing more than the improvement described and claimed as new, and that any 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 and to vend it to others to be used.[127]

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121 *Id.* at 298.

122 149 F.3d 1368 (Fed. Cir. 1998).

123 *See* discussion *infra* text accompanying nn. 313-33.

124 76 U.S. 788 (1870).

125 *Id.* at 795 (note omitted citing *Corning v. Burden*, 56 U.S. 252 (1854) (discussed in *supra* text accompanying nn. 107-09).

126 86 U.S. 287 (1873).

127 *Id.* at 392 (note omitted, citing *O'Reilly v. Morse*, 56 U.S. 62 (1853).

Justices Swayne, Davis, and Bradley dissented; and it was not until the October term 1880 that Tilghman's famous soap-making process was vindicated in *Tilghman v. Proctor*.[128] There, Justice Bradley stated for a unanimous Court:

> This case involves a consideration of the same patent which was the subject of litigation in the case of *Mitchell v. Tilghman*, ... The evidence in the present case, which is quite an unwieldy mass, is much the same as in that, being supplemented, however, by the testimony of the patentee respecting the nature of his original experiments and the practicability of using profitably the coil apparatus described in the patent, together with certain exhibits relating to the novelty of the alleged invention. Upon 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, and that the defendants have infringed it by the processes used by them.[129]

The change in the composition of the Court may have had some influence over the reversal. However, Justices Clifford, (who wrote *Mitchell*) Miller, and Field, changed their position. The basis for this reversal would appear to be a careful reconsideration of the technical details of the invention and a belated recognition that the invention was for a method for manufacturing fatty acids and glycerin from fatty bodies and not limited to a particular implementation.[130] The Grand Style was not dead. Justice Bradley stated the proposition boldly: "That a patent can be granted for a process, there can be no doubt. The patent law is not confined to new machines and new compositions of matter, but extends to any new and useful art or manufacture." Justice Bradley returned to the maxim "*ut res magis valeat quam pereat*" and made clear that processes are patentable subject matter and that Tilghman's invention was for a process and not a principle – relying upon *Corning* and *Neilson* and distinguishing *Morse*.[131]

In any event, formalism now began to raise its ugly head in patent cases with some regularity. *The Telephone Cases*,[132] decided in 1888, provided a brief respite.

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128 102 U.S. 707 (1880).

129 *Id.* at 708.

130 The single claim in the Tilghman patent was: "I hereby declare that I claim, as of my invention, the manufacturing of fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure." *Tilghman*, 102 U.S. at 709.

131 *See* 102 U.S. at 722-27.

132 126 U.S. 1 (1888).

B. Formalism: Patent Act of 1870 to the Great Depression

The *"pencil/eraser" cases* (*Rubber-Tip Pencil Co. v. Howard*[133] (1874) and *Reckendorfer v. Faber*[134] (1875)), provide early examples of the Formal Style. In *Rubber-Tip*, still under peripheral claiming, the invention claimed was: "a new article of manufacture an elastic erasive pencil-head, made substantially in manner as described."[135] The eraser head fit over the end of a lead pencil and was held to the pencil shaft by the elasticity of the eraser material. These types of eraser heads are still being sold today. First, in a unanimous opinion by Chief Justice Waite, the Court took judicial notice that: "Everyone knew, when the patent was applied for, that if a solid substance was inserted into a cavity in a piece of rubber smaller than itself, the rubber would cling to it."[136] The Chief Justice then concluded: "An idea of itself is not patentable, but a new device by which it may be made practically useful is. The idea of this patentee was a good one, but his device to give it effect, though useful, was not new. Consequently, he took nothing by his patent."[137] The deductive logic appears to be that if a "property" (elasticity) of a substance is known, then the use of that property defeats novelty. It is far from apparent why the idea was a "good one" when the conclusion is that it was not new, even though (evidently) no prior art existed antedating the patentee's eraser head.

In *Reckendorfer*, two patents were in issue that had been reissued in 1872. In the Reckendorfer patent, the first claim was quite specific: "A pencil composed of a wooden sheath and lead core, having one end of the sheath enlarged . . . and recessed head toward its opposite end for the whole or a portion of its length, substantially as show and described."[138] The issue to be resolved, according to Justice Hunt, was framed as follows:

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133 87 U.S. 498 (1874).

134 92 U.S. 347 (1875).

135 87 U.S. at 500.

136 *Id.* at 507.

137 *Id.*

138 92 U.S. at 349. In the other patent in issue to Lipman, the single claim was:

> I do not claim the use of a lead-pencil with a piece of india-rubber, or other erasing material, attached at one end for the purpose of erasing marks; but what I do claim as my invention, and desire to secure by letters-patent, is the combination of the lead and india-rubber, or other erasing substance, in the holder of a drawing-pencil, the whole being constructed and arranged substantially in the manner and for the purposes set forth.

Id. at 348.

> The article presented is for the performance of mechanical operations, to produce mechanical results, and is a mechanical instrument as much as a brush, a pen, a stamp, a knife, a file, or a screw. Whether it is styled a manufacture, a tool, or a machine, it is an instrument intended to produce a useful mechanical result; and the question presents itself, Does it embody any new device, or any combination of devices producing a new result?[139]

Thus, to be patentable the device must be new or, if a combination, it must produce a *new result*. There is no citation of authority for this proposition. The analogy is given of attaching a hammer to one end of a stick and a screw driver to the other.[140] Justice Hunt reasoned: "[n]o effect is produced, no result follows, from the joint use of the two."[141] He went on: "The combination, to be patentable, must produce a different force or effect, or result in the combined forces or processes, from that given by their separate parts. There must be a new result produced by their union: if not so, it is only an aggregation of separate elements."[142] He concluded: "In the case we are considering, the parts claimed to make a combination are distinct and disconnected. Not only is there no new result, but no joint operation."[143] Hence, because the pencil worked as a pencil and the eraser as an eraser, there was no invention in this combination – the aggregation exception to patentability is thus recognized and remorselessly applied against what most would agree was a very good idea of continuing value.[144] Justices Strong, Davis and Bradley dissented on the patentability issue but did not elaborate.[145]

In contrast to *Reckendorfer*, *Cochrane v. Deener*,[146] decided in 1877, involved a case where the defendants admitted that the process in question had revolutionized grain manufacturing.[147] Justice Bradley wrote the opinion, which has become famous for its definition of process:

> That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. If one of the steps of a process be

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139 *Id.* at 355.

140 *Id.* at 356.

141 *Id.*

142 *Id.* at 357.

143 *Id.*

144 In the first decades of the twentieth century, it was estimated that about 90% of all pencils came with an eraser attached. Henry Petroski, *The Pencil: A History of Design and Circumstance* 178 (Alfred A. Knopf 1990).

145 *Reckendorfer*, 92 U.S. at 358.

146 94 U.S. 780 (1877).

147 *Id.* at 787. "The defendants admit that the process has produced a revolution in the manufacture of flour; but they attribute that revolution to their improvements." *Id.*

> that a certain substance is to be reduced to a powder, it may not be at all material what instrument or machinery is used to effect that object, whether a hammer, a pestle and mortar, or a mill. Either may be pointed out; but if the patent is not confined to that particular tool or machine, the use of the others would be an infringement, the general process being the same. A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.[148]

Justice Bradley gave full recognition of the potential breadth of process claims as not being limited to a particular embodiment.[149] This definition, however, is a transformational one in the physical sense. If applied rigorously and in a deductive manner, such application could seriously retard the expansion of patent protection into non-traditional fields such as computer programs and computer-controlled processes where the transformation is numerical or symbolic. Fortunately, by the time the Supreme Court addressed the issue of computer-controlled processes a century later, the patent taught a physical transformation (uncured rubber to cured rubber O-rings).[150]

In the decades following the Civil War, conventional wisdom would have suggested an increasing use of the Formal Style by the Supreme Court.[151] As previously discussed, the expansive (Grand Style) approach employed by the Court in *Tilghman v. Proctor*[152] in 1881 was revisited in 1888 in the famous

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148 *Id.* at 787-88.

149 *Id.*

150 *Diamond v. Diehr*, 450 U.S. 175, 177, 179 (1981). For a further discussion of *Diehr*, review the text accompanying *infra* nn. 301-08.

151 As summarized by Gilmore:

> The post-Civil War judicial product seems to start from the assumption that the law is a closed, logical system. Judges do not make law: they merely declare the law which, in some Platonic sense, already exists. The judicial function has nothing to do with the adaptation of rules of law to changing conditions; it is restricted to the discovery of what the true rules of law are and indeed always have been. Past error can be exposed and in that way minor corrections can be made, but the truth, once arrived at, is immutable and eternal.

Gilmore, *supra* n. 1, at 62.

152 102 U.S at 707 (discussed *supra* text accompanying nn. 128-31).

Telephone Cases[153] sustaining Alexander Graham Bell's patent. The importance of this decision is not diminished by the fact that the author of *Tilghman v. Proctor*, Justice Bradley, dissented along with Justices Field and Harlan.[154] They disagreed with the majority over the issue of who was the first inventor of the telephone, rather than over the fundamental issue of whether Bell had claimed patentable subject matter.[155] Bell's claim at issue was "[t]he 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."[156]

With the onslaught of the age of formalism, it may seem surprising that in 1888 the *Telephone Cases* can be seen as prolonging the formative period in the Grand Style. The case is important not only because of the significance of the invention involved, but also because it clearly articulated Bell's process in broad terms, while limiting the impact of some of Chief Justice Taney's broad language in *Morse*.[157] Justice Waite defined "art" as the following:

> The patent for the art does not necessarily involve a patent for the particular means employed for using it. Indeed, the mention of any means, in the specification or descriptive portion of the patent, is only necessary to show that the art can be used; for it is only useful arts—arts which may be used to advantage—that can be made the subject of a patent.[158]

He thus made clear that the particular means used are only exemplary, and usefulness and operability are the limiting conditions.

The scope of Bell's fifth claim approaches that of the eighth claim of Morse: "[t]he 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."[159] In reference to the *Morse* case, Chief Justice Waite

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153 126 U.S. 1 (1888).

154 *Id.* at 573.

155 *Id.*

156 *Id.* at 531.

157 *Id.* at 534-35.

158 *Id.*

159 *Compare O'Reilly*, 56 U.S. at 62 *with Telephone Cases*, 126 U.S. at 14. If Morse's "Eighth" claim were modified to the Bell format by adding the underlined portions and deleting the bracketed portions, it would appear as follows:

> Eighth. [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

stated that "[t]he effect of that decision was, therefore, that the use of magnetism as a motive power, without regard to the particular process with which it was connected in the patent, could not be claimed, but that its use in that connection could**.**"[160] His interpretation appears to be that Morse's eighth claim covered any and every use of electro-magnetism. This may be stretching the claim quite a bit, as it was limited to "making or printing intelligible characters, letters, or signs," albeit at "any distance."[161] He then construed Bell's claim more narrowly:

> In the present case the claim is not for the use of a 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, and using it in that condition for that purpose.[162]

In his view, Morse's electric current is "pure" (in its "natural state"), while Bell's is in a particular "condition" (a continuous current) as being "suited" for the transmission of sound.[163] Chief Justice Waite then recognized, contrary to Taney, that the scope of the claim is limited by its utility:

> We see nothing in Morse's case to defeat Bell's claim; on the contrary, it is in all respects sustained by that authority. It may be that electricity cannot be used at all for the transmission of speech, except in the way Bell has discovered, and that therefore, practically, his patent gives him its exclusive use for that purpose; but that does not make his claim one for the use of electricity distinct from the particular process with which it is connected in his patent. *It will, if true, show more clearly the great importance of his discovery, but it will not invalidate his patent*.[164]

No one, including the giants Morse and Bell, can claim electricity by itself. One may claim its application, however, limited only to its usefulness. Moreover, the inventor need not have actually reduced the invention to practice.

> current, which I call electro-magnetism, however developed,] The method of and apparatus for making or printing intelligible characters, letters, or signs, at a [any] distance[s], being a new application of that power, of which I claim to be the first inventor or discoverer."], as herein described, by causing electrical undulations corresponding to said characters, letters, or signs to be transmitted through the use of the motive power of the electric or galvanic current, which I call electro-magnetism.

Compare O'Reilly, 56 U.S. at 62 *with Telephone Cases*, 126 U.S. at 14.

160 *Telephone Cases*, 126 U. S. at 534.

161 *Id.* (citing *O'Reilly*, 56 U.S. at 62).

162 *Id.*

163 *Id.*

164 *Id.* at 535 (emphasis added).

For instance, Bell had not actually transmitted speech at the time he submitted his patent application; but he had included sufficient information in his application to enable "one of ordinary skill" to practice the invention.[165]

The impact of formalism may also be seen in *Risdon Iron & Locomotive Works v. Medart*,[166] decided in 1895. Justice Brown, writing for a unanimous Court, employed a categorization form of analysis—a hallmark of formalist jurisprudence.[167] He first embarked on a discussion of the leading cases related to processes "to illustrate the distinction between such as are and such as are not patentable."[168] Starting with the famous *Neilson* case, Justice Brown observed that Chief Justice Taney had categorized the Neilson invention in *O'Reilly v. Morse* as a machine: "Mr. Chief Justice Taney treated [the Neilson invention] as an invention of a mechanical apparatus by which a current of hot air, instead of cold, could be thrown in."[169] On the other hand, Justice Bradley had categorized the Neilson invention as a process in *Tilghman v. Proctor*, which was decided 27 years later.[170] Justice Brown then went on to dispel the concern that certain processes—mechanical ones in particular—had been eliminated by some of

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165 *Id.*

> It is quite true that when Bell applied for his patent he had never actually transmitted telegraphically spoken words so that they could be distinctly heard and understood at the receiving end of his line, but in his specification he did describe accurately and with admirable clearness his process, that is to say, the exact electrical condition that must be created to accomplish his purpose, and he also described, with sufficient precision to enable one of ordinary skill in such matters to make it, a form of apparatus which, if used in the way pointed out, would produce the required effect, receive the words, and carry them to and deliver them at the appointed place.

Id.

166 158 U.S. 68 (1895).

167 As stated by Horwitz:

> Nothing captures the essential difference between the typical legal minds of nineteenth- and twentieth-century America quite as well as their attitude toward categories. Nineteenth-century legal thought was overwhelmingly dominated by categorical thinking–by clear, distinct, bright-line classifications of legal phenomena. Late-nineteenth century legal reasoning brought categorical modes of thought to their highest fulfillment.

Horwitz II, *supra* n. 17, at 17.

168 *Medart*, 158 U.S. at 72.

169 *Id.* at 73.

170 *Tilghman*, 102 U.S. at 722.

Chief Justice Taney's broad language in *O'Reilly v. Morse*.[171] Justice Brown limited this interpretation:

> In view of some of our later decisions it may be questioned whether the language used by the Chief Justice [Taney] in some portions of this paragraph may not be broader than these cases would justify, since patents for processes involving chemical effects or combinations have been repeatedly held to be valid.[172]

This clarification certainly was a desirable one.

Justice Brown then reviewed other cases that have sustained patents on processes[173] and ended with the *Telephone Cases*. At this point, he turned his analysis to cases where processes had been held invalid.[174] He began with Justice Story's classic decision in *Wyeth v. Stone*,[175] followed by what Justice Brown terms "[t]he leading case," *Corning v. Burden*.[176] He concluded a long quotation from this case with the following: "[b]ut 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."[177] He then added that "[a]lthough the cases are

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171 *See Medart*, 158 U.S. at 74-75 (quoting Chief Justice Taney in *O'Reilly v. Morse*).

> Whoever discovers that a certain useful result will be produced in any art, machine, manufacture, or composition of matter, by the use of certain means, is entitled to a patent for it; provided he specifies the means he uses in a manner so full and exact that any one skilled in the science to which it appertains can, by using the means he specifies, without any addition to, or subtraction from them, produce precisely the result he describes. And if this cannot be done by the means he describes the patent is void. And if it can he done, then the patent confers on him the exclusive right to use the means he specifies to produce the result or effect he describes and nothing more. And it makes no difference, in this respect, whether the effect is produced by chemical agency or combination; or by the application of discoveries or principles in natural philosophy known or unknown before his invention; or by machinery acting altogether upon mechanical principles. In either case he must describe the manner and process as above mentioned, and the end it accomplishes. And any one may lawfully accomplish the same end without infringing the patent, if he uses means substantially different from those described.

Id.

172 *Id.* at 75.

173 *Id.* at 75-76 (reviewing *New Process Fermentation Co. v. Maus*, 122 U.S. 413 (1887); *Tilghman v. Proctor*, 102 U.S. 707 (1881); *Cochrane v. Deener*, 94 U.S. 780 (1877); *Mowry v. Whitney*, 81 U.S. 620 (1871)).

174 *Id.* at 77.

175 *Id.* (discussing *Wyeth v. Stone*, 30 F. Cas. 723 (C.C.D. Mass. 1840)).

176 *Id.* at 77-78 (analyzing *Corning v. Burden*, 56 U.S. 252 (1854)).

177 *Id.* at 79.

not numerous, this distinction between a process and a function has never been departed from by this court, and has been accepted and applied in a large number of cases in the Circuit Courts."[178]

Justice Brown then cited, with a brief description, Circuit Court cases where mechanical processes had been invalidated[179] and concluded:

> The patent in question clearly falls within this category. As already shown, it is upon its face "for an improved process of manufacture," and mechanism is shown and described simply for the purpose of exhibiting its operation, which is described in detail. The result is a pulley more perfectly balanced, more faultless[ly] shape[d], stronger and more durable, perhaps, than any before produced; but this was not because the patentee had discovered anything new in the result produced, but because the mechanism was better adopted to produce that result than anything that had before been known. As pulleys of that description had been produced before, doubtless, with greater care in the manufacture of them, a pulley as perfect as his might have been made. So that all that he invented in fact was a machine for the more perfect manufacture of such pulleys. The operation or function of such machine, however, is not patentable as a process.[180]

It is not immediately apparent why the Court would apply the Circuit Court cases while apparently ignoring its own Grand-Style decisions, which were all presumably well-reasoned and policy-based. It indeed was well into the twentieth century before the "function of a machine" exception was put to rest by Judge Rich in *In re Tarczy-Hornoch*[181]—much to the chagrin of Justice Stevens, dissenting in *Diamond v. Diehr*—which finally opened the door for computer-related inventions as protectable subject matter.[182]

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178 *Id.*

179 *See id.*

> The following processes have been held not to be patentable: An improvement in sewing machines, by which the soles and uppers of boots and shoes could be sewed together without any welt by a certain kind of stitches, *MacKay v. Jackman*, 12 Fed. Rep. 615 [sic]. A process for washing shavings in breweries, *Brainard v. Cramme*, 12 Fed. Rep. 621 [sic]. For an improved method of treating seed by steam, *Gage v. Kellogg*, 23 Fed. Rep. 891 [sic]. A process for crimping heel stiffenings of boots and shoes, *Hatch v. Moffitt*, 15 Fed. Rep. 252 [sic]. *See also Sickels v. Falls Company*, 4 Blatchford, 508; *Excelsior Needle Co. v. Union Needle Co.*, 32 Fed. Rep. 221 [sic].

Id.

180 *Id.*

181 397 F.2d 856 (C.C.P.A. 1968).

182 450 U.S. at 198 (Stevens, J. dissenting). The demise of the "function of a machine" exception is traced in A. Samuel Oddi, *Assault on the Citadel: Judge Rich and Computer-Related Inventions*, 39 Hous. L. Rev. 1033, 1041-45 (2002) [hereinafter *Assault*].

The dichotomy here between "real" processes and "false" processes would seem analogous to the dichotomies of the formalist period, such as "private" versus "public."[183] "Real" processes presumably satisfy Justice Grier's definition in *Corning*, which was from the same term as *Morse*: "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."[184] On the other hand, "false" processes are presumably those that merely produce a "result" or "effect."[185] As stated by Justice Grier, "[i]t is for the discovery or invention of some practicable method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself."[186] If the "result or effect" itself is defined as producing the product that the machine is intended to produce, this is circuitous reasoning and it is hard to justify this distinction on any principled basis.

Two years after *Risdon Iron*, Justice Brown reinforced the "false" process exception in *Boyden Power Brake Co. v. Westinghouse*[187] when he wrote the following:

> The difficulty we have found with this claim is this: [t]hat, if it be interpreted simply as a claim for the function of admitting air to the brake-cylinder directly from the train-pipe, it is open to the objection, held in several cases to be fatal, that the mere function of a machine cannot be patented.[188]

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183 Many are listed by Horwitz:

> There are a number of familiar categories that late-nineteenth-century judges invoked to decide cases: 'direct-indirect' tests in a number of legal areas, especially under the commerce clause; 'business affected with the public interest'; 'intervening' and 'supervening' causes in the law of causation; a 'literalist' interpretation of the Sherman Act that purported to distinguish clearly between contracts in restraint of trade and those not in restraint of trade; legislation that interfered with contract 'rights' versus contract 'remedies'; distinctions between 'taxation' and 'takings' and between exercises of police power (or regulation) and confiscations; and the exercise of eminent domain or taxing powers that served a public purpose and those that did not. One could extend the list indefinitely.

Horwitz II, *supra* n. 17, at 17-18.

184 *Corning*, 56 U.S. at 267.

185 *See id.* at 268.

186 *Id.*

187 170 U.S. 537 (1898).

188 *Id.* at 554. (noting that the "rule was clearly laid down in the leading case of *Corning v. Burden* [56 U.S. 252] . . . .").

Yet in 1909, presumably at the height of the formalist period, the Court entered into a policy analysis of the purpose of the Patent Act and in particular the scope of subject matter protection under the Act.[189] In *Expanded Metal Co. v. Bradford*,[190] the protection of mechanical processes was challenged on the basis of *Corning* and *Risdon Iron*. Justice Day, writing for a unanimous Court, defined the issue:

> It is lastly contended, and this is perhaps the most important question in the case, that in view of the former declarations and opinions of this court, what is termed a process patent relates only to such as are produced by chemical action, or by the operation or application of some similar elemental action, and that such processes do not include methods or means which are affected by mere mechanical combinations, and a part of the language used in [citing *Corning* and *Risdon Iron*] is seized upon in support of this contention. We have no disposition to question the decision in those cases.[191]

Justice Day, however, then continued writing that "[a]n examination of the extent of the right to process patents requires consideration of the object and purpose of the Congress in exercising the constitutional power to protect for a limited period meritorious inventions or discoveries."[192] He then quoted the statutory classes of invention and concluded:

> This is the statute which secures to inventors the rights of protection, and it is not the province of the courts to so limit the statute as to deprive meritorious inventors of its benefits. The word "process" is not used in the statute. The inventor of a new and useful art is distinctly entitled to the benefit of the statute as well as he who invents a machine, manufacture, or composition of matter. The word "process" has been brought into the decisions because it is sup-

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189 Only four years earlier, the Supreme Court had decided *Lockner v. New York*, 198 U.S. 45 (1905), which may be considered the high-water mark of formalism. However, as Professor Schauer has observed:

> We condemn *Lochner* as formalistic not because it involves a choice, but because it attempts to describe this choice as compulsion. What strikes us clearly as a political or social or moral or economic choice is described in *Lochner* as definitionally incorporated within the *meaning* of a broad term. Thus, choice is masked by the language of linguistic inexorability.

Frederick Schauer, *Formalism*, 97 Yale L.J. 509, 511-12 (1988) (emphasis original). The same may be said with respect to the definition by the courts of statutory subject matter from a statute that merely lists the categories.

190 214 U.S. 366 (1909).

191 *Id.* at 381-82.

192 *Id.* at 382.

> posedly an equivalent form of expression, or included in the statutory designation of a new and useful art.[193]

Justice Day saw the dichotomy in the following way:

> It is undoubtedly true, and all the cases agree, that the mere function or effect of the operation of a machine cannot be the subject-matter of a lawful patent. But it does not follow that a method of doing a thing, so clearly indicated that those skilled in the art can avail themselves of mechanism to carry it into operation, is not the subject-matter of a valid patent.[194]

He then relied upon the *Cochrane-Tilghman* line of cases rather than the *Corning-Risdon Iron* line.[195] Policy seems to win in the midst of formalism.

At this time, however, the courts were beginning to recognize the tension between laissez-faire economics and trade restraints by means of patents. The courts first took a laissez-faire approach to patent "tie-ins." Shortly thereafter, the courts changed their view and held that "tie-ins" were "patent misuse" in restraint of trade. A "tie-in" occurs when a patent owner conditions a license to a licensee on the condition that the licensee purchase supplies from the patent owner. These supplies could include unpatented staple commodities readily available on the open market (e.g. paper, ink, salt) at, no doubt, lower prices. The licensee would directly infringe if it purchased the "tied-in" supplies on the open market, thereby violating the license. Additionally, a third party who sold those supplies to the licensee became a contributory infringer.

This practice was first approved by the Supreme Court in *Henry v. A.B. Dick Co.*,[196] decided in 1912. In this case, the patent owner sold its mimeograph machines with the following label license: "[t]his machine is sold by the A.B. Dick Co. with the license restriction that it may be used only with the [unpatented] stencil paper, ink, and other supplies made by A.B. Dick Company, Chicago, U.S.A."[197] The defendant, with knowledge of the license's restrictions, sold unpatented ink to the licensee. The Court, in an opinion by Justice Lurton,[198] upheld a contributory infringement action against the defendant on the

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193 *Id.*

194 *Id.* at 383.

195 *See id.* (citing *Cochrane*, 94 U.S. at 780).

196 224 U.S. 1 (1912).

197 *Id.* at 11.

198 *Id.* Justice Day did not participate. *Id.* at 1 n. 1. Chief Justice White and Justices Hughes and Lamar dissented. *Id.* Justice Lurton, while on the 6th Circuit, wrote the leading opinion permitting such "tie-ins" in *Heaton-Peninsular Button-Fastener Co. v. Eureka Specialty Co.*, 77 F. 288 (6th Cir. 1896).

basis of the Patent Act.[199] Justice Lurton first established the proposition that "[t]his right to sever ownership and use is deducible from the nature of a patent monopoly and is recognized in the cases."[200] He then defined the line between "lawful" and "unlawful" qualification than can be imposed by the patent owner:

> Where, then, is the line between a lawful and an unlawful qualification upon the use? This is a question of statutory construction. But with what eye shall we read a meaning into it? It is a statute creating and protecting a monopoly. It is a true monopoly, one having its origin in the ultimate authority, the Constitution. Shall we deal with the statute creating and guaranteeing the exclusive right which is granted to the inventor with the narrow scrutiny proper when a statutory right is asserted to uphold a claim which is lacking in those moral elements which appeal to the normal man? Or shall we approach it as a monopoly granted to subserve a broad public policy, by which large ends are to be attained, and, therefore, to be construed so as to give effect to a wise and beneficial purpose? That we must neither transcend the statute, nor cut down its clear meaning, is plain.[201]

After quoting Chief Justice Marshall in *Grant v. Raymond*,[202] Justice Lurton concluded that the qualification of requiring the licensee to purchase unpatented ink only from the patent owner was a "lawful" one within the Patent Act.[203]

The Court's broad interpretation of lawful "tie-ins" did not stand the test of time. Indeed, it lasted only five years. In *Motion Picture Patents Co. v. Universal Film Manufacturing Co.*,[204] the Court, in an opinion by Justice Clarke,

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199 *Henry*, 224 U.S. at 49.

200 *Id.* at 25.

201 *Id.* at 26-27.

202 *Id.* at 27 (quoting *Grant v. Raymond*, 31 U.S. 218, 241-42 (1832)). Chief Justice Marshall stated:

> It is the reward stipulated for the advantages derived by the public for the exertions of the individual, and is intended as a stimulus to those exertions. The laws which are passed to give effect to this purpose ought, we think, to be construed in the spirit in which they have been made; and to execute the contract fairly on the part of the United States, where the full benefit has been actually received, if this can be done without transcending the intention of the statute, or countenancing acts which are fraudulent or may prove mischievous. The public yields nothing which it has not agreed to yield; it receives all which it had contracted to receive. The full benefit of the discovery, after its enjoyment by the discoverer for fourteen years, is preserved, and for his exclusive enjoyment of it during that time the public faith is pledged.

Id.

203 *Id.* at 38.

204 243 U.S. 502 (1917).

reversed *Henry* and limited a patent's scope to the "claimed invention."[205] Justice Clarke stated in this regard:

> Whatever right the owner may have to control by restriction the materials to be used in operating the machine must be derived through the general law from the ownership of the property in the machine and *it cannot be derived from or protected by the patent law, which allows a grant only of the right to an exclusive use of the new and useful discovery which has been made—this and nothing more.*[206]

He concluded:

> A restriction which would give to the plaintiff such a potential power for evil over an industry which must be recognized as an important element in the amusement life of the nation, under the conclusions we have stated in this opinion, is plainly void, because wholly without the scope and purpose of our patent laws and because, if sustained, it would be gravely injurious to that public interest, which we have seen is more a favorite of the law than is the promotion of private fortunes.[207]

What a difference five years made—including the adoption by Congress of the Clayton Act in 1914.[208] While not relying on the Clayton Act, the Court clearly relied on the same underlying policy to bar trade restrictions on unpatented commodities.

Justice Holmes dissented in *Motion Picture Patents Co.* and was joined by Justices McKenna and Van Devanter.[209] His reasoning is formalistic rather than pragmatic. He uses "property logic"—if you want to use my property (and patents are property), then you must comply with my conditions. In Justice Holmes' words:

> But the domination is one only to the extent of the desire for the tea pot or film feeder, and if the owner prefers to keep the pot or the feeder unless you will buy his tea or films, I cannot see in allowing him the right to do so anything more than an ordinary incident of ownership, or at most, a consequence of the *Paper Bag Case*, on which, as it seems to me, this case ought to turn.[210]

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205 *Id.* at 513, 518.

206 *Id.* at 513 (emphasis added).

207 *Id.* at 519.

208 *Clayton Act of 1914*, 63 Pub. L. No. 63-212, § 3, 38 Stat. 730, 731 (1914).

209 *Motion Picture Patents Co.*, 243 U.S. at 519-21.

210 *Mot. Picture Pats. Co.*, 243 U.S. at 520 (Holmes, J., dissenting) (citing Chief Justice Marshall's majority opinion in *Grant v. Raymond*, 31 U.S. 218, 242 (1832)). The Paper Bag Case (*Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U. S. 405 (1908)), held that patent owners need not use (work) their inventions in order to enforce them against infringers. *Id.* at 422-30.

The use of "property logic" declined with the adoption and expansion of the patent misuse doctrine. Its use further declined by the courts' severely limiting contributory infringement, which narrowed the scope of patent protection. A brief discussion of this demise is included in the next section.

Nonetheless, the liberal policy-based interpretation of patented inventions, as exemplified by the *Cochrane-Risdon Iron-Expanded Metal* line of cases, continued into the next decade. This interpretation is apparent in *Eibel Process Co. v. Minnesota & Ontario Paper Co.*,[211] which was decided in 1923. Writing for a unanimous Court, Chief Justice Taft stated:

> In administering the patent law the court first looks into the art to find what the real merit of the alleged discovery or invention is and whether it has advanced the art substantially. If it has done so, then the court is liberal in its construction of the patent to secure to the inventor the reward he deserves. If what he has done works only a slight step forward and that which he says is a discovery is on the border line between mere mechanical change and real invention, then his patent, if sustained, will be given a narrow scope and infringement will be found only in approximate copies of the new device. It is this differing attitude of the courts toward genuine discoveries and slight improvements that reconciles the sometimes apparently conflicting instances of construing specifications and the finding of equivalents in alleged infringements. In the case before us, for the reasons we have already reviewed, we think that Eibel made a very useful discovery which has substantially advanced the art. His was not a pioneer patent, creating a new art; but a patent which is only an improvement on an old machine may be very meritorious and entitled to liberal treatment. Indeed, when one notes the crude working of machines of famous pioneer inventions and discoveries, and compares them with the modern machines and processes exemplifying the principle of the pioneer discovery, one hesitates in the division of credit between the original inventor and the improvers; and certainly finds no reason to withhold from the really meritorious improver, the application of the rule "ut res magis valeat quam pereat," which has been sustained in so many cases in this Court.[212]

This liberal "treatment" was not to last long, while formalism lived on.

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[211] 261 U.S. 45 (1923).

[212] *Id.* at 63 (citing *McClain v. Ortmayer*, 141 U.S. 419 (1891); *Rubber Co. v. Goodyear*, 76 U.S. 788 (1869); *Turrill v. Mich. S. & N. Ind. R.R. Co.*, 68 U.S. 491 (1864); *Winans v. Denmead*, 56 U.S. 330 (1854); *Corning*, 56 U.S. at 252).

C. The Dark Ages—The Great Depression to the Patent Act of 1952

Perhaps a classic example of formalism upon entering the "Dark Ages" is *American Fruit Growers, Inc. v. Brogdex Co.*,[213] which was decided in 1931. In a unanimous opinion written by Justice McReynolds,[214] the Court held that a citrus fruit impregnated with borax to retard mold was not a manufacture under the Patent Act.[215] An exemplary claim was the following: "[f]resh citrus fruit of which the rind or skin carries borax in amount that is very small but sufficient to render the fruit resistant to blue mold decay."[216] The logic of Justice McReynolds was to rely upon the dictionary, which defined "manufacture" as "'the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery.' Also 'anything made for use from raw or prepared materials.'"[217] This definition includes both "manufacture" as a verb (to manufacture) and as a noun ("anything made"). Justice McReynolds seemed to conflate these two; he reasoned:

> Addition of borax to the rind of natural fruit does not produce from the raw material an article for use which possesses a new or distinctive form, quality, or property. The added substance only protects the natural article against deterioration by inhibiting development of extraneous spores upon the rind. There is no change in the name, appearance, or general character of the fruit. It remains a fresh orange fit only for the same beneficial uses as theretofore.[218]

He seemed to miss the fact that the orange's "character" had changed—it now had a longer eatable (shelf) life. Evidently to bolster the dictionary defi-

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213 283 U.S. 1 (1931).

214 *Id.* at 5. Perhaps the invalidation of the patent can be understood, including the joining in the result of Justices Holmes and Brandeis, on the ground that the process claims were held invalid on the basis of a prior art method that used an additional step of applying gelatin to the fruit after washing it in boric acid. *Id.* at 13. Presumably an orange impregnated with boric acid and then coated with gelatin would anticipate an orange merely treated with boric acid. *Id.* at 11, 13.

215 *See* 35 U.S.C. § 101 (2000) (providing the scope of patentable subject matter as "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof").

216 *Am. Fruit Growers, Inc.*, 283 U.S. at 6.

217 *Id.* at 11.

218 *Id.* at 11-12.

nition, Justice McReynolds relied upon two cases relating to tariffs,[219] while ignoring the respondent's admonition:

> The tariff cases cited by petitioner are not applicable to narrow the definition of an article of manufacture as contemplated by the patent statute. This is because the question of what is and what is not an article of manufacture under the highly technical provisions of tariff schedules is determined by the courts, in any given instance, upon a rule or underlying principle obviously very different from that controlling the question in patent law.[220]

It indeed would be surprising if the policy reasons supporting the protection of a "manufacture" as a category of subject matter under the patent statute were not different from those supporting the recognition of a commodity as a "manufacture" under tariff or other taxing regimes. Under formalism, once the Court defines "manufacture" in a particular way, the only remaining issue is to deduce whether an "alleged" invention fits that definition. Even though protecting such impregnated oranges might advance the "useful arts" and provide an incentive to improve the food supplies, categorization would prevail over policy.[221]

However, formalism was in decline. In the companion cases of *Smith v. Snow*[222] and *Waxham v. Smith*,[223] which were decided in 1935, the Court unanimously upheld Smith's patent on a method of incubating eggs. In *Snow*, Justice Stone set out the policy reasons for supporting the patent: "[i]f the matter were doubtful, it is plain from what has been said that the character of the patent and its commercial and practical success are such as to entitle the inventor to broad claims and to a liberal construction of those which he has made."[224] In *Waxham*, the accused infringer relied upon *Risdon Iron,* arguing that if the claim were broadly construed it would be invalid "as an attempt to patent the function performed by the petitioner's incubator."[225] Justice Stone rejected this, stating: "A method, which may be patented irrespective of the particular form of the mechanism which may be availed of for carrying it into operation, is not to be

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219 *Id.* at 12-13 (citing *Anheuser-Busch Brewing Assn. v. U.S.*, 207 U.S. 556, 562 (1908); *Hartranft v. Wiegmann*, 121 U.S. 609, 613, 615 (1887)).

220 283 U.S. at 3.

221 *See* the text accompanying *supra* nn. 16-21 concerning the importance of categorization to formalism.

222 294 U.S. 1 (1935).

223 294 U.S. 20 (1935).

224 *Snow*, 294 U.S. at 14.

225 *Id.* at 21.

rejected as 'functional,' merely because the specifications show a machine capable of using it."[226]

In what may be considered a precursor to the computer cases of the 1980's, the Court in *Mackay Radio & Telegraph Co. v. Radio Corp. of Am.*,[227] decided in 1939, stated the following: "While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be."[228] No citation of authority is given for this truism. A claim for an antenna included the recitation of a "formula" that defined how the antenna was to be constructed.[229] The "formula" had not been "invented" by the patentee, but had been part of the prior art for 30 years prior to the invention under consideration.[230] The Court limited the scope of the patent to the exact terms of the formula claimed. It is not apparent if the Court would have given a broader interpretation of the claims if the "formula" had been invented by the patentee rather than being merely applied. Four decades latter this issue was considered in the context of computer-related inventions.[231]

This bleak period in patent history is also illustrated by the ascendancy of the doctrine of patent misuse at the expense of contributory infringement. In a series of cases in the 1930's and early 1940's, following the lead of the *Motion Pictures* case, the Supreme Court refused to enforce patents against third parties who contributed to the direct infringement of these patents. In *Morton Salt Co. v. G.S. Suppiger Co.*,[232] decided in 1942, the Court finally indicated that the basis of the misuse doctrine was inequitable conduct "unclean hands" and refused to enforce a patent against a direct infringer because the patent owner conditioned the use of its patented machine on the purchase of unpatented salt pellets from it. In *B.B. Chemical Co. v. Ellis*,[233] a companion case to *Morton Salt*, the Court extended to misuse to a patentee who granted an implied license to purchasers of unpatented material for use in its patented process. The accused in-

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226 *Id.* at 22.

227 306 U.S. 86 (1939).

228 *Id.* at 94.

229 *Id.* at 93.

230 *Id.*

231 *Cf. Parker v. Flook*, 437 U.S. 584 (1978) (where the algorithm was created by the inventor) *with Diamond v. Diehr*, 450 U.S. 175 (1981) (where inventor used a well known equation). *See* discussion of these cases *infra* text accompanying nn. 272-74, 301-08.

232 314 U.S. 488, 492-93 (1942).

233 314 U.S. 495 (1942).

fringer was a competitor in the unpatented material who induced others to purchase the material for use in the patented process.

The final straw came in the infamous *Mercoid* cases[234] decided in 1944. The Court held that it was misuse for a patent owner to license the use of a component that had no other use but in its patented invention, thus rendering the patent unenforceable against the defendant who was selling the "nonstaple" component. Justice Douglas made his underlying philosophy toward patents clear:

> The patent is a privilege. But it is a privilege which is conditioned by a public purpose. It results from invention and is limited to the invention which it defines. When the patentee ties something else to his invention, he acts only by virtue of his right as the owner of property to make contracts concerning it and not otherwise. He then is subject to all the limitations upon that right which the general law imposes upon such contracts. The contract is not saved by anything in the patent laws because it relates to the invention. If it were, the mere act of the patentee could make the distinctive claim of the patent attach to something which does not possess the quality of invention. Then the patent would be diverted from its statutory purpose and become a ready instrument for economic control in domains where the anti-trust acts or other laws not the patent statutes define the public policy.[235]

The privilege logic of Justice Douglas may be seen in stark contrast to the property logic of Justice Holmes. It took until the Patent Act of 1952 to rein in the Court-imposed misuse doctrine by the incorporation of §§ 271(c) and (d) into the Act.[236]

In addition, during this time period, the Court seemed to adopt a subjective, perhaps iconoclastic, view of the standard (or, perhaps better stated, standards) of "invention." In a 1941 opinion, *Cuno Engr. Corp. v. Automatic Devices Corp.*,[237] Justice Douglas added his "flight of fancy" of how inventions were made: "That is to say the new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling. If it fails, it has not established its right to a private grant on the public domain."[238] That "eureka" moment, where the light bulb goes on, may satisfy the cartoonist's impression of how ideas or inventions are conceived, but how are courts to apply such a standard? To avoid imposing such a model for the creative process,

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234 *Mercoid Corp. v. Mid-Continent Investment Co.* (*Mercoid I*), 320 U.S. 661 (1944); *Mercoid Corp. v. Minneapolis Honeywell Corp.* (*Mercoid II*), 320 U.S. 684 (1944).

235 *Mercoid I*, 320 U.S. at 666.

236 35 U.S.C § 271(c), (d).

237 314 U.S. 84 (1941).

238 *Id.* at 91.

the 1952 Act includes at the end of the "nonobvious" standard the following provision: "Patentability shall not be negatived by the manner in which the invention was made."[239]

In the famous *A&P* case (*Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*[240]), decided a decade after *Cuno Engineering*, Justice Jackson illustrated a very low opinion of combination inventions on behalf of his colleagues on the Court:

> Courts should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements. The function of a patent is to add to the sum of useful knowledge. Patents cannot be sustained when, on the contrary, their effect is to eruca from former resources freely available to skilled artisans. A patent for a combination which only unites old elements with no change in their respective functions, such as is presented here, obviously withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men. This patentee has added nothing to the total stock of knowledge, but has merely brought together segments of prior art and claims them in congregation as a monopoly.[241]

If this standard were applied with any degree of rigor, very few mechanical and electrical patents would, of course, pass the bar.

One last case warrants discussion before the new age of the 1952 Act began. In *Funk Bros. Seed Co. v. Kalo Inoculant Co.*,[242] decided in 1948, with Justice Douglas writing the majority opinion, there is some ambiguity as to the exact basis for the decision, which seems characteristic of Justice Douglas' decisions in the patent area. A representation claim is:

> An inoculant for leguminous plants comprising a plurality of selected mutually non-inhibitive strains of different species of bacteria of the genus Rhizobium, said strains being unaffected by each other in respect to their ability to fix nitrogen in the leguminous plant for which they are specific.[243]

Presumably an "inoculant" is a "composition of matter" within the statutory classes of invention. Thus, there should be no issue with regard to this, and the case should be considered as involving the "invention" issue. Yet, these two issues seem to be commingled and conflated. Justice Douglas first made the analogy:

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239 35 U.S.C. § 103(a).

240 340 U.S. 147 (1951).

241 *Id.* at 152-53.

242 333 U.S. 127 (1948).

243 *Id.* at 128 n. 1.

> The qualities of these bacteria, like the heat of the sun, electricity, or the qualities of metals, are part of the storehouse of knowledge of all men. They are manifestations of laws of nature, free to all men and reserved exclusively to none. He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.[244]

The question would then appear to be whether the qualities per se of the "inoculant" were being claimed. If so, this would fail to satisfy the subject matter requirement. But Justice Douglas went on to the "invention" issue:

> Discovery of the fact that certain strains of each species of these bacteria can be mixed without harmful effect to the properties of either is a discovery of their qualities of non-inhibition. It is no more than the discovery of some of the handiwork of nature and hence is not patentable. The aggregation of select strains of the several species into one product is an application of that newly-discovered natural principle. But however ingenious the discovery of that natural principle may have been, the application of it is hardly more than an advance in the packaging of the inoculants.[245]

Although the discovery of non-inhibition was "ingenious," its application as a "natural principle" somehow failed to satisfy the "invention" requirement–evidently in the absence of prior art. The "inoculant" was useful because it applied a natural principle, just as the antenna in *Mackay*, the telephone of Bell and the telegraph of Morse. It is one thing to claim a natural principle and another to apply it. The Court provided no principled way to separate the two. As in *A&P*, "invention" is denied if the subject works as expected in hindsight.

In 1949, Justice Jackson perhaps best characterized the reality of this period: "[T]he only patent that is valid is one which this Court has not been able to get its hands on."[246] Yet, somewhat surprisingly in 1950, the Court sustained some dubious patent claims and found infringement under the equitable doctrine of equivalents in *Graver Tank & Mfg. Co. v. Linde Air Products*.[247]

The lack of an objective definition of "invention" and the misuse doctrine were two of the motivating issues leading to the adoption of the 1952 Pat-

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244 *Id*. at 130.

245 *Id*. at 131.

246 *Jungersen v. Ostby & Barton Co.*, 335 U.S. 560, 572 (1949). In *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1, 12 (1946), the Court disapproved of the common claiming practice of reciting only the means for performing a particular function rather than the actual structure of the invention. This practice was authorized in the new statute, 35 U.S.C. § 112 ¶6.

247 339 U.S. 605 (1950).

ent Act. Its adoption, however, did not quickly lead into the promised land of patent protection as an instrumentally driven policy.

D. The New Act and the Age of Restraint

The Supreme Court did not address the fundamental issue of "invention" under the new statutory definition in § 103 of the 1952 Act until 1966 in the "Trilogy."[248] The "nonobvious" standard of § 103 was to provide an objective basis for the "invention" determination:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.[249]

In *Graham v. John Deere Co.*, with perhaps some unintended irony the Court stated:

> Although we conclude here that the inquiry which the Patent Office and the courts must make as to patentability must be beamed with greater intensity on the requirements of § 103, it bears repeating that we find no change in the general strictness with which the overall test is to be applied. We have been urged to find in § 103 a relaxed standard, supposedly a congressional reaction to the "increased standard" applied by this Court in its decisions over the last 20 or 30 years. *The standard has remained invariable in this Court.*[250]

In two out of the three cases, the Court found that the claimed inventions failed to meet the nonobvious standard.[251] Apparently, not entirely satisfied with objectivity based on the "skill of the art," the Court in several cases tried to infuse a "synergism" requirement, but this has seemed to have little traction.[252]

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248 *Graham v. John Deere Co.*, 383 U.S.1 (1966) (including *Calmar, Inc. v. Cook Chemical Co. and Colgate-Palmolive Co. Cook Chemical Co.*), and *U.S. v. Adams*, 383 U.S. 39 (1966).

249 35 U.S.C. § 103(a).

250 383 U.S. at 19 (emphasis added).

251 Only in *U.S. v. Adams*, was the patent sustained. The invention was for a water-activated battery that experts maintained would not work.

252 *See Anderson's-Black Rock v. Pavement Co.*, 396 U.S. 57, 61(1969); *see also Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976). In *Sakraida* the Court concluded:

> We cannot agree that the combination of these old elements to produce an abrupt release of water directly on the barn floor from storage tanks or pools can properly be characterized as synergistic, that is, "result[ing] in an effect

The age of computers was beginning. However, the "function of the machine" remained at this time as a court-made exclusion to patentable subject matter. This exclusion was attacked in 1968 in *In re Tarzy-Hornoch*[253] in one of Judge Rich's magisterial opinions, while he was sitting on the Court of Customs and Patent Appeals (CCPA--the predecessor court to the Court of Appeals for the Federal Circuit). After a careful review of the leading cases, including *Wyeth v. Stone, Morse, The Telephone Cases* and *Risdon Iron*, Judge Rich concluded:

> Our present review of the major precedents has persuaded us that the decisions of the Supreme Court have not required the rejection of process claims merely because the process apparently could be carried out only with the disclosed apparatus. These rejections have been the product of decisions in the lower courts and especially in this court. We decide today that we will not longer follow those decisions.[254]

He then added the instrumental policy reasoning reminiscent of the formative era:

> Exceptional treatment for this narrow class of processes is, pro tanto, inconsistent with the broad goal of the patent system, the promotion of the useful arts, in that it necessarily denies to certain inventors the exclusive rights to their discoveries and thus defeats the intent which must be presumed of Congress in enacting the Patent Statutes.[255]

> greater than the sum of the several effects taken separately." *Anderson's-Black Rock v. Pavement Co*., 396 U.S. 57, 61 (1969). Rather, this patent simply arranges old elements with each performing the same function it had been known to perform, although perhaps producing a more striking result than in previous combinations. Such combinations are not patentable under standards appropriate for a combination patent. *Great A. & P. Tea Co. v. Supermarket Corp*.; *Anderson's-Black Rock v. Pavement Co*. Under those authorities this assembly of old elements that delivers water directly rather than through pipes or hoses to the barn floor falls under the head of "the work of the skillful mechanic, not that of the inventor." *Hotchkiss v. Greenwood*, 11 How., at 267. Exploitation of the principle of gravity adds nothing to the sum of useful knowledge where there is no change in the respective functions of the elements of the combination; this particular use of the assembly of old elements would be obvious to any person skilled in the art of mechanical application.

425 U.S. at 281. The CAFC shortly after its creation repudiated any "synergism" requirement. *See Chore-Time Equip., Inc. v. Cumberland Corp.*, 713 F.2d 774, 781 (Fed. Cir. 1983).

253 397 F.2d 856 (C.C.P.A. 1968).

254 *Id*. at 866 (note omitted).

255 *Id*. at 867.

The CCPA, primarily through the leadership of Judge Rich, proceeded to eliminate two other court-created doctrines that excluded from statutory subject matter processes that included mental steps. These were the "mental steps" and the "point of novelty" doctrines. These were addressed by the CCPA in *In re Musgrave*[256] in an opinion by Judge Rich. He stated the issue in the case succinctly: "Are some or all of the steps in each claim 'mental' and, if so, is that fatal to patentability?"[257] The conclusion was that it was not. In reference to the statutory language of § 101, Judge Rich, showing his usual animus to court-created exceptions, observed:

> As may be seen from the statutory language, it contains nothing whatever which would either include or exclude claims containing 'mental steps' and whatever law there may be on the subject cannot be attributed to Congress. It is purely a question of case law. That law we, like others, have found to be something of a morass.[258]

Part of the morass, according to Judge Rich, was the misinterpretation of the definition of process in *Cochrane v. Deener*:

> The above-quoted extracts from the board opinion further reveal that the board repeatedly asserted that steps were "mental" and rendered the claims non-statutory because they were not physical acts applied to physical things. This presumes that the law requires all steps of a statutory "process" to be physical acts applied to physical things. [In past cases] we showed how this erroneous idea arose from a dictum in *Cochrane v. Deener* . . . and is inconsistent with several later Supreme Court opinions.[259]

The "point of novelty" doctrine, which held that if the novel step of a process was "mental" then the claim itself was non-statutory, was disposed of quite smartly:

> In considering the patentability of a process consisting of a plurality of steps we think it is immaterial to the question whether the combination is a statutory "process" that individual steps are old. The whole process could be old and yet be statutory; a fortiori, it matters not that one or more steps are old.[260]

To that can be added: It matters not whether that one or more of the steps is "mental."

Finally, Judge Rich took the ultimate step in the definition of a process as statutory subject matter by stretching it to the constitutional limits:

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256 431 F.2d 882 (C.C.P.A. 1970).

257 *Id.* at 890.

258 *Id.*

259 *Id.* at 892-93.

260 *Id.* at 893.

> All that is necessary, in our view, to make a sequence of operational steps a statutory "process" within 35 USC 101 is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of "useful arts." Const. Art. 1, sec. 8.[261]

This proved to be too expansive for the Supreme Court in its deferential, if not outright anti-patent, mood. But the stage was set for computer-related inventions to challenge the traditional "transformation" century-old definition of a process dating back to *Cochrane v. Deener*.

Deepsouth Packing Co. v. Laitram Corp.,[262] decided by the Supreme Court in 1972, was not a § 101 statutory subject matter case but is relevant to the ensuing statutory subject matter cases–living matter and computer programs. Although *Deepsouth* was a five-to-four opinion, this case clearly announced the restraint that the Court would exercise in patent cases over the next decade. As stated by Justice White for the majority:

> Moreover, we must consider petitioner's claim in light of this Nation's historical antipathy to monopoly and of repeated congressional efforts to preserve and foster competition. . . . It follows that we should not expand patent rights by overruling or modifying our prior cases construing the patent statutes, unless the argument for expansion of privilege is based on more than mere inference from ambiguous statutory language. *We would require a clear and certain signal from Congress* before approving the position of a litigant who, as respondent here, argues that the beachhead of privilege is wider, and the area of public use narrower, than courts had previously thought. No such signal legitimizes respondent's position in this litigation.[263]

The "clean and certain signal from Congress" was to control in the first two computer-related patent cases to follow--*Gottschalk v. Benson*,[264] later in the same term, and *Parker v. Flook*,[265] in 1978.

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261 *Id.*

262 406 U.S. 518 (1972).

263 *Id.* at 531 (emphasis added).

264 409 U.S. 63, 73 (1972), where the Court stated:

> If these programs are to be patentable, considerable problems are raised which only committees of Congress can manage, for broad powers of investigation are needed, including hearings which canvass the wide variety of views which those operating in this field entertain. The technological problems tendered in the many briefs before us indicate to us that considered action by the Congress is needed.

265 437 U.S. 584, 596 (1978), where the Court stated:

> It is our duty to construe the patent statutes as they now read, in light of our prior precedents, and we must proceed cautiously when we are asked to ex-

Benson is a muddled opinion by Justice Douglas. At best, it is formalistic. The claimed process was for "converting signals from binary coded decimal into binary" form.[266] The issue, however, was defined precisely by Justice Douglas: "The question is whether the method described in claim is a 'process' within the meaning of the Patent Act."[267] One would then expect a definition of "process" to be provided, but instead a definition of "algorithm" is supplied: "A procedure for solving a given type of mathematical problem is known as an 'algorithm.'"[268] The question of whether such a "procedure" is a "process" under the statute is not addressed. The implication, however, is that it is not, because Justice Douglas offered as the minor premise in the syllogism: "The procedures set forth in the present claims are of that kind; that is to say, they are a generalized formulation for programs to solve mathematical problems of converting one form of numerical representation to another."[269] The syllogism is solved: Benson is claiming an algorithm and algorithms are not patentable processes under the statute:

> It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case. The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.[270]

Presumably, an algorithm was equated with an idea. In any event, the die was cast. The only policy reason given was that it was Congress' problem to resolve how to deal with computer-related inventions.[271] The Court did not cite and, presumably, did not recognize any of the CCPA cases as worthy of consideration, including *In re Benson*, the decision appealed, and the comprehensive *In re Musgrave*.

Flook, decided six years later, was another "nail in the coffin" excluding computer-related inventions from being categorized as patentable subject mat-

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> tend patent rights into areas wholly unforeseen by Congress. [Quoting Justice White's "clear and certain" admonition from Deepsouth.]

266 *Benson*, 409 U.S. at 73.

267 *Id.* at 64.

268 *Id.* at 65.

269 *Id.*

270 *Id.* at 71.

271 *Id.* "It may be that the patent laws should be extended to cover these programs, a policy matter to which we are not competent to speak. The President's Commission on the Patent System rejected the proposal that these programs be patentable. . . ." *Id.*

ter. In *Flook,* rather than merely claiming the solution of an algorithm, the claim was for: "A method of updating the value of at least one alarm limit on at least one process variable involved in a process comprising the catalytic chemical conversation of hydrocarbons. . . ."[272] Thus, there was a post-solution function for the calculation–to update an alarm limit, which presumably would prevent the system from exploding. Justice Stevens had replaced Justice Douglas on the Court and interpreted *Benson* as follows: "Reasoning that an algorithm, or mathematical formula, is like a law of nature, *Benson* applied the established rule that a law of nature can not be the subject of a patent."[273] The problem here was that Flook was claiming an end-use for the calculation. Justice Stevens disposed of this:

> The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance. A competent draftsman could attach some form of post-solution activity to almost any mathematical formula . . . .[274]

Of course, this begs the question of whether a statutory process was being claimed competently or otherwise. The CCPA was faring poorly against the combined forces of the Patent Office and the Supreme Court in the absence of a "clear and certain signal from Congress." The formalistic reasoning, based perhaps on a majority of the Supreme Court's antipathy to patents, particularly as extending to new technologies, was to end very soon with a shift in the majority.

E. The "anything under the sun made by man" Metamorphosis to the Instrumental Age.

In addition to computers, the new technological field evolving was biotechnology. By the manipulation of living matter according to micro-biologic science, marvelous results were being predicted. This created a new crisis in patent law: Should living matter be patentable? Of course, it had long been decided that products of nature, whether living or not, were not patentable subject matter. On the other hand, these microbes were different. They were made by scientists and engineers in laboratories. The case to reach the Supreme Court on this issue was *Diamond v. Chakrabarty*,[275] decided in 1980.

Chakrabarty is a landmark case for a variety of reasons. First, the finding that microorganisms were patentable subject matter provided a highly im-

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272 437 U.S. at 596 (Appendix).

273 *Id.* at 589.

274 *Id.* at 590.

275 447 U.S. 303 (1980).

portant incentive for investment in the bio-tech area. Second, and equally important, it marked a metamorphosis in how the Supreme Court approached patent issues–backing away from judicial restraint awaiting a "clear and certain signal from Congress" to adopting an expansive view of the instrumental goal of the patent system in evolving technologies.

While the *Chakrabarty* decision was written by Chief Justice Burger for a five-justice majority, the jurisprudential credit should be awarded to Judge Rich for his magisterial opinion in *In re Bergy II* (into which was consolidated *In re Chakrabarty*).[276] The Supreme Court had granted certiorari in *Parker v. Bergy*[277] after the CCPA had held that living matter was patentable subject matter in *In re Bergy I*.[278] The appeal was then remanded to the CCPA for reconsideration in light of the Court's holding in *Flook*. What a tremendous opportunity for Judge Rich, and, indeed, he took full advantage to apply his comprehensive knowledge of the patent statute and case law, as well as to demonstrate his mastery of judicial advocacy on instrumental policy grounds.

Judge Rich quickly disposed of the relevancy of *Flook*–finding none.[279] He next provided a tutorial on the "Anatomy of the Patent Statute,"[280] presumably for the education of the Court. He used the analogy of having separate keys for opening the respective doors to § 101 (statutory subject matter), § 102 (novelty) and § 103 (obviousness). The genius of his opinion, however, was in providing a legislative justification for judicial action and in combating the "clear and certain signal" restraint.

Countering the argument that § 101 should be given a narrow interpretation unless signaled otherwise by Congress, Judge Rich dredged from the legislative history of the Patent Act (which he helped draft and was intimately familiar with), the following expression of Congressional intent:
If we had any doubt about the propriety of giving those words a broad interpretation, it would be dispelled by the identical statements in the House and Senate reports accompanying the 1952 reenactment . . . that "a machine, or manufacture . . . may include *anything under the sun that is made by man*."[281]

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276 596 F.2d 952 (1979), *aff'd*; *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

277 438 U.S. 902 (1978).

278 563 F.2d 1031 (CCPA 1977), vacated & remanded; *Parker v. Bergy*, 438 U.S. 902 (1978), vacated as moot, *Diamond v. Chakrabarty*, 444 U.S. 303 (1980).

279 596 F.2d at 965 ("The appeals here involve no method of calculation, and the *Flook* holding appears to have no bearing.").

280 *Id.* at 959-64.

281 *Id.* at 987 (emphasis added). The entire comment from the Senate and House Reports with respect to § 101 is: "A person may have 'invented' a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under

The "anything under the sun" metaphor, as it turned out, was the signal the majority of the Supreme Court was waiting for. To dispel the restraining impact of the "clear and certain signal" metaphor from *Deepsouth* and repeated in *Benson* and *Flook*, Judge Rich turned to an obscure Supreme Court case decided in 1933, *United States v. Dubilier Condenser Corp*,[282] where the issue was whether government employees or the United States was entitled to title of patents filed by its employees. The Court said, in the context of whether government employees should be barred from filing patent applications, except for Patent Office employees, who were barred by statute, the following: "We should not read into the patent laws limitations and conditions which the legislature has not expressed."[283] Judge Rich took this sentence and placed it in an entirely different context as follows: "We think the Supreme Court gave us our 'signal' in *United States v. Dubilier Condenser Corp.* . . . where it said: 'We should not read into the patent laws limitations and conditions which the legislature has not expressed.'"[284] To call the sentence from *Dubilier* a "signal," where it would otherwise be generous to call it *obiter dictum,* was indeed audacious and indeed successful as by the Chief Justice's reliance on the sentence coupled with the "anything under the sun" metaphor for the legislative history of the Patent Act.

The Chief Justice's opinion in *Chakrabarty* succinctly followed the comprehensive design of Judge Rich. He defined the issue to be "whether respondent's micro-organism constitutes a 'manufacture' or 'composition of matter' within the meaning of the statute."[285] He then defined the canons of construction to be applied:

> In cases of statutory construction we begin, of course, with the language of the statute. *Southeastern Community College v. Davis*, ... And "unless otherwise defined, words will be interpreted as taking their ordinary, contemporary, common meaning." *Perrin v. United States*, ... We have also cautioned that courts "should not read into the patent laws limitations and conditions which the legislature has not expressed." *United States v. Dubilier Condenser Corp*. . . . .[286]

The Chief Justice then proceeded to apply these canons:

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section 101 unless the conditions of the title are fulfilled." S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952). It is not apparent why "process" and "composition of matter" were not included along with "machine" and "manufacture."

282 289 U.S. 178 (1933).

283 *Id*. at 199.

284 596 F.2d at 987.

285 447 U.S. at 307.

286 *Id*. at 308.

> Guided by these canons of construction, this Court has read the term "manufacture" in § 101 in accordance with its dictionary definition to mean "the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." *American Fruit Growers, Inc. v. Brogdex Co*. . . .[287]

Of course, *American Fruit* was decided before *Dubilier*, and it is doubtful at best to presume that the Court in *Dubilier*, deciding an unrelated issue to the one at hand, intended to postulate a canon of general applicability in patent law.

Then, to buttress his case, Chief Justice Burger quoted the legislative history brought to light by Judge Rich: "The Committee Reports accompanying the 1952 Act inform us that Congress intended statutory subject matter to 'include anything under the sun that is made by man.'"[288]

He then concluded:

> Judged in this light, respondent's micro-organism plainly qualifies as patentable subject matter. His claim is not to a hitherto unknown natural phenomenon, but to a nonnaturally occurring manufacture or composition of matter -- a product of human ingenuity "having a distinctive name, character [and] use."[289]

The Chief Justice then disposed of the arguments that the Plant Patent Act and The Plant Variety Protection Act of 1930 precluded protection of living matter under § 101,[290] along the lines of Judge Rich's opinion in *Bergy II*.

Of critical importance to the expansion of patentable subject matter was the Court's reversal of its prior position of restraint "waiting for a clear and certain signal from Congress." The Chief Justice attacked this restraint directly: "[T]he petitioner relies on our recent holding in *Parker v. Flook*[291] . . . and the statement that the judiciary 'must proceed cautiously when . . . asked to extend patent rights into areas wholly unforeseen by Congress.'"[292] Thus judicial restraint falls to *Marbury v. Madison* and the Patent Clause of the Constitution:

> It is, of course, correct that Congress, not the courts, must define the limits of patentability; but it is equally true that once Congress has spoken it is "the province and duty of the judicial department to say what the law is." *Marbury v. Madison* . . . . Congress has performed its constitutional role in defining

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287 *Id.*

288 *Id.* at 309.

289 *Id.* at 309-10 (quoting *Hartranft v. Wiegmann*, 121 U.S. 609, 615 (1887)).

290 *Id.* at 310-14.

291 437 U.S. at 584.

292 447 U.S. at 314-15.

> patentable subject matter in § 101; we perform ours in construing the language Congress has employed. In so doing, our obligation is to take statutes as we find them, guided, if ambiguity appears, by the legislative history and statutory purpose. Here, we perceive no ambiguity. The subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting "the Progress of Science and the useful Arts" with all that means for the social and economic benefits envisioned by Jefferson. Broad general language is not necessarily ambiguous when congressional objectives require broad terms.[293]

The Court was, therefore, merely performing its prescribed junction in interpreting Congress' intent to protect a broad scope of inventions, including those in newly evolving technologies. The Chief Justice then found no contrary intent in *Flook*: "*Flook* did not announce a new principle that inventions in areas not contemplated by Congress when the patent laws were enacted are unpatentable *per se*."[294] Moreover, he concluded: "To read that concept into *Flook* would frustrate the purposes of the patent law."[295] The instrumental interpretation is clear. A sea-change in the Court had occurred. It would no longer wait for Congress to act to expand patent protection into new technologies. On the other hand, it was up to Congress, not the Court, to deal with the moral and societal implications of granting patents on living matter.[296] The question re-

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293 *Id.* at 315 (citation omitted).

294 *Id.* (emphasis added).

295 *Id.*

296 *Id.* at 316-17 (note omitted):

> To buttress his argument, the petitioner, with the support of amicus, points to grave risks that may be generated by research endeavors such as respondents'. The briefs present a gruesome parade of horribles. Scientists, among them Nobel laureates, are quoted suggesting that genetic research may pose a serious threat to the human race, or, at the very least, that the dangers are far too substantial to permit such research to proceed apace at this time. We are told that genetic research and related technological developments may spread pollution and disease, that it may result in a loss of genetic diversity, and that its practice may tend to depreciate the value of human life. These arguments are forcefully, even passionately, presented; they remind us that, at times, human ingenuity seems unable to control fully the forces it creates -- that, with Hamlet, it is sometimes better "to bear those ills we have than fly to others that we know not of."
>
> It is argued that this Court should weigh these potential hazards in considering whether respondent's invention is patentable subject matter under § 101. We disagree. The grant or denial of patents on micro-organisms is not likely to put an end to genetic research or to its attendant risks. The large amount of research that has already occurred when no researcher had sure knowledge that patent protection would be available suggests that legislative or judicial

mained whether computer-related inventions were to improve their lot before the Supreme Court in light of the policy change wrought by *Chakrabarty* with *Benson* and *Flook* still the law of the land. The wait was not long.

As an aside on the issue of patent misuse, *Dawson Chemical Co. v. Rohm & Haas Co.*[297] was decided the same term as *Chakrabarty*. It held that it was not misuse for a patent owner on a "new use" patent on a method of weed-control by applying an unpatented chemical to rice fields while granting a license to purchases of the chemical from it but refusing to license competitors under the patent. The accused contributory infringer had been denied a patent but sold the unpatented chemical with instructions on how to use it according to the patented method. The Court stated:

> Since our present task is one of statutory construction, questions of public policy cannot be determinative of the outcome unless specific policy choices fairly can be attributed to Congress itself. In this instance, as we have already stated, Congress chose a compromise between competing policy interests. The policy of free competition runs deep in our law. It underlies both the doctrine of patent misuse and the general principle that the boundary of a patent monopoly is to be limited by the literal scope of the patent claims. But the policy of stimulating invention that underlies the entire patent system runs no less deep. And the doctrine of contributory infringement, which has been called "an expression both of law and morals" *Mercoid I*, . . . (Frankfurter, J., dissenting), can be of crucial importance in ensuring that the endeavors and investments of the inventor do not go unrewarded.[298]

The Court held that the patent owner's conduct was immunized from patent misuse according to the terms of § 271(d), which was intended to limit

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> fiat as to patentability will not deter the scientific mind from probing into the unknown any more than Canute could command the tides. Whether respondent's claims are patentable may determine whether research efforts are accelerated by the hope of reward or slowed by want of incentives, but that is all.
>
> What is more important is that we are without competence to entertain these arguments -- either to brush them aside as fantasies generated by fear of the unknown, or to act on them. The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot. That process involves the balancing of competing values and interests, which in our democratic system is the business of elected representatives. Whatever their validity, the contentions now pressed on us should be addressed to the political branches of the Government, the Congress and the Executive, and not to the courts.

297 448 U.S. 176 (1980).

298 *Id.* at 220-21 (citation omitted).

the *Mercoid* decisions.[299] Under this decision, the practical result was that the patent owner could bar competitors from selling the unpatented chemical since it had no use other than in the patented method. The Court noted the incentive required to find new use inventions, which were specifically defined in the 1952 Patent Act, as within the statutory classes of invention.[300]

The following term, the Supreme Court granted certiorari from the CCPA's decision in *In re Diehr*.[301] The lower court's opinion held that a computer-controlled process for making rubber O-rings was patentable subject matter, contrary to the decision of the PTO. In the invention disclosed in the patent application, a computer program was used to solve a well known equation used for calculating the cure time in rubber molding processes. The PTO, rejected the claims on the basis of *Benson* and *Flook*. On appeal, the CCPA reversed. In his opinion, Judge Rich admonished the PTO that "any rejection which is based solely on the determination that a computer or computer program is involved is insupportable because it is overly broad and must be reversed as being *without basis in the law.*"[302] Here, unlike *Benson* and *Flook,* the calculations were "intimately entwined with the rubber molding process," and the claimed process was *not* "merely generating a new number by a calculation."[303]

The Supreme Court, through Justice Rehnquist's majority opinion in *Diamond v. Diehr*,[304] agreed with Judge Rich's proposition. The *Diehr* decision started with the antidote to the "clear and certain signal from Congress," which had since become a canon of construction: "[I]n dealing with the patent laws, we have more than once cautioned that courts should not read into the patent laws limitations and conditions which the legislature has not expressed."[305] The "more than once" caution is evidently from *Dubilier*, as repeated and adopted in *Chakrabarty*. Judge Rich was given no credit here. Justice Rehnquist then quoted the "everything under the sun" metaphor and proceeded to affirm the CCPA, finding that the *Cochrane v. Deener* transformation definition of process quite nicely applied because the claims of the process "involve the transforma-

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299 *Id.* at 223.

300 *See id.* at 221-23 ("It is perhaps, noteworthy that holders of 'new use' patents on chemical processes were among those designated to Congress as intended beneficiaries of the protection against contributory infringement that § 271 was designed to restore.").

301 602 F.2d 982, 989 (C.C.P.A. 1979), *aff'd*, *Diamond v. Diehr*, 450 U.S. 175 (1981).

302 *Id.* at 985 (emphasis added).

303 *Id.* at 989.

304 450 U.S. 175 (1981).

305 *Id.* at 182 (quoting *Chakrabarty* quoting *Dubilier*) (internal quotations omitted).

tion of an article, in this case raw, uncured, synthetic rubber, into a different state or thing."[306]

Aside from the quotations from *Dubilier* and the legislative history, there is no discussion in the majority opinion of policy matters and the incentive goal of the patent statute. These had now been resolved by *Chakrabarty,* and no further discussion evidently was deemed warranted by the majority. In a rather bitter dissent,[307] Justice Stevens preferred to defer to the primary authority of Congress: "The broad question whether computer programs should be given patent protection involves political considerations that this Court is not authorized to address."[308]

What was not resolved by *Diehr* was whether physical transformation was required to meet the statutory definition of a process. That is, can a process involve processing numbers or symbols (numbers in, numbers out)? It took a decade and a half for this particularly important issue for computer-related inventions to be resolved.

F. The Federal Circuit and the Modern Era

In the meantime, an important development to the evolution of patent law occurred. This was the creation in 1982 of the Court of Appeals for the Federal Circuit (CAFC). This court replaced the CCPA as the court for appellate reviews from the PTO but additionally took on a new jurisdiction over all appeals from Federal District Courts in cases arising under the patent statute.[309] A primary rationale for the creation of the CAFC was to harmonize patent law. Before this change, the difference in standards of "invention" among the Circuits was notorious. Also, the Supreme Court seemingly had more pressing matters on its docket. Consequently, the Court began to show increasing deference to the CAFC and rarely granted certiorari. Indeed, with respect to statutory subject matter under § 101, *Diehr* was the last case to be heard on the issue. In addition, it appeared the PTO was developing an understanding that it was to

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306 *Id.* at 184.

307 After an extensive historical review of the CCPA cases disposing of the "function of the machine," "mental steps," and "point of novelty" doctrines, and the computer cases including *Benson* and *Flook*, Justice Stevens concluded: "In my judgment, this reading of *Flook*—although entirely consistent with the lower court's expansive approach to § 101 during the past 12 years—trivializes the holding in *Flook*, the principle that underlies *Benson*, and the settled line of authority reviewed in those opinions." *Id.* at 205.

308 *Id.* at 216-17.

309 Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25 (1982). The jurisdiction of the Federal Circuit is found in 28 U.S.C. § 1295 (2000).

follow the decisions of the CAFC rather than appealing to the Supreme Court to support its recalcitrant attitude toward computer-related inventions. In this regard, two CAFC cases warrant special mention.

It was not until 1994 that the CAFC addressed a § 101 issue *en banc*. In *In re Alappat*[310] the invention was claimed as a machine: "A rasterizer for converting vector list data . . . into anti-aliased pixel illumination intensity data to be displayed on a display means . . . ."[311] The PTO rejected the claims based on what it called the "mathematical algorithm" exception to statutory subject matter. Judge Rich, writing for the *en banc* court, denied that there was such an exception. He concluded:

> [T]he claimed invention as a whole is directed to a combination of interrelated elements which combine to form a machine for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means. This is not a disembodied mathematical concept which may be characterized as an abstract idea, but rather a specific machine to produce a *useful, concrete, and tangible result*.[312]

While this "machine" (rasterizer) is said to produce a "useful, concrete, and tangible result," the transformation is far different from transforming raw rubber to an O-ring as in *Diehr*. In fact, electrical data are being manipulated to produce such "useful, concrete, and tangible results." It is significant that the majority of the court agreed with this formulation. Consequently, the PTO would be expected to comply on this issue since the Supreme Court chose to ignore it.

Four years later, Judge Rich was able to implement the "useful, concrete, and tangible result" test and, additionally, eliminate another court-created exception to patentable subject matter—the so called "business method" exception. *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*,[313] was one of Judge Rich's last and most controversial opinions.

The patent at issue in *State Street* was titled "Data Processing System for Hub and Spoke Financial Services Configuration."[314] Originally, the application included claims in both "process" and "machine" format. During the prosecution of the application, however, the "process" claims were cancelled. The preamble of claim 1, the sole independent claim in the patent as issued, recited: "A data processing system for managing a financial services configura-

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310 33 F.3d 1526 (Fed. Cir. 1994) (en banc).

311 *Id.* at 1538-39 (reciting Claim 15 of Alappat's patent application).

312 *Id.* at 1544 (footnotes and citations omitted) (emphasis added).

313 149 F.3d 1368 (Fed. Cir. 1998).

314 *Id.* at 1370.

tion of a portfolio established as a partnership . . . ."[315] The body of the claims included six elements in "means-plus-function" format. Judge Rich stated:

> Thus, claim 1, properly construed, claims a machine, namely, a data processing system for managing a financial services configuration of a portfolio established as a partnership, which machine is made up of, at the very least, the specific structures disclosed in the written description and corresponding to the means-plus-function elements (a)-(g) recited in the claim. A "machine" is proper statutory subject matter under § 101.[316]

However, he then essentially eliminated any distinctions between "machine" and "process" claims in this context: "We note that, for the purposes of a § 101 analysis, it is of little relevance whether claim 1 is directed to a 'machine' or a 'process,' as long as it falls within at least one of the four enumerated categories of patentable subject matter, 'machine' and 'process' being such categories."[317] Either format key will open the § 101 door.

Judge Rich then turns to the two symbolic policy rationales that had previously served him well:

> The repetitive use of the expansive term "any" in § 101 shows Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101. Indeed, the Supreme Court has acknowledged that Congress intended § 101 to extend to "anything under the sun that is made by man." [citing *Chakrabarty* and *Diehr*]. Thus, it is improper to read limitations into § 101 on the subject matter that may be patented where the legislative history indicates that Congress clearly did not intend such limitations. [*Chakrabarty*] ("We have also cautioned that courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'").[318]

Chakrabarty and *Diehr* became the authority, with *Dubilier* discarded to the dustbin of legal obscurity. Judge Rich then recited the three categories of non-patentable subject matter recognized in *Diehr*: "The Supreme Court has identified three categories of subject matter that are unpatentable, namely, 'laws of nature, natural phenomena, and abstract ideas.'"[319] He then made the important distinction between the algorithm as an abstract idea and its useful application: "Unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not 'useful.' From a practical standpoint, this means that to be patentable an

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315 *Id.* at 1371.

316 *Id.* at 1372.

317 *Id.*

318 *Id.* at 1373 (citations and footnote omitted).

319 *Id.*

algorithm must be applied in a 'useful way.'"[320] Judge Rich then extended "transformation" in the sense of the claimed "machine" beyond physical transformation:

> Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"—a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.[321]

This he justified by reference to the holding in *Diehr* and the *Alappat*:

> However, after *Diehr* and *Alappat*, the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter, unless, of course, its operation does not produce a "useful, concrete and tangible result."[322]

Physical transformation is out—the requirement to satisfy § 101 is only that a "useful, concrete and tangible result" be produced by the operation of the claimed invention. Of course, utility is one of the doors that must be opened for patentability in all cases, though concreteness and tangibility are somewhat nebulous. Presumably, the operation in *Benson* of converting numbers from pure binary into binary coded decimal code would still not open the door. But would the door now open for an invention generating an updated alarm system in a catalytic process, as in *Flook*?

The test of patentable subject matter of *State Street* is somewhat narrower, but not appreciably more than that of the "too early for its time," *Musgrave* decision in 1970. As previously discussed,[323] *Musgrave* provided the following test of statutory subject matter: "All that is necessary, in our view, to make a sequence of operational steps a statutory 'process' within 35 USC 101, is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of 'useful arts.'"[324] With the commingling of the statutory classes in *State Street* and with the presumption that the invention must be within the "technological arts," the scope of patentable subject matter is that which produces a "useful, concrete and tangible" result. In-

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320 *Id.*

321 *Id.*

322 *Id.*

323 *See* text accompanying *supra* nn. 256-61 (discussing *Musgrave*).

324 *In re Musgrave*, 431 F.2d 882, 893 (C.C.P.A. 1970).

deed, this broad and liberal interpretation of patentable subject matter may be dated even further back with a bit of imagination. In *The Jail Case*[325] decided a century before *Musgrave*, the Court reasoned: "[W]hatever is neither a machine, nor a manufacture, nor a composition of matter, must (ex necessitate) be "an art."[326] In the cyclic history of patentable subject matter, *Jacobs* came much too early and has been long forgotten.

Probably the most controversial aspect of *State Street* was the elimination of the "business method" exclusion from patent eligibility. After the elimination of the "mere function of the machine," "mental steps," and "point of novelty" exclusions, the judicially-created "business method" exclusion remained. Judge Rich made short work of it: "We take this opportunity to lay this ill-conceived exception to rest."[327] He established first that: "The business method exception has never been invoked by this court, or the CCPA, to deem an invention unpatentable."[328] Second, he admonished the District Court for asserting that the patent would "foreclose virtually any computer-implemented accounting method necessary to manage this type of financial structure."[329] Consistent with his "Anatomy of the Patent Statute"[330] Judge Rich restricted the function of § 101 to its proper purpose: "Whether the patent's claims are too broad to be patentable is not to be judged under § 101, but rather under §§ 102, 103, and 112."[331]

The following year the Federal Circuit made clear that the *State Street* analysis of § 101 applied to methods as well as machines. In *AT&T Corp. v. Excel Communs., Inc.*,[332] with respect to claims drafted in process form, the court held: "Whether stated implicitly or explicitly, we consider the scope of § 101 to be the same regardless of the form—machine or process—in which a particular claim is drafted."[333]

Not unlike *Chakrabarty* and *Diehr*, *State Street* was the key that opened the patentable subject matter door to a vast and previously unexplored area of technology. Methods of doing business are not limited to those that are computer-implemented, though they may be the most important type. Thus, the

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325 *Jacobs v. Baker*, 74 U.S. 295 (1869) (discussed *supra* text accompanying nn. 120-23).

326 *Id.* at 297.

327 149 F.3d at 1375.

328 *Id.*

329 *Id.* at 1376-77.

330 *Bergy II*, 596 F.2d at 959-64.

331 149 F.3d at 1377.

332 172 F.3d 1352 (Fed. Cir. 1999).

333 *Id.* at 1357.

controversy ensued much on the same grounds as the debate over protecting biological and computer-related inventions: The PTO having difficulty in finding prior art to limit some far-reaching inventions that might impede the progress of the technological arts, if patents on such inventions were granted. It is not apparent that this doomsday philosophy has impaired the economy with respect to bio-tech and computer-related technologies.

What has become apparent is that § 101 patentable subject matter, after *Chakrabarty*, *Diehr*, and *State Street*, is no longer a significant impediment to patentability. Under Judge Rich's "Anatomy of the Patent Statute,"[334] as adopted by the Supreme Court in *Chakrabarty*, the primary focus should be on §§ 102, 103, and 112. Additionally, § 101 includes the utility requirement and still excludes laws of nature, natural phenomena, and abstract ideas. This result appears driven by instrumental reasoning based on the Patent Clause of the Constitution, as buttressed by effective application of legislative history and judicial decisions.

IV. SUMMARY AND CONCLUSIONS

The general hypothesis to be tested in this article was that patent law, at least with respect to the patent eligibility issue, followed the overall pattern of American law through the formative, formalistic, and modern ages/eras/periods, but with the expectation that formalism would play a more substantial role in the decision-making process in patent cases. The forgoing analysis is believed to demonstrate the plausibility of the general hypothesis, while not identifying a significant strain of formalism, as had been anticipated.

During the Formative Period (Age of Discovery/Golden Age), it appears quite clear that the Grand Style was being applied in patent cases in the Marshall Court, particularly in the opinions of Justice Story and the Chief Justice himself. The style of the Taney Court was not so "Grand," except for the brilliance of Justice Story. The Taney Court showed considerable ambivalence toward patents—at one time adopting a restrictive view and at others following Justice Story's liberal construction. *O'Reilly v. Morse*[335] demonstrated that the Grand Style was not so grand in the hands of Chief Justice Taney, who seemed to have a fundamental misunderstanding of the underlying principles of patent law. Not unlike Formalisim, the application of an unsound policy may produce a logical, however flawed, conclusion. The latter part of the formative period was plagued by vacillation between an expansive view of protectable subject

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334 *Bergy II*, 596 F.2d at 959-64.

335 56 U.S. 62 (1853); *see* text accompanying *supra* nn. 94-106.

matter, as espoused by Justice Story, and the restrictive view of Chief Justice Taney.

Formalism made some inroads during the formative period, but it does not appear that it ever came into full bloom in patent eligibility cases—even during the generally recognized formalistic period. There are examples—*The Pencil* and *Eraser* cases[336] and *Risdon Iron & Locomotive Works v. Medart*[337]—but these cases do not appear to represent the predominant style of decision making. In particular contrast, the Grand Style lived on in landmark cases, such as *Cochrane v. Deener*,[338] *Tilghman v. Proctor*,[339] and *The Telephone Cases*.[340] However, *Expanded Metal Co. v. Bradford*[341] and *Eibel Process Co. v Minn. & Ontario Paper Co.*[342] were decided contrary to the restrictive holdings in *Corning v. Burden*[343] and *Risdon Iron & Locomotive Works v. Medart*.[344]

The Dark Ages of patent law between the Depression and beyond the 1952 Patent Act had a formalistic component, as in the categorization in *American Fruit Growers, Inc. v. Brogdex Co.*[345] The view of patents as property soon was countered by patents as a privilege charged with a public duty. The patent misuse doctrine was born and applied with a vengeance, eviscerating contributory infringement and culminating in the *Mercoid* decisions.[346] In addition, there was *Funk Bros. Seed Co. v. Kalo Inoculant Co.*,[347] commingling the subject matter and "invention" issues. Also troubling was the restrictive and ever changing standard of "invention," as applied by the courts under the lead of the subjective approach of the Supreme Court in cases such as *Cuno Eng. Corp. v. Automatic Devices Corp.*[348] and *Great Atlantic & Pacific Tea Co. v. Supermarket Equip. Corp.*[349]

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336 *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498 (1874); *Reckendorfer v. Faber*, 92 U.S. 347 (1876); *see* text accompanying *supra* nn. 133-43.

337 158 U.S. 68 (1895); *see* text accompanying *supra* nn. 166-82.

338 94 U.S. 780 (1877).

339 102 U.S. 707 (1880).

340 126 U.S. 1.

341 214 U.S. 366.

342 261 U.S. 45.

343 56 U.S. 252.

344 158 U.S. 68.

345 283 U.S. 1.

346 *Mercoid I.*, 320 U.S. 661; *Mercoid II*, 320 U.S. at 684; *see* text accompanying *supra* nn. 234-35.

347 333 U.S. at 127; *see* text accompanying *supra* nn. 242-46.

348 314 U.S. 84.

349 340 U.S. 147.

The enactment of the 1952 Patent Act did not remedy the restrictive view that the Supreme Court had developed with respect to patents. Indeed, it took more than a decade for the Court to address the "invention" issue under the new statute and three decades to relieve itself of its self-imposed restraint that patent scope should not be expanded by the Court absent "a *clear and certain signal from Congress*."[350] The policy of judicial restraint and deference to congressional action was repeated in *Benson*[351] and *Flook*[352] (denying protection to computer-related inventions) and continued until the *Chakrabarty*[353] decision in 1980. Under *Chakrabarty* (and reinforced in *Diehr*[354]), the rule no longer would be restraint but would be the implementation of congressional intent, as expressed in the legislative history of the patent statute that "anything under the sun that is made by man"[355] was the standard defining the scope of patentable subject matter. Moreover, such a broad standard was demanded by the Court's own admonition that: "[We] should not read into the patent laws limitations and conditions which the legislature has not expressed."[356]

The Supreme Court had adopted the reasoning of Judge Rich in *In re Bergy II*[357] (the underlying case of the *Chakrabarty* appeal) and seems to have returned to Justice Story's maxim of liberal patent claim construction: "*ut res magis valeat, quam pereat.*"[358] It is my view that *Chakrabarty* ushered in the modern era of patent law, at least insofar as the patent eligibility issue is concerned.[359] The style of *Chakrabarty* may not be Grand (at least with a capitol G), for no one would confuse the writing of Chief Justice Burger with that of Chief Justice Marshall or of Justice Story. Nonetheless, by wisely following the

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350 *See* text accompanying *supra* nn. 262-96.

351 *Benson*, 409 U.S. 63.

352 *Flook*, 437 U.S. 584.

353 *Chakrabarty*, 447 U.S. 303.

354 *Diehr*, 450 U.S. 175.

355 *Chakrabarty*, 447 U.S. at 309.

356 *Id.* at 308 (quoting *U.S. v. Dubilier Condenser Corp.* 289 U.S. 178, 179 (1933)).

357 596 F.2d 952 (1979), *aff'd*, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

358 *Ryan*, 21 F. Cas. at 112.

359 The *Chakrabarty* opinion would seem to satisfy Llewellyn's categorization in the modern age as being in the Style of Reason, where the court seeks to reach the "right" decision. This decision also seems consistent with Horowitz's view of modern decision making: Rather than relying on the categorical thinking of formalism the Court balances conflicting policies. Finally, *Chakrabarty* seems consistent with Kennedy's view, that "modern legal thought" entails recognition that there are conflicts between policies and moralities. Indeed, the Court took into account both policy and morality when deciding to permit the patenting of living matter.

lead of Judge Rich, the instrumental goal of the Patent Clause was advanced by no longer placing a barrier on inventions that do not fit into established patterns of technology. Those revolutionary inventions at the cutting edge of technology are exactly the type of inventions that are most dependent on the patent system.[360] Placing subject matter barriers in the way of protection seems counterproductive to the goal of promoting the useful arts, whatever their nature may be.

One final observation can be made to justify the title of the article: There appears to be a regenerative, self-correcting mechanism at work over time with respect to opinions restricting the scope of patent eligibility. Examples include: *Le Roy I*[361] followed by *Le Roy II*;[362] *O'Reilly v. Morse*[363] by *The Telephone Cases*;[364] *Mitchell v. Tilghman*[365] by *Tilghman v. Proctor*;[366] *Benson/Flook*[367] by *Chakrabarty/Diehr/State Street*.[368] These "regenerations" appear to represent repeated reversions to the policy-driven decision making process of the formative period, particularly as represented by Justice Story.

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360 The importance of "revolutionary" inventions, which have been defined as those that produce a genuine revolution in consumption or production, is discussed in Frederic M. Scherer, *Industrial Market Structure & Economic Performance* 448 (2d ed., Chi.: Rand-McNally 1980); *see also* Oddi, *supra* n. 113, at 277-81 (discussing the importance of the patent system to such inventions that are likely to be induced by the patent system).

361 *Le Roy I*, 55 U.S. at 175-77 (invalidating a patent claim to a known device utilizing a newly-discovered property of lead).

362 *Le Roy II*, 63 U.S. at 137-38 (upholding a patent claim to the device in *Le Roy I*).

363 56 U.S. at 112-13 (invalidating a patent claim directed to the method of communicating through galvanic current).

364 126 U.S. at 14 (upholding a patent claim directed to transmitting sounds by causing electrical undulations).

365 86 U.S. at 287 (invalidating a patent claim to a process utilizing a newly-discovered principle of glycerin and fatty acids).

366 102 U.S. at 728 (upholding a patent claim of the invention in *Mitchell v. Tilghman*).

367 *Benson*, 409 U.S. at 73 (invalidating patent claim for a mathematical algorithm used by computers); *Flook*, 437 U.S. at 596 (invalidating a patent claim for a monitoring process using a computer).

368 *Chakrabarty*, 447 U.S. at 318 (upholding patent claims for man-made organisms); *Diehr*, 450 U.S. at 192 (upholding patent claims for a process using a computer); *State Street Bank*, 149 F.3d at 1377 (upholding patent claims for a business method).