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The statutory subject matter provision of the United States patent code is one of that law's murkiest provisions. It has been the subject of repeated cases before the United States Supreme Court.1 Despite this, confusion and disagreement among the lower courts remains substantial.2 Much of the literature agrees that the law is in disarray.3

This unfortunate state of affairs seems surprising at first. The wording of the statutory provision is rather short and straightforward.4 The Section permits patent applications to be maintained for any "process, machine, manufacture, or composition of matter."5 There is a general agreement that these subject matter categories refer to applied technol-


2. E.g., In re Alappat, 33 F.3d 1526 (Fed. Cir. 1994) (en banc) (6-2 decision on merits). The relevant Federal Agency, the PTO, has also shown considerable uncertainty in this area. E.g., In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995) (remanding decision on agency's motion to dismiss); Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478 (1996).


4. 35 U.S.C. § 101 (1994) (noting that § 101 states: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new or useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.").


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ogy broadly.\textsuperscript{6} Congress has even noted that the language encompasses anything "touched by the hand of man."\textsuperscript{7}

In addition, there is a generally strong consensus as to the provision's underlying purpose.\textsuperscript{8} Speaking in terms of economics, the patent system gives inventors the expectation of being able to exert single-source control over technology that becomes patented.\textsuperscript{9} This control tends to result in the inventor being able to reap a higher-than-normal rate of return on the technology's commercial exploitation.\textsuperscript{10} Thus, the consensus reasons, the patent system causes inventors to seek patentable inventions with greater vigor than would otherwise be the case.\textsuperscript{11} This, it is hoped, will result in society obtaining a higher pace of inventive achievement that would otherwise be the case.

The subject matter provision, it is thought, gives this incentive function focus.\textsuperscript{12} Where the prospect of patenting exists, it distorts the pattern of economic and social activity from what would exist in a free-market, unregulated state. As a general matter, United States society has a strong historical preference for relying on free-market mechanisms over regulation. Thus, the patent system must be limited to a sphere of influence that is proper. This means defining a boundary, beyond which the marketplace will operate free of the patent system's influence. The statutory subject matter provision of United States patent law provides this definition; areas of endeavor targeted for distortion are included within the realm of statutory subject matter, while those meant to be held apart form patented are excluded as non-statutory. The United States patent system therefore functions to exclude from patenting, for example, matters of pure scientific inquiry and artistic expression.\textsuperscript{13}

\textsuperscript{6} E.g., Flook, 437 U.S. at 590; Chakrabarty, 447 U.S. at 308; Diehr, 450 U.S. at 182; Alappat, 33 F.3d at 1542.
\textsuperscript{7} S. Rep. No. 1979, 82d Cong. (1952); H.R. REP. No. 1923, 82d Cong. (1952); See also Diehr, 450 U.S. at 182.
\textsuperscript{8} E.g., DONALD S. CHISUM, CHISUM ON PATENTS § 1.01 (1998), at 1-5, n.9 ("The general purpose of the statutory classes of subject matter is to limit patent protection to the field of applied technology . . ."); JOHN W. SCHLICHTER, PATENT LAW: LEGAL AND ECONOMIC PRINCIPLES § 1.06 (1997) ("The limitations of section 101 seek to confine patents to technical information that defines some production and consumption alternative.").
\textsuperscript{10} E.g., Posner, supra note 9, at 195-99; Kitch, supra note 9, at 266-67; MACHLUP, supra note 9, at 44-45.
\textsuperscript{11} E.g., MACHLUP, supra note 9, at 44-45.
\textsuperscript{12} E.g., Flook, 437 U.S. at 589-91; Alappat, 33 F.3d at 1552-53 (Archer, C.J., dissenting); CHISUM, supra note 8, § 101; SCHLICHTER, supra note 8, § 1.06.
Although the United States does not, other countries use the statutory subject matter provisions of their patent codes as well to exclude particular fields of applied technology.\textsuperscript{14}

The operational problems with the subject matter provision, however, do not reside in these broad areas of policy or overall statutory scheme. Rather, difficulty has arisen in attempts to apply the broad principles to specific inventions. Thus, for example, dispute has arisen concerning whether inventions involve mere principles of operation,\textsuperscript{15} or an impermissible amount of printed matter.\textsuperscript{16} They have also arisen concerning inventions that involve human participation, particularly mental cognition.\textsuperscript{17} In general, it is fair to characterize the case law in this area as having struggled to develop identifiable categories of subject matter that are outside the defined statutory categories.

Undoubtedly, a large part of the difficulties in this area can be traced to the nature of the inventive technologies that have tended to be under adjudication. With few exceptions, the inventions at issue historically have tended to have relatively small economic importance. The printed matter exception, for example, has evolved through cases dealing with business records and forms, such as the arrangement of names in a dictionary,\textsuperscript{18} bank checks and stubs,\textsuperscript{19} and the attachment of coupons to savings-certificates.\textsuperscript{20} Other cases involving the printed matter exception have involved measuring cups,\textsuperscript{21} a retractable tape measure,\textsuperscript{22} and a novelty hat band.\textsuperscript{23} Obviously, cases in which the patent applicant has little stomach for the costs of vigorous advocacy tend to provide poor opportunities for the law to grow. It is therefore as though the law regarding the statutory subject matter provision has been in an uncomfortable slumber.

The relatively recent rise of computer technology has upset this state of affairs. Computer technology, both hardware and software, is now virtually omnipresent in society and still increasing. The technologies, moreover, are extremely valuable.\textsuperscript{24} In addition, computer technol-
ogy inherently raises many of the subject-matter difficulties that have plagued the patent law previously. Cases have already addressed, for example, such issues as whether computer programs are merely mathematical formulae,\(^ {25}\) whether they are equivalent to human thought,\(^ {26}\) whether they are in the nature of printed matter,\(^ {27}\) and whether they are only abstract concepts.\(^ {28}\) It is as though the computer industry is presenting the intractable questions of patentable subject matter in a microcosm. And, with the large economic consequences of patenting computer technology at issue, it appears that vigorous, searching advocacy will become the norm.\(^ {29}\) Finally, it appears, the patent law will not escape.

One can expect that, despite this increased vigor, some of the existing problems will remain intractable. For example, the fact that computer instructions can be expressed in binary code, and that computers perform essentially mathematical operations,\(^ {30}\) means that the characterization of computer software as mathematical algorithms will be difficult to refute.\(^ {31}\) The fact that computer instructions can be written in human-readable languages means that whether programs are printed matter will likely prove troublesome as well.\(^ {32}\)

But is clear that some of the problems that exist in dealing with the determination of statutory subject matter are the result of insufficient analysis, and that increased attention to them will likely result in improvements.


\(^{26}\) In re Musgrave, 431 F.2d 882 (C.C.P.A. 1970).

\(^{27}\) E.g., In re Lowry, 32 F.3d 1579 (Fed. Cir. 1994).

\(^{28}\) E.g., In re Warmerdam, 32 F.3d 1354 (Fed. Cir. 1994); In re Trovato, 60 F.3d 807 (Fed. Cir. 1995) (en banc), vacating, 42 F.3d 1376 (Fed. Cir. 1994).

\(^{29}\) The last decade has seen an increased number of cases arising out of the PTO that deal with the relationship the statutory subject matter provision of § 101 and computer-related technology. E.g., In re Alappat, 33 F.3d 1526 (Fed. Cir. 1994) (en banc) (6-2 decision on merits); In re Lowry, 32 F.3d 1579 (Fed. Cir. 1994); Warmerdam, 33 F.3d at 1354; In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995); In re Trovato, 60 F.3d 807 (Fed. Cir. 1995) (en banc), vacating, 42 F.3d 1376 (Fed. Cir. 1994). In addition, infringement litigation is apparently increasing over computer software-related patent rights. E.g., Arrhythmia Research Tech. Inc. v. Corazonix Corp., 958 F.2d 1053 (Fed. Cir. 1992). See generally Vietzke, supra note 3.


This paper isolates and treats one such problem: that of dealing with so-called "hybrid" inventions.\textsuperscript{33} Hybrid inventions are those that consist of both statutory and non-statutory elements grouped together.\textsuperscript{34} As such, their basic nature presents a classification problem. Hybrid inventions are mongrels, neither purely statutory nor purely non-statutory. Thus, it is not possible to categorize them with the usual analytical tools. And yet they must be categorized. The statutory scheme is itself binary; it provides no middle ground between statutory or non-statutory inventions.\textsuperscript{35} Every hybrid invention therefore presents the task of determining which character of the invention is to control in the determination of patentability.\textsuperscript{36}

As the following discussion indicates, the patent law has heretofore not dealt adequately with this problem of categorizing hybrid inventions. After experimenting with the task openly in the 1950's and 60's,\textsuperscript{37} the courts have since either ignored the question in their analyses or treated the matter without express discussion.\textsuperscript{38} Neither tactic has been helpful. The case law at present contains little express guidance on how hybrid inventions should be treated.\textsuperscript{39} It does not even recognize the categorization of hybrid inventions as a distinct issue.\textsuperscript{40}

For purposes of discussion, this article deals with an example of hybrid invention that presents these associated issues with particular clar-
ity. Specifically, it treats situations in which non-statutory information has been placed onto a specific data storage medium.41 In this class of situations, we assume that the information has previously been decided to be not statutory subject matter when considered in isolation,42 while the storage medium is clearly statutory. These situations are recurrent; indeed, they may be the classic form of hybrid invention. Examples include such old-technology forms as a musical composition captured in the apertures of player piano role,43 or a poem printed on the pages of a bound book. But the class also includes such current examples as a sound recording captured on a compact disk,44 or a database (or a computer program that has been conceded to be non-statutory) stored on a magnetic floppy disk.45

This article begins by tracing how the law has treated such hybrid claims historically, and surveys the strengths and weaknesses of each treatment that has been employed. It contends that the current law actually adopts a portion of the practice that the PTO's examining core has employed for some time, but which has gone unarticulated in the cases and unrecognized in the literature. The article concludes that the law will almost inevitably be forced to adopt the remaining portions of the agency practice.

II. BACKGROUND

The initial task in dealing with hybrid inventions is to develop an appropriate analytical model and nomenclature with which to describe them. This is important for at least two reasons. Obviously, a rigorous

41. The non-statutory data in this example could be taken to exist in many different forms. The example thus encompasses situations where the encoded data is unquestionably excluded from § 101. These would include purely lingual information, such as writing. It would also include works that lie squarely within the fine arts, such as photographs or musical compositions. At the same time, the example also encompasses more difficult fact patterns, where there are colorable arguments in favor of considering the non-statutory element to be within the categories of § 101. Thus, the example also addresses most of the fact patterns that have been litigated recently in the computer-related arts. E.g., In re Abele, 684 F.2d 902 (C.C.P.A. 1982); In re Alappat, 33 F.3d 1526 (Fed. Cir. 1994) (en banc) (6-2 decision on merits); In re Lowry, 32 F.3d 1579 (Fed. Cir. 1994); In re Warmerdam, 33 F.3d 1354 (Fed. Cir. 1994).

42. See generally, e.g., DONALD S. CHISUM, I CHISUM ON PATENTS, § 1.01-.03 (1995) (discussing the question of statutory subject matter apart from the complication discussed in this article).

43. E.g., Alappat, 33 F.3d at 1553-54. The example of a claim directed to a specific sequence of perforations in a player-piano roll is a recurring one, meant to demonstrate the ease with which statutory and non-statutory elements can be combined in to a single claim. Id.

44. Id. (Judge Archer's dissent discussing the fact pattern is substantial in length).

45. Short variations of this fact pattern occur in In re Lowry, 32 F.3d 1579 (Fed. Cir. 1994) and In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995).
treatment of hybrid inventions requires their structure to be understood rigorously. The absence of such rigor is an important reason why the case law has failed to treat hybrid inventions adequately to date.

But in addition, delving into these topics causes one immediately to confront the relation between hybrid inventions and the modern claiming theory that United States patent law employs generally. This confrontation is necessary. It reveals the precise nature of the problem that hybrid inventions present, and demonstrates that problem to be independent from other problems involved in the question of statutory subject matter. Indeed, it is perhaps fair to say the question of hybrid inventions is the result of the claiming theory that the United States patent law has chosen to employ.

A. HYBRID INVENTIONS AND HYBRID CLAIMS

Understanding hybrid inventions is largely a matter of understanding the interplay between subject matter categorization and the practice of peripheral claiming. "Peripheral claiming" refers to the paradigm that is currently used in the United States to arrive at an understanding of a patent’s technological scope. For over a hundred years, the United States has required the patent applicant to provide a written, lingual statement of the technology that he or she proposes to control with the patent. This statement is made in the portion of the patent referred to as the “claim.”

United States patent law has recently entered a period in which various aspects of peripheral claiming are receiving new scrutiny. But, while many of these aspects are fundamental and important to patent law generally, we need to concern ourselves here with only one. Fortunately, it is an aspect of peripheral claiming that is generally accepted, and which is currently not in turmoil.

46. See discussion infra notes 48-51 and accompanying text.
47. See discussion infra notes 57-59 and accompanying text.
49. E.g., ANTHONY W. DELLER, 1 WALKER ON PATENTS 1-64 (2d ed. 1964).
52. Markman, 517 U.S. 370 (discussing the process by which the literal language of the claims is to be interpreted); Hilton Davis, 520 U.S. 17 (discussing whether the literal boundaries of the claim scope should be flexible in some circumstances); In re Donaldson, 29 U.S.P.Q.2d (BNA) 1845 (1994) (discussing one aspect of whether claim interpretation in the agency should match that in courts).
Specifically, modern authorities concede that a peripherally drawn claim can be accurately characterized as a list of parts that together make up the subject matter of the invention. Thus, for example, a peripheral claim drawn to an article of manufacture will present a list describing each of the article’s component parts. A claim drawn to a method will present a list of the method’s individual steps. By logical necessity, the claimed list of parts is usually considered to be inclusive, rather than exclusive, so that the addition of even further parts or steps will still be encompassed within the definition of the invention that the claim sets out.

This basic structure has made it possible to adopt a simplified notation by which the contents of a particular claim can be set forth. Each of the claimed invention’s parts, which the patent law refers to as “elements,” can be denoted by an abstract identifier. The claim can then be represented by a list of these identifiers. For reasons now lost to history, the patent law has settled on the convention of denoting these individual elements by the letters of the alphabet. Thus, a claim that defines an article having four parts is denoted as having the structure ABCD. A method with three steps is denoted as ABC.

Obviously, there is substantial room for persons to differ over what, precisely, in the claimed description is an element, as opposed to merely one of an element’s constituent subparts. This is proving troublesome in other areas of the patent law. But we are again fortunate here, because these difficulties do not arise in the context of the present discussion of hybrid inventions. Instead, we need only deal with a simple point: our hypothetical invention of a statutory storage medium and non-statutory data can be represented as the invention AB, where we have adopted the additional convention of denoting the non-statutory element in italics.

At this point, even our simple analysis has allowed us to make several important observations. First, it is easy to see why hybrid inventions have proven so difficult to classify. According to our nomenclature, a purely statutory invention is one such as ABC, in which all the elements are statutory per se. A purely non-statutory invention is one such

53. E.g., Landis, supra note 33; 2 Donald S. Chisum, Chisum on Patents, ch. 8 (1994).
55. E.g., Landis, supra note 33; 2 Chisum, supra note 53, ch.8.
56. The Supreme Court has stated that over-assertions of infringement under the doctrine of equivalents can be policed by limiting them to occasions in which the accused device includes equivalents of each element of the claimed invention. Hilton Davis, 520 U.S. at 17. This has placed stress on the need to arrive a mechanism for parsing patent claims. See generally, e.g., Hughes Aircraft v. United States, 117 S. Ct. 1466 (1997) (remanding case to Federal Circuit for consideration under Hilton-Davis). The lack of precision inherent in separating claims into elements will probably render this effort unproductive.
as $ABC$, in which all the elements are non-statutory.\(^{57}\) Our hybrid invention fits in neither of these neat categories. It is neither purely statutory, nor purely non-statutory. Our notation captures the hybrid invention’s mongrel nature nicely.

Second, it is now clear that the question of hybrid inventions is not linked to any particular field of technology. How the patent system should treat inventions such as $AB$ is not peculiar to computer software or printed matter. Rather, it is broadly a question of how the system should treat any invention that possesses a mixed, rather than pure, character. The question of hybrid inventions transcends the particular concerns of specific industries.

Third, and perhaps most revealing, it is now clear that dealing with hybrid inventions is virtually inherent in a patent system that adheres to peripheral claiming. Hybrid claiming exists whenever an invention is defined in the mixed form $AB$. And the potential for this mixed form would not disappear, for example, if a particular computer program were to be held statutory subject matter *per se*, or even if statutory subject matter status were to be granted to all computer programs together. Rather, the potential for hybrid claiming is not removed until *all* subject matters become open to patenting. Stated conversely, as long as *any* class of subject matter is withheld from the reach of the patent system, there *will* be a potential for hybrid claims to exist. And since each patent applicant has the power to claim his invention as he sees fit,\(^{58}\) that potential will almost certainly be realized. The United States will not expand the reach of the patent system to include all forms of human activity.\(^{59}\) Thus, hybrid inventions are with us to stay.

**B. THE HISTORICAL TREATMENT OF HYBRID CLAIMS**

With the background of the preceding section, we are now ready to examine how the law has dealt with hybrid claims to date. Clearly, that history must be very old. Claims in the form $AB$ can be found in decisions dating from at least the first part of this century.\(^{60}\) Unfortunately, these early authorities do not address the question of hybrid claiming

\(^{57}\) Examples of claims having this form occur in, *e.g.*, Gottschalk v. Benson, 409 U.S. 63 (1972); *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982) (claim 5); *In re Warmerdam*, 33 F.3d 1354 (Fed. Cir. 1994) (claim 5). See generally discussion *infra* note 99 and accompanying text.

\(^{58}\) *E.g.*, 35 U.S.C. § 112, ¶ 2 (1994) (claim must present subject matter that “applicant regards as his invention.”).

\(^{59}\) 35 U.S.C. § 287 (1984) (noting generally the recent amendments to § 287 regarding the enforcement of patents on medical procedures). Several attempts have arisen in recent years to restrict the subject-matter reach of the patent system.

\(^{60}\) *E.g.*, *In re Scott*, 76 F.2d 136 (C.C.P.A. 1935); *In re Sterling*, 70 F.2d 910 (C.C.P.A. 1934); *In re Reeves*, 62 F.2d 199 (C.C.P.A. 1932).
expressly. There is also no record of the PTO's practice in this period, and no mention of the question in the scholarship as well. And so, the inquiry must begin in the early 1950's, when the case law appears to have first treated the question of hybrid claims expressly.

Perhaps the best example of a decision from this first period is In re Abrams, a 1951 decision of the Court of Customs and Patent Appeals. The invention in Abrams was a method for evaluating collecting and geologic test data in the art of petroleum prospecting. The final step was claimed as one of "comparing" the results obtained in two different lines of inquiry. According to the PTO, this last element was a form of mental step, and was non-statutory per se. Thus, Abrams involved a hybrid invention claimed in the form we have discussed so far.

Abrams is noteworthy for the particular directness with which it addressed the question of how to categorize hybrid claims. In particular, the court adopted the appellant's rather comprehensive set of rules for determining whether hybrid inventions should be categorized as statutory subject matter. According to the appellant, claimed inventions could be grouped into three types of situations:

1. If all the steps of a method claim are purely mental in character, the subject matter thereof is not patentable within the meaning of the patent statutes.

2. If a method claim embodies both positive and physical steps as well as so-called mental steps, yet the alleged novelty resides in one or more of the so-called mental steps, then the claim is considered unpatentable for the same reason that it would be if all the steps were purely mental in character.

3. If a method claim embodies both positive and physical steps as well as so-called mental steps, yet the novelty or advance over the art resides in one or more of the positive and physical steps and the so-called mental step or steps are merely incidental parts of the process which are essential to define, qualify or limit its scope, then the claim is patentable and not subject to the objection contained in 1 and 2 above.

Unfortunately for the applicants, the court found that Abrams' claim fell factually within the second type of invention, and it therefore af-

63. Id. at 166.
firmed the PTO's rejection.\textsuperscript{64}

The analytical framework set out in the Abrams decision became influential for a time.\textsuperscript{65} As the language of the decision makes clear, the categorization of hybrid claims according to Abrams was to be controlled by the element of the claimed invention that was responsible for the invention being distinguishable from the prior art. Thus, if the novel part of the invention lay in a statutory element, the character of that statutory element was imputed to the entire invention, and the invention was categorized as statutory subject matter. Conversely, if the novel part of the invention were found to reside in a non-statutory element, the character of that element was to be taken as controlling, and the invention was considered drawn to subject matter that was non-statutory.\textsuperscript{66} This emphasis on the placement of the novel feature of the invention led to the test becoming known as the "point-of-novelty" approach.\textsuperscript{67}

The point-of-novelty approach possessed several qualities that were attractive to decision makers. Probably foremost, it attempted to fulfill the statutory subject matter provision's overall aim. Asking whether the novel part of the invention was statutory was meant to discover whether the applicant's advance had occurred in a technological field targeted by the patent system. If it had, presumably the applicant's activity was of the sort that Congress meant the patent system to foster. Making patent rights available was necessary to vindicate the expectation of single-source control held by the applicant and others situated like him.

Conversely, if the novelty of the claimed invention resided in a non-statutory element, the applicant's activities could be presumed to have been in a field meant to be free of the patent system's influence. Denying a patent to such inventors would be necessary, because to do otherwise would extend the patent system's distortion beyond the bounds expressed previously in the law.

This first advantage, being related to the goals of substantive patent law, was perhaps easy to see. But the point-of-novelty approach presented a second advantage as well: it was set out as a specific, rule based procedure. The importance of this second advantage is more difficult to see initially. But it is vital. Adjudication of patentable subject matter takes place in the first instance while patent applications are be-

\textsuperscript{64} Id. at 170. This categorization has been described as originating with Don Lee, Inc. v. Walker, 61 F.2d 58 (9th Cir. 1932). In re Musgrave, 431 F.2d 882 (C.C.P.A. 1970); In re Prater, 415 F.2d 1378 (C.C.P.A. 1968).

\textsuperscript{65} E.g., Ex parte Egan, 129 U.S.P.Q. (BNA) 23 (Bd. Pat. App. & Int. 1960) and the agency positions described in Prater, 415 F.2d 1393; In re Bernhart, 417 F.2d 1395 (C.C.P.A.1969); In re Freeman, 573 F.2d 1237 (C.C.P.A. 1978). See also Diamond v. Diehr, 450 U.S. 175, 203 n.20 (J. Stewart, dissenting).

\textsuperscript{66} E.g., the summary present in In re Musgrave, 431 F.2d 882 (C.C.P.A. 1970).

\textsuperscript{67} E.g., Freeman, 573 F.2d at 1237.
ing scrutinized by a patent examiner of the PTO. Not all these examiners are trained in the law. More importantly, they number in the several thousands. Consistency and horizontal equity demand that the questions before them be bounded, and that the element of discretion be reduced as much as is reasonably possible. Thus the point-of-novelty approach was attractive in part because it could be stated in a limited number of specific tests, or rules, that could be applied to a wide array of technologies. Indeed, this basic need for a rule-based implementation of the statutory subject matter requirement has always been a critical driving force in the law.

These advantages, however, were also coupled with at least several serious disadvantages. For example, the point-of-novelty inherently paces greater emphasis on the novel element of the claim, at the expense of the elements that are not novel. This is conceptually at odds with an array of doctrines in patent law, which hold that all elements of the claim are to be accorded equal weight in making various adjudications.

The point-of-novelty approach also can be applied only after first ascertaining precisely what society knew prior to the applicant's work. Only against this backdrop can one determine which element in the claimed combination is novel. This preliminary need is at odds with how the statutory subject matter provision operates generally. Looked at broadly, the subject matter provision of the patent code asks the overall question of whether the claimed invention is inside or outside the areas of activity that the patent system means to target. Typically, this can be answered without making any inquiry into whether related technology happens to be old.

Reference to several examples demonstrates this point. Obviously, a claim to a poem per se is non-statutory; the answer does not depend on whether the poem is new in relation to prior poems or not. A claim to a wheel per se, in contrast, is clearly statutory. Again, the answer does not depend on whether the claimed wheel is new or old. In fact, even a wheel that is admittedly old will be held statutory subject matter. Whether the wheel is sufficiently new or not to justify patenting will be determined during application of the tests for anticipation and obviousness, under § 102 and § 103, respectively. The point-of-novelty approach thus conflicts with the overall structure of the patent code, which segregates the determinations of statutory subject matter and anticipation into sep-

69. See discussion infra notes 115-116 and accompanying text.
70. E.g., Freeman, 573 F.2d at 1237.
71. E.g., Musgrave, 431 F.2d at 882.
72. Id.
73. See generally, e.g., Diamond v. Diehr, 450 U.S. 175 (1981).
arate inquiries.74

Still further, the point-of-novelty was flawed because it left some disputed situations unsolved. What if, for example, multiple features of the invention are novel, some of which are statutory per se, while others are non-statutory? What if none of the elements is novel? In both these situations the claims contain no point of novelty, and the point-of-novelty approach consequently is inoperative.

C. HYBRID CLAIMS AND THE REQUIREMENT OF SINGLE-CATEGORY INVENTIONS

The various flaws discussed in the preceding section eventually led to the point-of-novelty approach being discarded.75 Its demise, however, left a considerable vacuum. Applicants continued to claim inventions in hybrid form; those claims still needed to be fit into the statute's existing, binary format. Consequently, the PTO still required a mechanism by which hybrid claims could be categorized.

Precisely what the agency did in response to this need is not easy to prove. It promulgated no rules on the topic; neither did it set forth any policy statements or other position papers. Nevertheless, scrutiny of the cases shows that by the end of the 1970's, the agency (now known as the PTO) had adopted an approach that was closely linked to the agency's historical method of managing inventions claimed via elements in more than one statutory category.76 By short extension of that practice, it was able to design a paradigm that solved some of the problems encountered with the point-of-novelty approach. Understanding that new approach requires first a brief digression into the agency's historical method of treating claims presented across statutory categories.

III. ANALYSIS

A. THE HISTORICAL TREATMENT OF MULTIPLE-CATEGORY INVENTIONS: THE PTO'S "BLUE PENCIL"

There is a great tendency in United States patent law to consider the various categories of statutory subject matter in § 101 as separate from one another.77 Thus, for example, rights over a patented article of manufacture are usually considered to be independent of the particular

74. E.g., discussion infra notes 135-136 and accompanying text.
75. E.g., Musgrave, 431 F.2d 882, 889 (C.C.P.A. 1970); In re Freeman, 573 F.2d 1237 (C.C.P.A. 1978).
76. See discussion infra notes 81-90 and accompanying text.
77. E.g., In re Schreiber, 128 F.3d 1473 (Fed. Cir. 1997); In re Durden, 763 F.2d 1406 (Fed. Cir. 1985); Ex parte Akamatsu, 22 U.S.P.Q.2d (BNA) 1915 (Bd. Pat. App. & Int. 1992); Ex parte Lyell, 17 U.S.P.Q.2d (BNA) 1548 (Bd. Pat. App. & Int. 1990). See also Rosenberg, supra note 33, at § 14.04; Deller, supra note 49, § 133.
use to which the article may be put.\textsuperscript{78} Similarly, rights to a patented process are usually considered to be independent of the particular apparatus used to carry the process out.\textsuperscript{79}

But are the statutory categories independent by necessity?\textsuperscript{80} What if, for example, the applicant presents a claim in which elements, defining an article of manufacture, have been combined with statements of a particular use? What if a process claim begins with recitations of the particular machinery that will be employed? Claims in this format present the invention as including elements in more than one statutory category. Clearly, they present the question of whether such a presentation is proper.

Although it is not universally recognized, even among patent specialists, the PTO has long held the view that each invention must be claimed via elements in only a single statutory category. Thus, in the agency's view, it is improper to combine apparatus details in a claim drawn to a method. It is also improper to introduce use limitations into a claim drawn to an article of manufacture.\textsuperscript{81}

Perhaps the best recent case illustrating this historical practice is \textit{In re Durden},\textsuperscript{82} but the use of \textit{Durden} in the text is valid for at least several reasons. First, the discussion here is historical, and it is beyond peradventure that \textit{Durden} represents the traditional practice of the agency.\textsuperscript{83} Further, the rule illustrated in \textit{Durden} applies broadly and many aspects remain in place at this time.\textsuperscript{84}

\textsuperscript{78} E.g., Schreiber, 128 F.3d at 1473.
\textsuperscript{79} E.g., Akamatsu, 22 U.S.P.Q.2d (BNA) at 1915.
\textsuperscript{80} In fact, the various statutory classes of inventive subject matter are not as separate, by nature, as United States patent law currently insists. Under the European Patent Convention it has long been possible to claim inventions in the form of a particular chemical put to a particular use. These "method of use" claims have typically not been available in the United States. \textit{Cf.} discussion \textit{infra} note 82 and accompanying text.
\textsuperscript{81} Lyell, 17 U.S.P.Q.2d (BNA) at 1548 (noting a well articulated and thorough summary of this position).
\textsuperscript{82} \textit{In re Durden}, 763 F.2d at 1406. \textit{Durden} has of course been the subject of various attacks, both in Congress and the Courts. A decade-long effort to overturn the holding has resulted in Congress passing a limited provision dealing with biotechnology processes. Biotechnological Process Patent Amendment Act, PL 104-41. Cases have issued from the Federal Circuit that call the continued vitality of \textit{Durden} into question, at least in the sphere of claims drawn to chemical processes. \textit{In re Ochiai}, 71 F.3d 1565 (Fed. Cir. 1995); \textit{In re Brouwer}, 77 F.3d 422 (Fed. Cir. 1996).
\textsuperscript{83} \textit{Durden}, 763 F.2d at 1410.
\textsuperscript{84} Carl Moy, \textit{The Biotechnology Process Amendments, Ochiai and the Future of Hybrid Claiming} (on file with author). In the mid 1980's, the United States Court of Appeals for the Federal Circuit decided a case which dealt with a cluster of technological improvements involving chemicals with insecticidal properties. Specifically, the applicant had invented a new chemical end product, as well as a new chemical intermediate from which the end product could be made. He also had learned the process by which the end product could be obtained from the intermediate. \textit{Durden}, 763 F.2d at 1407.
Durden is a particularly valuable example because the PTO had committed itself to certain positions prior to the particular dispute under consideration. In previous actions, it had granted patent rights to Durden in both the intermediate and the end product. The claim at issue recited the process of taking the already-patented intermediate and using it to arrive at the already-patented end product.

At first glance, then, the issue in Durden seems overwhelmingly likely to have been adjudicated in the applicant’s favor. Using the nomenclature we have developed so far, Durden’s claim could be rendered as ABC, in which A was the intermediate, B the group of process steps, and C the end product. Because the agency had already conceded that both A and C were patentable per se, it would have seemed clear that the combination ABC was patentable regardless of what process steps had been previously known in the art.

But this was not the result. Rather, both the agency and the Federal Circuit felt that the process claim was unpatentable over the art of record, which disclosed merely the process steps of element B. According to the Federal Circuit’s opinion, the claim’s recitation of the specific intermediate and end product was of no moment; the claimed invention at issue was a process and patentability, if it was to exist at all, had to reside in the process steps themselves.

Durden demonstrates two important aspects of how the PTO has historically treated claims that include elements in more than one statutory category. First, the agency considers such claims improper, and will consider only the elements in one category. Second—and this is perhaps the most startling part—the agency does not require any overt action from the applicant, such as canceling the offending passages, before it does so. Rather, it takes matters into its own hands and simply refuses to give the offending passages effect. This has given rise over the years to various situation in which the agency will make cryptic assertions that, for example, certain claim recitations are “non-limiting,” or carry

85. Id. at 1407.
86. Id.
87. In general, under open-ended claiming theory, the narrower, combination invention is patentable over the art whenever an included sub-combination is patentable.
88. Durden, 763 F.2d at 1407 (noting the agency’s position); id at 1411 (noting the C.C.P.A.’s position).
89. Id. at 1410 (quoting In re Larsen, 292 F.2d 531 (C.C.P.A. 1961)). The court states: We do not agree with appellant’s proposition that the ‘use of an unobvious starting material renders a process unobvious.’ Were this true, every step, for example, dissolving or heating when performed on a new compound would result in a patentable process. . . . [E]ach statutory class of inventions should be considered independently on its own merits.

Id.
"no patentable weight." The practice has found favor in the agency's reviewing court both before and after Durden. Viewed as a rule-based process, then, the PTO has traditionally behaved as follows. When confronted with a claim that recites elements in more than one statutory category, it first determines the particular category in which the invention truly resides. It then proceeds down the list of elements in the claim, retaining those that are in the true statutory category, and dismissing all other elements as non-limiting or otherwise without effect. Thereafter, it examines on the merits the invention that is defined by the elements that have been retained.

As a final point in this digression, it should be noted that the practice of the PTO described here has been very poorly documented over the years. The point is too finely detailed to be addressed in either the patent statute or the Code of Federal Regulations. But there is also no express mention of it in the agency's Manual of Patent Examining Procedure. Nor has it been the express subject of any notice in the Official Gazette. This dearth of documentation is probably not the result of any conscious choice of those within the agency. Rather, it almost certainly stems from the subject's basic nature. As the reader by now can appreciate, conceptually isolating and then dealing with the problems of hybrid claims is a difficult, abstract task. The most likely explanation for the poor documentation is that the agency simply did not appreciate fully this aspect of patent examination.

Nevertheless, the fact of poor documentation has left us with a thorny question of nomenclature. In part because there is no literature discussing it, the agency's historical practice has no commonly accepted name. For lack of a better alternative, this article refers to the practice as the "blue pencil" rule; the claim recitations that are being ignored are

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91. E.g., In re Gold, 29 F.3d 694 (Fed. Cir. 1994) (use of claimed article); In re Koester, 392 F.2d 626 (C.C.P.A. 1969) ("whereby" language in article claim). This approval continues even after Congress' recent amendment to § 103 and the court's decisions in In re Ochiai, 71 F.3d 1565 (Fed. Cir. 1995) and in In re Brouwer, 77 F.3d 422 (Fed. Cir. 1996). In re Schreiber, 128 F.3d 1473 (Fed. Cir. 1997) (use limitations in article claim) (citing authorities).

92. See generally PATENT & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 2100 (July 1996) (noting that evidence of the agency practice can be found in a careful reading the aforesaid section).

93. See generally discussion infra note 156 and accompanying text.

94. Because of the long legislative attempt to overturn In re Durden, 763 F.2d 1406 (Fed. Cir. 1985) the practice is probably better known at present; see discussion supra note 82 and accompanying text.
said to have been "blue penciled" out of the claim. For those readers who may be interested, the etymological justification for the label is set out in the margin.\textsuperscript{95} It was referred to as the "blue-pencil rule" because in theory, an unreasonable or excessive covenant could be reformed by running a blue-pencil through its provisions to leave the reasonable provisions in place.\textsuperscript{96} The rule was imported to the United States for the same purpose in cases involving restrictive employment covenants and became essentially a rule of partial restraint.\textsuperscript{97}

B. EXTENSION TO HYBRID CLAIMS

The PTO's strategy for dealing with hybrid claims after the demise of the point-of-novelty approach was essentially to apply the blue-pencil rule outlined in the preceding section. In point of fact, the agency merely struck the non-statutory elements from the claimed invention, and examined whatever remained.\textsuperscript{98} The reasoning behind this practice was not complex at all: non-statutory recitations are by definition not within any statutory category whatsoever; thus, they could never be in the statutory category to which the invention truly belonged. Application of the

\textsuperscript{95} The term "blue-pencil rule" refers to a practice first applied by English courts when reviewing the enforceability of restrictive employment covenants. Chesman v. Nainby, 92 Eng.Rep. 447 (1725). As a general matter, whether a restrictive covenant was enforceable depended upon how its provisions struck a balance between an employer's and an employee's interest. In early cases, a restraint was held unenforceable if it weighed excessively, and unreasonably, in favor of one party over another. \textit{Id.}. This evaluation of the covenant as a document in its entirety caused, as was likely, problems. \textit{Id.} at 385. In some cases a restriction on employment, or a covenant not-to-compete, was warranted by the circumstances, but the covenant language exceeded the restriction warranted. To circumvent the dilemma of having to enforce either an entire covenant or non at all, courts adopted the blue-pencil rule: part of a restraint was severed and deleted when a blue-pencil could be run through it. \textit{Severability of Employee Covenants Not To Compete}, 23 U. Chi. L. Rev. 663, 664 (1956). The rule provided that in a case where a restraint was found to be excessive, if, by its terms, that excessive portion was severable from the remainder of the covenant, the court would strike that portion. As a result, the remaining portions of the covenant could be enforced. John Roane Inc. v. Tweed, 89 A.2d 548, 555 (1952).


\textsuperscript{97} KURT H. DECKER, 1 COVENANTS NOT TO COMPETE 384 (2d ed. 1993).

blue-pencil rule would therefore result in their being ignored on all occasions.

In terms of our hypothetical invention AB, this means that the PTO would ignore the non-statutory data, B, and would consider the claim as if it were drawn to the statutory storage medium, A, alone. In effect, the agency's practice conceptually purged hybrid claims of their non-statutory elements, leaving a leaner claim consisting of statutory elements solely.

This approach of the PTO gradually found favor in the decisions of its reviewing court at the time, the Court of Customs and Patent Appeals. Minsk argues that the agency standard matches that set out in the court decisions, but argues that the agency adopted the practice from the courts. Minsk's view stems from his focus on overt statements of the PTO's policy, rather than an observation of the positions taken by the agency in examination adjudications. It is fair to say that, by the late 1970's, the blue-pencil rule had become cemented as the dominant practice in the area.

This extension of the blue pencil rule possessed several positive qualities. It was heavily rule-based, for example, and not wedded to the details of any particular technological field. Use of the blue-pencil rule thus guaranteed a relatively high degree of consistency and predictability in how hybrid claims would be treated across the PTO's entire examination function.

In addition, the close similarity between the traditional use of the blue-pencil rule and this new field of application was also beneficial. In its traditional setting the blue-pencil rule was familiar and time-tested. Extending it to hybrid claims was likely to be something individual examiners could accomplish easily and with good reliability.

As still another advantage, the blue-pencil rule was determinate in all cases. Unlike the point-of-novelty approach, the blue-pencil rule cate-

99. There are a series of decisions that evidence the assertion in the text. The most noteworthy of these are generally considered to be In re Freeman, 573 F.2d 1237 (C.C.P.A. 1978); In re Walter, 618 F.2d 758 (C.C.P.A. 1980); In re Abele, 684 F.2d 902 (C.C.P.A. 1982). The practice is thus known, particularly among those whose focus is primarily on court decisions, as the Freeman-Walter-Abele test. The fact that the Freeman-Walter-Abele test operates in the same way as the blue pencil rule can be seen in the cases, particularly Abele. In that decision the court differentiated between two closely related claims, holding claim 5 non-statutory, while approving of claim 6 as statutory. The distinction was that claim 5, the more general of the two, called for certain calculated data to be merely displayed, while claim 6 specified that the data pertained to X-ray attenuation, and called for it to be displayed by a tomography scanner. In holding claim 6 statutory, the court stated: "Were we to view the claim absent the algorithm, the production, detection and display steps would still result in a conventional CAT-scan process. . . . [W]e view the[se] steps . . . as manifestly statutory subject matter and are not swayed from this conclusion by the mere presence of an algorithm in the claimed method." Id at 908.
gorized every patent claim as either statutory subject matter or not. If, after the non-statutory elements were removed, at least one statutory element remained, the invention was considered statutory. If, on the other hand, the blue pencil rule removed all the elements from the claim, the invention was considered non-statutory.

But at the same time, extending the blue-pencil rule to hybrid claims presented new difficulties. Not the least of these was the rule's basic operational principle. Under the blue pencil rule some portions of the claim were simply to be ignored. This practice seemed radical to some, and had no direct support in the authorities. Indeed, court opinions had recently admonished the PTO for presuming too much authority to define the proper contents of patent claims. But at the same time, extending the blue-pencil rule to hybrid claims presented new difficulties. Not the least of these was the rule's basic operational principle. Under the blue pencil rule some portions of the claim were simply to be ignored. This practice seemed radical to some, and had no direct support in the authorities. Indeed, court opinions had recently admonished the PTO for presuming too much authority to define the proper contents of patent claims.100

Additionally, use of the blue-pencil rule converted the statutory subject-matter provision into what appeared to be an extremely low hurdle. Essentially, under the rule a claim would be considered to present statutory subject matter as long as it contained any element that was drawn to statutory subject matter.101 For example, our hypothetical invention AB would, because of the presence of the storage medium A, always be categorized as statutory subject matter. This would be true even if the non-statutory portion B was actually more significant in practical terms. It would even be true if the statutory portion, A, was entirely conventional.

The underlying problem with this result is relatively easy to see. If the simple presence of any statutory element is enough to bring a claimed invention with the purview of the patent system, it might be possible for clever applicants to obtain patent protection over developments that actually fell outside the patent system's targeted area of social activity.102 Our example of a new song, B, encoded on a standard storage medium, A, presents this issue in high relief. If a patent on such a claimed combination were to be granted, it would give control over some uses of the song. A few such claims would be able to recite all the storage media that are commercially significant, thereby raising the specter of effective patent control over the song per se. And yet the song is clearly non-statutory subject matter; the patent system is not meant to encourage songwriters to compose new works.

Finally, the extension of the blue-pencil rule suffered from the same important flaw as the basic rule itself: it was almost completely undocu-

100. These cases had overturned agency attempts to reject inventions as “incompletely” claimed.
101. E.g., Witek, supra note 98, at 378 (“Practitioners got around an adverse decision under the Freeman-Walter-Abele test by drafting . . . claims with structural or physical limitations.”).
102. See discussion infra notes 151-152 and accompanying text.
The general assertion in the text—that the behavior of the PTO's examining corps is different on this issue from the standards set out in the cases and the administration's own published instructions—is not new. Strobos has asserted, for example, that undocumented, folklore practices of the patent community have contributed to the development of a rule-based treatment of software inventions, which is generally not recognized in the authorities. Witek notes that the behavior of the agency's examining corps is different from the authorities as well. Accordingly, it was difficult for the courts to discern and discuss. The lack of documentation also sapped applicants of confidence that the rule would actually be applied to their specific cases.

C. Interlude: Parker v. Flook

This was the volatile state of affairs when the Supreme Court confronted a hybrid claim in Parker v. Flook. The invention at issue in that case was a method of arriving at a set of industrial process parameters that would be indicative of abnormal activity. If one or more of these parameters was breached an alarm would be triggered, so that the process could be evaluated more closely. In effect, then, the process was one of calculating a set of such alarm limits. The claim at issue recited the step of measuring various data concerning the status of the process, calculating an adjustment to the previously existing alarm limit, and then updating the alarm limit to include the calculated adjustment.

In point of fact, therefore, Flook presented a hybrid claim in the form ABC, in which A and C involved statutory, physical manipulations, and B involved a non-statutory calculation.

The hybrid nature of this claimed invention did not escape the Court's attention. "The only novel feature of the method," it wrote, "is a mathematical formula." "The question in this case is whether the identification of a limited category of useful, though conventional, post solution applications of such a formula makes respondent's method eligi-

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103. The agency, for example, issued a first policy statement on the examination standards for computer-related inventions, which was hostile to the patentability of such inventions generally and which did not describe the blue-pencil rule. Examination of Patent Applications on Computer Programs: Notice of Issuance of Guidelines, 33 Fed. Reg. 15609 (1968). The statement was withdrawn after a short time, and not replaced in the period under consideration in the text here.
105. Witek, supra note 98, at 419.
107. Id. at 585-86.
108. Id. at 596-97.
109. Id. at 585.
ble for patent protection.”

The factual situation in Flook thus placed the weaknesses of the blue-pencil rule in high relief. If a hybrid claim would be held statutory as long as it included even a single statutory element, no matter how minor, what prevented applicants from claiming non-statutory advances in combination with trivial details of the statutory environment in which they were to be employed? Clearly, as long as the focus remained solely on whether hybrid claims passed muster under the statutory subject matter provisions of § 101, the answer was “nothing.”

In the period immediately prior to Flook, the patent system had encountered increasing numbers of instances in which patent claims were cleverly worded, to present the barest recitation of statutory subject matter in combination with elements whose statutory nature was frankly questionable. These instances had raised justifiable suspicions that the patent claims were simply attempts to evade the statutory subject matter provision of the patent code entirely. In the lower courts, there had arisen formulations in which the blue-pencil rule was combined with further tests, designed to measure the bona fides of the statutory portions of the claim. These further tests sought to determine, for example, whether the post-solution activity stated in a hybrid method was “non-trivial,” or whether the hybrid claim would, if allowed, effectively provide coverage of the non-statutory elements per se.

Against this backdrop it is probably not surprising that the Supreme Court turned its back on the blue-pencil rule. In its opinion the Court acknowledged that the simple presence of a non-statutory element in a claim would not necessarily impart a non-statutory character to the entire claimed invention. At the same time, however, it felt that the mere presence of statutory elements of a conventional or obvious nature should not make the invention statutory. The line between these extremes, it continued, should be determined by whether the statutory portions of the claim define an invention that qualifies as a patentable advance. To be patentable in this sense the invention would not only have to reside within a statutory field of endeavor, it would also need to

110. Id.
111. E.g., In re Abele, 684 F.2d 902, 905-09 (C.C.P.A. 1982) (noting authorities cited therein). Essentially, the court decisions attempted to measure the substantiality of the statutory elements to determine whether they placed any meaningful restrictions on the patentee’s ability to assert control over the non-statutory elements. Id.
112. Flook, 437 U.S. at 590-91 (“[A] process is not unpatentable simply because it contains a law of nature or a mathematical algorithm.”).
113. Id. at 593.
114. Id. at 594 (“Respondent’s advance is unpatentable under section 101, not because it contains a mathematical algorithm as one component, but because once that algorithm is assumed to be within the prior art, the application, considered as a whole, contains no patentable invention.”).
be both novel and non-obvious over the art.\textsuperscript{115}

The Supreme Court thus set out in \textit{Flook} a rule-based procedure that contained similarities to both the point-of-novelty approach and the PTO's blue-pencil rule, but which presented differences from each. Like both rules, the Court's procedure in \textit{Flook} involved first conceptually distinguishing between the statutory and non-statutory elements of the claim. Thereafter, the non-statutory elements of a hybrid claim were to be ignored. The result would be a truncated claim drawn to the hybrid invention's statutory elements, grouped together as a sub-combination. This latter step resembled the procedure under the blue-pencil rule.

At this point, however, the Court's approach took a different course. Specifically, the Court called for the claim to be compared to the prior technology, in an effort to gauge the true nature of the invention's advance. In this sense, the Court's procedure in \textit{Flook} resembled the point-of-novelty approach. But instead of directing the comparison toward the novel element, the Court in \textit{Flook} focused narrowly on the statutory elements. If the combination of those elements was non-obvious over the art, the invention could be said to include an advance within a statutory field of technology. Conversely, if the invention defined by the statutory elements was either obvious or anticipated, then the advance contained in the hybrid invention, if indeed there was one, would be non-statutory.

Our hypothetical invention, \textit{AB}, would therefore be handled under \textit{Flook} in the following manner. First, it would be stripped of the non-statutory data, \textit{B}. Obviously, this would leave only the statutory storage medium, \textit{A}. Our invention would thereafter be classified as statutory subject matter only if the part of the claim reciting the storage medium presented details that were novel and non-obvious over the prior art. Since in the situation we have posited the storage medium is conventional, the details of element \textit{A} would not be non-obvious; rather, they would be anticipated. Thus, \textit{Flook} would categorize our hybrid invention \textit{AB} as non-statutory subject matter.

The test laid out in \textit{Flook} dealt with several issues successfully. First, it consisted of a series of discrete, easily applied steps. In this way the Supreme Court's treatment was basically similar to both of the approaches that preceded it. The Court apparently agreed that the nature of the PTO's examination task required the law to be formulated in a way that could be delegated to the agency's corps of examiners unambiguously.

Second, the test was determinate in all cases. By incorporating the first several steps of the agency's blue-pencil rule, the Court's test in \textit{Flook} shared that rule's important advantage over the point-of-novelty approach.

\textsuperscript{115} Id. at 592-93.
Third, the test corrected the apparent problem with the blue-pencil rule: it effectively prevented the incentives of the patent system from affecting developmental efforts in non-statutory fields of technology. By requiring the statutory portion of the hybrid invention to be a patentable advance in and of itself, the test made sure that the non-statutory portion was essentially extraneous. For the invention ABCD to be statutory under *Flook*, for example, the broader, sub-combination ABC would have to patentable when considered alone. It was as though the applicant's addition of the further element *D* did nothing more than narrow the claim gratuitously.\(^\text{116}\) In this sense, the test shielded the subject matters meant to be outside the purview of the patent system.\(^\text{117}\) This analysis was not greeted entirely with open arms.\(^\text{118}\) The better view, however, is probably to include the non-statutory elements in the prior art, for the policy reasons stated in the text, as well as the efficiency grounds argued in, e.g., Klein, *Reinventing the Examination Process for Patenting Applications Covering Software-Related Inventions*, 13 *John Marshall J. Computer & Info. L.* 231 (1995).

But the Court's test in *Flook* was not without flaws. In particular, the test suffered from one of the basic difficulties of the point-of-novelty approach: it could not be applied without first ascertaining the relationship between the claimed invention and the whole body of prior knowledge that preceded it.\(^\text{119}\) As with that earlier approach, this need conflicted with the outlines of the statutory subject matter provision generally. That provision is not concerned with the level of advance that an invention represents; instead, it is only concerned with whether the invention resides in a statutory field of endeavor.

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\(^{116}\) *E.g.*, Witek, supra note 98, at 374 ("[W]hy would anyone bother to limit the already novel hardware with unneeded software limitations that would be given no patentable merit in the PTO but would be construed as limitations to infringement by the courts?").

\(^{117}\) In fact, the test laid out in *Flook* provided a good deal more protection than this. According to the opinion, the non-statutory portions of the claimed invention were to be considered part of the prior art regardless of whether those portions were known "at the time the invention was made"—the date set out in § 103—or even whether they were the product of *Flook*'s own work. *Flook*, 437 U.S. at 591-92, 595 n.18. By doing so, the Court in *Flook* meant to preserve the public-domain status of the information contained in the non-statutory claim elements. Non-statutory information is part of society's common stock of knowledge; assuming that it is always part of the prior art would result in the public being free to use the information in the manner normally associated with public-domain material.


\(^{119}\) Simenauer, supra note 118, at 91. Simenauer notes the similarity between the Court's approach in *Flook* and the point-of-novelty approach. *Id.* *See discussion supra* notes 62-67 and accompanying text.
In fact, the Court's test in *Flook* took this flaw to a new, higher level. The test did not seek merely to find a point of novelty. Rather, it required a full-blown determination of whether the statutory portion of the invention met the standards of §§ 102 and 103 in their entirety. As a result, application of the Court's test in *Flook* made examination under these two Sections essentially redundant over the determination of statutory subject matter.

For some members of the Court, this difficulty was simply too much to accept. Three justices dissented from the majority, asserting that the opinion dealt a "damaging blow a basic principles of patent law by importing into [the] inquiry under 35 U.S.C. § 101 the criteria of novelty and inventiveness." 120 "It may well be," the dissent continued, "that under the criteria of §§102 and 103 no patent should issue on the process claimed in this case." 121 But "Section 101 is concerned only with subject-matter patentability." According to the dissenters, "the claimed process clearly meets the standards of subject matter patentability of Section 101." 122

D. THE SUPREME COURT SIGNS ON: *DIAMOND v. DIEHR*

The patent law community gave the Supreme Court's decision in *Flook* a reception that was distinctly lukewarm. Commentators found it difficult to agree on precisely what the decision meant. 123 The lower court to whom the decision was addressed, the Court of Customs and Patent Appeals, was initially reluctant to accept *Flook*, and then became openly and brazenly critical. 124

In all, therefore, it is at least fair to say that the analysis in *Flook* failed to take root. Rather, the CCPA continued to develop the PTO's blue-pencil rule. In particular, the lower court continued to address whether the statutory portion of the hybrid claim was significant enough to impart statutory status to the entire invention. 125 It was as though the court was determined to ignore *Flook* as much as possible.

Less than two years into this rebellious environment the Supreme Court decided to take another case that involved hybrid claiming. That

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120. *Flook*, 437 U.S. at 600 (noting that the dissent was authored by Justice Stewart and the opinion was joined by Chief Justice Burger and Justice Rehnquist).
121. Id.
122. Id.
125. E.g., *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982).
decision, *Diamond v. Diehr*,\(^{126}\) addressed an improved method for curing rubber which, according to the Court, “includes in several of its steps the use of a mathematical formula.” The formula calculated the time that the rubber should undergo curing in a heated molding press.\(^{127}\)

The claims at issue in *Diehr* were thus very similar to those that had been at issue in *Flook*. All Diehr’s claims, in fact, could be represented in the same form ABC, where A refers to the statutory steps of data gathering, B the non-statutory calculation, and C the statutory steps of using the calculated parameter—in Diehr’s case the proper curing interval.\(^{128}\)

This time, however, the Court was of a different mind. Now, the dissenters in *Flook* were joined by two of their brethren to form the bare majority of a 5-4 decision.\(^{129}\) According to that new majority, Diehr’s claims should be categorized as within a statutory field of technology.

> [W]e think that a physical and chemical process for molding precision synthetic rubber products falls within the § 101 categories of possibly patentable subject matter. . . . Industrial processes such as this are the types which have historically been eligible to receive the protection of our patent laws.\(^{130}\)

Gone in *Diehr* was the elaborate conceptual structure of *Flook* for determining whether the statutory elements of the invention presented a patentable advance over the art. The mathematical equation “is not patentable in isolation,” the Court admitted, “but when a process for curing rubber is devised which incorporates in it a more efficient solution of the equation, that process is at the least not barred at the threshold by §101.”\(^{131}\) Thus, no inquiry into the prior art is required at all. “The ‘novelty’ of any element or steps in a process, or even of the process itself is of no relevance in determining whether the subject matter of a claim falls within the §101 categories of possibly patentable subject matter.”\(^{132}\)

The procedure set out in *Diehr* thus differed substantially from that in *Flook*. Both decisions operated at the outset by categorizing the individual elements of the claim.\(^{133}\) But instead of scrutinizing the merits of any statutory elements that might be found, *Diehr* called for simply not-

\(^{127}\) Id. at 177-80.
\(^{128}\) Id. at 180-81.
\(^{129}\) Id. at 175. The majority in *Diehr* consisted of Justice Rehnquist, who authored the opinion, Chief Justice Burger, and Justices Stewart, White, and Powell. The minority opinion was authored by Justice Stevens, and was joined by Justices Brennan, Marshall, and Blackmun.
\(^{130}\) Id. at 184.
\(^{131}\) Id. at 188.
\(^{132}\) Id. at 188-89.
ing that the statutory elements were present. The presence of such stat-
utory elements, the Court reasoned, indicated that the claimed invention fell within the statutory fields of technology that § 101 broadly de-

The Supreme Court’s opinion in Diehr is therefore relevant to the present discussion in at least two ways. First, the opinion in Diehr to no small degree overrules that in Flook. The central point in Flook was that categorizing hybrid inventions should include consideration of novelty and non-obviousness. The dissenting Justices in Flook had taken great issue with that holding at the time; they were decidedly of the same opinion when members of the majority in Diehr. The majority opinion in Diehr expressly states at several point’s questions of novelty and obviousness are not part of the deciding process that is to be employed. It is clear that the Court meant the statutory subject-matter requirement of § 101 to be a low hurdle to patentability for hybrid inventions, similar to its role for invention of a “purely” statutory character.

This first point did not escape Diehr’s four dissenting Justices, who had been part of the majority in Flook. Despite the Diehr majority’s attempt to harmonize the two decisions, to these four Justices their inconsistencies were “manifest[].” In all, the plainly better approach for us, in analyzing the present status of the law, is to consider Diehr as overruling Flook sub silentio.

Second, a careful reading of Diehr shows that the Supreme Court in that opinion substantially adopted the blue-pencil rule. Stripped to its essentials, the process that the Court employed involved categorizing the individual elements of Diehr’s claim as either statutory or non-statutory, and then relying on the fact that at least some statutory elements were present to hold that the invention was statutory in its entirety. This is indeed the same process that the PTO had employed for some time, and which had found favor in the agency’s reviewing court.

134. E.g., Diehr, 450 U.S. at 191.
135. Id. at 188.
136. Id. at 188-89, 193 n.15.
137. Id. at 188-91.
138. Id. at 210.
140. E.g., Brian R. Yoshida, Claiming Electronic and Software Technologies: The Effect of the Federal Circuit Decisions in Alappat, Warmerdam, and Lowry on the Claiming of
E. Living With the Blue Pencil Rule

The Supreme Court's decision in Diehr brings our review of the law concerning hybrid inventions essentially up to date. At present, the categorization of hybrid inventions is determined according to the PTO's blue-pencil rule. Thus, stated very generally, the presence of any statutory element in a hybrid claim will result in the claim being determined statutory subject matter.141 Our claimed invention, AB, is very likely to pass muster under § 101.

But, at the same time, the fundamental problems of the blue-pencil rule remain. Clearly, that rule results in the statutory subject matter provision being essentially no restriction at all. In particular, it leaves the door potentially wide open those who would use the patent system to obtain rights over advances in non-statutory fields of activity. In essence, the tension between the competing policies is still unresolved. These assertions about the current state of affairs can be proven by examining In re Alappat,142 an en banc decision that the United States Court of Appeals for the Federal Circuit. The Alappat decision dealt with oscilloscope displays. Specifically, the invention at issue was a means of smoothing, or "rasterizing," a wave form displayed via the individual pixels of the oscilloscope's cathode ray tube. Essentially, the invention varied the brightness of the pixels along the path of the wave form via a mathematical formula, to adjust for inaccuracies in the display.143 The claim in Alappat recited the invention a series of circuit elements, one of which executed the mathematical formula.144

The judges of the Federal Circuit split over whether this claim presented statutory subject matter.145 A majority held firm to the views of the Supreme Court in Diehr, and focused on the presence of claim elements drawn to physical structure.146 As a result, they stated, the claim "defines a combination of elements constituting a machine."147 The crux of the majority's reasoning, in fact, is displayed in the following passage:


141. See generally Witek, supra note 98, at 369-79; Gable, supra note 98, at 132-33.
142. In re Warmerdam, 33 F.3d 1354 (Fed. Cir. 1994). For allegations that the current case law follows Diehr, E.g., Yoshida, supra note 140, at 480; Minsk, supra note 40, at 251.
143. In re Alappat, 33 F.3d 1526, 1537-38 (Fed. Cir. 1994).
144. Id. at 1538-39.
145. The portion of the majority opinion in Alappat dealing with the merits of the § 101 rejection was written by Judge Rich, and joined by Judges Newman, Lourie, Michel, Plager and Rader. Chief Judge Archer filed a dissent on the merits, which was joined by Judge Nies. The remaining judges did not participate on this issue. Judges Newman and Rader filed additional, concurring opinions.
146. Warmerdam, 33 F.3d at 1536.
147. Id. at 1543-44.
[I]t is irrelevant that a claim may contain, as a part of the whole, subject matter that would not be patentable by itself. "A claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula . . ."\textsuperscript{148}

The majority thus applied the blue-pencil rule; the presence of statutory elements in the claim caused the invention to be classified as statutory.\textsuperscript{149}

Two dissenting judges, in contrast, focused on the traditional weaknesses of the blue-pencil rule.\textsuperscript{150} They noted that the overall intention of § 101 is to keep non-statutory fields of activity free from the influence of the patent system.\textsuperscript{151} The majority's approach was wrong, in their view, because it would permit the grant of patents, over hybrid inventions, whose "practical effect" would be the extension of patent protection to non-statutory fields of endeavor.\textsuperscript{152} The only solution, they felt, was to hold statutory only those claims where the invention or discovery "reside[s] in a practical application."\textsuperscript{153}

The dilemma facing the law in this area can now be summarized fairly briefly. From the various recent court decisions it is clear that hybrid inventions will be categorized as either statutory or non-statutory according to the blue-pencil rule. The dissents in \textit{Diehr} and \textit{Alappat} prove that the weaknesses in the blue-pencil rule are known, that they are formidable, that they are nevertheless insufficient to compel the law to change. Thus, we are stuck with the blue-pencil rule for the foreseeable future.

What can be done? Can we suggest ways for the case law to improve? The answer is probably "yes." First, it is clear that the blue-pencil rule must be refined to the point where it prevents applicants from obtaining effective patent protection over non-statutory advances. One cannot patent data, for example; it is therefore beyond peradventure that our hypothetical invention, AB, must not be open to patenting if the advance resides in the new data, B, alone.

Second, it is also clear that these refinements must be implemented through precise, determinate rules. The same policy considerations that drove the selection of a rule-based structure in \textit{Abrams} continue to be overriding today: the process of deciding whether an invention is statutory subject matter must be bounded; the system cannot survive if sev-

\textsuperscript{148} Id. at 1544.
\textsuperscript{149} For the proposition that \textit{Alappat} and \textit{Diehr} employ the same analysis, e.g., Nellie A. Fisher, The Patent Eligibility of Computer Implemented Processes in the Wake of In re \textit{Alappat}: The Diehr Standard Resurrected, 32 Hous. L. Rev. 517 (1995).
\textsuperscript{150} Warmerdam, 33 F.3d at 1545.
\textsuperscript{151} Id. at 1552-54.
\textsuperscript{152} Id. at 1554.
\textsuperscript{153} Id. at 1553.
eral thousand patent examiners—and several dozen different panel configurations of the Federal Circuit—are each empowered to act according to their own subjective views of what justice and the equities of the patent system require.

Fortunately, we already have a likely source for such refinements: once again, it is the internal practice of the PTO's examining corps. It is a familiar doctrine of Administrative Law that agencies must make law; new disputes, which make the creation of new law necessary, come before the agencies first; thus, agencies must act at times without the express guidance of either Congress or the Courts.154

So it has been also with the need to refine the blue-pencil rule. Largely without guidance or comment from the courts, the agency has long used a particular set of rules for giving the blue-pencil rule proper effect. But that set of rules does not deal with the subject-matter restrictions of § 101 directly; instead, it deals with how the examination of hybrid claims should proceed forward, through the questions of anticipation and obviousness in § 102 and § 103, respectively. Specifically, the agency's personnel have long refused to consider the non-statutory elements of the claimed invention when determining whether the invention is an advance over the art.155 It is as though, once the non-statutory elements have been blue-penciled out of the claim, they remain absent for the entire examination process.

We can highlight the operation of these rules by seeing how they would apply to our hypothetical invention of a stored data structure, AB. As we have already discussed, the portion of the blue-pencil rule dealt with in cases such as Diehr would result in the non-statutory data, B, being conceptually removed from the claim. The fact that the storage medium, A, remains after this process will result in the claim being treated as a statutory invention. To paraphrase the majority opinion in Alappat, our claim would be held to define a "combination of elements constituting a machine" for storing data. This would end the examination of the claim under the statutory subject matter provisions of § 101.

At this point our invention would next be examined under the other statutory tests for patentability, including anticipation and obviousness. But these tests would not be applied to the claimed combination, AB. Instead, the agency would test the combination of statutory elements only. In our case, this would be the storage media, A, alone. We have already posited that the storage media is conventional. As a consequence, patent rights over our invention would be denied; the invention would be held either anticipated under § 102 or obvious under § 103.

155. See cases cited infra note 160.
We should pause here to note that the existence of this agency practice has been very hard for outsiders to discern over the years. The agency's policy statements, for example, have typically avoided discussing how hybrid inventions are to be examined under § 102 and § 103.156 Discussions of practice in the literature are virtually non-existent.157 The case law has additionally been unhelpful.158

One important reason for these failings is the procedural posture of the disputes that have been treated in the "lead" cases. A large majority of the disputes involving hybrid inventions have arisen in the context of rejections posed under § 101 only.159 Obviously, the adjudication of these disputes did not present an opportunity to explore the proper application of § 102 and § 103. The scant discussion in the case law has left the debate unstimulated.

Nevertheless, some evidence of the agency practice can be found in the authorities. Among the handful of cases that do deal with the issue of statutory subject matter in the context of §§ 102 and 103 most note that elements, once found non-statutory are "non-limiting," or have no "patentable weight."160 Witek briefly discusses the practical operation of the blue-pencil rule in the context of § 102 and § 103. 11 Berk. Tech.

156. E.g., Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478 (1996). See generally Tao, supra note 30, at 315-18 (“[T]he actual approach taken by the PTO examiners... may be difficult discern from these publications.”).

157. A review of the literature indicates that Simenaur and Witek are the commentators to have addressed this issue. See the authorities cited infra notes 95, 101, 149, 116-117. Klein describes a substantially similar set of procedures, but only as a hypothetical possibility for the PTO to employ. He asserts that it would take a change in practice for the agency to act as he suggests. Leslie Ann Reis, 13 J. Marshall J. Computer & Info. L. 292-93 (1995). Thus, he is apparently unaware of the examining corps' historical behavior.

158. See the authorities collected infra note 160.


E.g., Ex parte Bonne, reprinted at 54 Geo. Wash. L. Rev. 909-11 (1986); Ex parte Des Granges, 142 U.S.P.Q. (BNA) 41 (Bd. Pat. App. & Int. 1962); Ex parte Dere, 118 U.S.P.Q. (BNA) 541 (Bd. Pat. App. & Int. 1957) (citing authorities); Ex parte Gwinn, 112 U.S.P.Q. (BNA) 439 (Bd. Pat. App. & Int. 1957). See also Ex parte Carver, 227 U.S.P.Q. (BNA) 465 (Bd. Pat. App. & Int. 1985). The agency's reviewing court has generally not quarreled with use of the blue-pencil rule in the context of §§ 102 and 103. But the court opinions do not contain discussions sufficient to inspire confidence that the agency's practice was fully understood. Certainly the discussions have been insufficient to bring the practice to the attention of the majority of the patent community. E.g., In re Smith, 70 F.3d 1290 (Fed. Cir. 1995) (“no patentable weight”; In re Lowry, 32 F.3d 1579 (Fed. Cir. 1994) (patentable weight); In re Gulack, 703 F.2d 1381 (Fed. Cir. 1983); In re Miller, 418 F.2d 1392 (C.C.P.A. 1969). Earlier cases, using somewhat different language but to the same effect, include Conover v. Coe, 69 App. D.C. 144 (1938); In re Graf, 87 F.2d 218 (C.C.P.A. 1937); In re Scott, 76 F.2d 136 (C.C.P.A. 1935); In re Sterling, 70 F.2d 910 (C.C.P.A. 1934); In re Reeves, 62 F.2d 199 (C.C.P.A. 1932).
L.J. at 409-10. Simenauer describes a procedure that probably has the same effect. 54 GEO. WASH. L. REV. at 897-909. Clearly, these terms flag the courts' use of the PTO's blue-pencil rule. Indeed, the decision in Durden, which applied the blue-pencil rule in its traditional, cross-category context, was itself an adjudication of patentability under § 102 and § 103.161

The first important step in refining the treatment of hybrid claims may therefore be as simple as stating, and then accepting, the practice that the agency has traditionally employed. Taking such a step would have much to recommend it. The resulting law would be highly rule-based, and thus would provide consistency and predictability. The law would also be highly determinate; by applying the existing standards of § 102 and § 103, in fact, the question of whether a hybrid invention is novel and non-obvious would be equally determinate as that question is when applied to conventional, non-hybrid inventions. And use of the familiar, time-tested body of law under § 102 and § 103 would likely be a task that the agency and the courts could execute confidently.

Indeed, ignoring the non-statutory elements of hybrid inventions during examination under § 102 and § 103 would reconcile the various judicial views that surfaced in Flook, Diehr, and Alappat. Under such a practice, the statutory subject matter provision of § 101 would continue to present only a low hurdle to patentability. This would be consistent with the admonishment in both Diehr and Alappat that "[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because" it further includes one or more non-statutory elements.162

Yet at the same time, the practice would also address the concerns of the current minority. By looking to the statutory elements of the claim only, examination under the agency's refined practice focuses on the merits of the invention's statutory portion. A hybrid invention thus would not be novel and non-obvious unless the statutory portion is patentable in and of itself. The agency’s refined practice therefore effectively prevents patent rights from issuing on inventions whose real advance is solely in a non-statutory field of endeavor. The procedure set out in Flook essentially applied all the requirements of patentability, including those of § 102 and § 103, within the analysis of statutory subject matter. Using the blue-pencil rule throughout the substantive examination of hybrid inventions accomplishes essentially the same result, but through a procedure that delays measuring the statutory portion of the invention against the art until the issue is addressed under § 102 and § 103. The agency’s refined practice thus respects the compartmental-

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162. Diehr, 450 U.S. at 187; Alappat, 33 F.3d at 1543-44.
ized nature of the patent statute that was so important to the majority in *Diehr*.

It appears, in fact, that the majority in *Diehr* foresaw the rise of just this sort of refinement. In describing its action, the majority took pains to note that it was addressing only a question preliminary to the determination of patentability in relation to the art. As a consequence, it repeatedly described itself as holding merely that Diehr's hybrid invention was within a statutory category of "possibly" patentable inventions. Clearly, the majority contemplated further tests of patentability, under § 102 and § 103, that Diehr's invention would not necessarily survive.

Finally, expressly articulating the agency's refinements to the blue pencil rule will likely cause the process of analyzing hybrid inventions to be viewed with much greater rigor. We will gain, for example, a much more accurate appreciation of how the holdings in *Diehr* and *Alappat* are limited: the decisions merely state that the hybrid inventions at issue were statutory; they do not state that the inventions were also patentable over the art. Once we have worked the blue-pencil rule through to its completion, we will also be able to dwell specifically on the earlier, more fundamental task of categorizing an invention's individual elements as either statutory or not. Perhaps, on this narrower question, we may find some way to agree.

The speed with which the case law will adopt the PTO's refinements to the blue-pencil rule is of course open to some question. Certainly it would be helpful for the agency to describe its practice expressly. But in addition, adoption of the practice will require the law to become comfortable with certain concepts that are, at first, jarring. The law will have to approve openly, for example, of ignoring some portions of the applicant's patent claim. In the process, will likely need to discard at least part of the gloss that § 103's reference to the invention "as a whole" has acquired over time.

But it is very likely that the law will in the end find it necessary to adopt the agency's refinements. Almost certainly, the law will conclude

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164. *Id.* at 190, 191.

165. *E.g.*, *id.* at 191 ("[I]t may later be determined that the respondent's process is not deserving of patent protection because it fails to satisfy the statutory conditions [novelty under section 102 or nonobviousness under section 103].") *See also* Gibby, *supra* note 3, at 351-55.

166. *See* discussion *supra* notes 30-32 and accompanying text.


that it patent rights over hybrid inventions, $AB$, must be denied where the advance resides solely in the non-statutory element $B$. By adopting the blue-pencil rule's first part, the law has guaranteed that the statutory subject matter provision of § 101 will not be enough to guarantee this result. Only adopting the rule in its entirety will result in a body of law that implements adequately the underlying policy judgments of the patent law.

IV. CONCLUSION

The case law authorities decided over the years demonstrate that the PTO's examining corps has developed a workable, rule-oriented system for judging the patentability of hybrid inventions. The law would improve substantially if this practice were documented and expressly approved by the agency's reviewing court.