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THE JURY'S ROLE IN DETERMINING KEY ISSUES IN PATENT CASES: MARKMAN, HILTON DAVIS AND BEYOND

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I. Introduction

Trials involving patents historically could occur at law or in equity. A patent holder could bring an action for damages at law, or sue for an injunction and recovery of the profits of the infringer. n1 In the first patent statute passed by Congress, provision was made for actions for infringement of patents and specific reference was made to damage awards by juries. n2 Injunctions against patent infringement originally could be obtained in state courts with equity jurisdiction, n3 or in federal courts when diversity existed. n4

Congress expressly conferred federal equity jurisdiction in patent cases on the federal trial courts with the Patent Act of 1819. n5 The Patent Act of 1870 permitted federal courts to award damages in equity in addition to the profits of the infringer, n6 and an 1875 amendment

[*208] permitted courts sitting in equity to use advisory jury verdicts at the court's discretion. n7

The Seventh Amendment to the Constitution preserves the basic right of trial by jury n8 "in suits at Common Law where the value in controversy exceeds twenty dollars." n9 This right as applied to issues of patent infringement and compensatory damages is well established. It is also well established that there is no right to a jury trial in suits for injunctions, or on the defense of inequitable conduct; nor was there a right to a jury trial on the pre-1946 equitable remedy by which a patent holder could recover the apportioned profits of an infringer. Such issues fell easily on opposite sides of the well established fault line distinguishing suits at common law from suits in equity.

Until recently, declining demands for jury trials in patent cases decreased the importance of determining the jury's role in the decision of other key issues. For example, in 1961, no patent cases were tried to juries. n10 Ten years later the situation was virtually the same. n11 At that time, the absence of juries in patent trials was a factor in the Supreme Court's unanimous holding that a prior judgment of patent invalidity was res judicata in a later suit against another infringer even though a judgment upholding the patent would not have been res judicata. n12

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Since 1971, however, the number of patent cases tried to juries has sharply increased. By 1981, juries were used in about 21 percent of patent cases. By 1994, this percentage had risen to 70 percent. n13 This "dramatic increase" generated concern that juries were being used to "avoid the substantive merits of a patent dispute." n14

The creation in 1982 of the United States Court of Appeals for the Federal Circuit ("Federal Circuit") has contributed to the recent increase in the use of juries. The Federal Circuit has exclusive appellate jurisdiction over patent appeals, subject only to discretionary review by the Supreme Court. n15 The more limited appellate review of jury verdicts (for error in instructions and substantial evidence to sustain the verdict) than occurs in review of judicial findings of fact (where the standard is clear error) has increased the consequences of expansion of the jury's role in determining issues in patent cases. Patent lawyers have perceived both juries, n16 and the Federal Circuit n17 to be pro-patent. Such perceptions naturally influence patent holders to demand juries whenever possible.

Jury verdicts are less specific than judicial findings, less susceptible to review for consistency, uniformity or correctness and less predictable than the results of bench trials. Consequently, the increased use of juries and their expanded role in patent trials have clashed with a fundamental premise found in the legislation creating the Federal Circuit. The House

[*210] Report on the bill that created the Federal Circuit predicted that it would "provide nationwide uniformity in patent law, will make the rules applied in patent litigation more predictable and will eliminate the expensive, time-consuming and unseemly forum shopping that characterizes litigation in the field." n18 The Senate Report predicted the court would "increase doctrinal stability." n19 If, however, the application of basic doctrines of patent law are subsumed within jury verdicts, particularly general verdicts, uniformity, predictability and doctrinal stability could easily become hollow shells within which juries could do as they wished with the court of appeals hamstrung by its limited review function.

This article examines the jury's role in patent claim interpretation, application of the doctrine of equivalents and determinations of nonobviousness, enablement, inequitable conduct and willful infringement.

The first two issues in particular have prompted sharp division among the judges of the Federal Circuit. For example, in *Markman v. Westview Instruments, Inc.*, n20 Judge Mayer, dissenting on the jury's role in interpreting patents, stated that the majority meant to banish the jury from patent litigation, n21 and in *Hilton Davis Chemical Co. v. Warner Jenkinson Co. Inc.*, n22 the dissenting judges stated that the majority was giving unbridled discretion to the judges. n23 The sharp divergence of opinion illustrates how characterizations n24 can blur analysis or dictate conclusions. n25

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In the past two years, the Supreme Court has granted certiorari in four patent cases involving jury questions. The first, *In Re Lockwood*, was subsequently dismissed as moot. ⁿ²⁶ There, the Federal Circuit had held there was a constitutional right to a jury trial on the issue of patent validity in a counterclaim for declaratory relief even after summary

[*212] judgment of no infringement had been granted. n27 In the second case, Markman v. Westview Instruments, the Supreme Court held "judges, not juries, are better suited to find the acquired meaning of patent terms." n28 The Supreme Court also granted a writ of certiorari in Hilton Davis Chemical Co. v. Eerner Jenkinson Co. Inc. n29 That case has recently been decided and is discussed in a brief postscript at the end of this article. Certiorari was also granted in U.S. Surgical Corp. v. Ethicon, Inc.; the judgment was vacated and remanded to the Federal Circuit "for further consideration in light of Markman v. Westview Instruments" decision. n30

II. The Background, Meaning and Consequences of the Markman Decision

To determine the scope of patent claims, one must look to the boundaries set by the literal terms of the claims and then, if appropriate, examine any equivalents of those terms. In both parts of the analysis, the fundamental reference point is the abstraction known as "the person of ordinary skill in the art." It would be chaotic if a judge and jury were to apply different levels of ordinary skill. The Supreme Court's holding in Markman that judges, not juries, interpret patents provides a strong argument for requiring that the level of "ordinary skill" be similarly decided by the trial court, and that the level so established should prevail throughout the remainder of the litigation.

Interpretation of a patent is guided by the statutory command that the associated specification must clearly describe the invention and conclude with distinct claims. n31 In Graham v. John Deere Co., the Court held that:

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[i]t is, of course, well settled that an invention is construed not only in the light of the claims, but also with reference to the file wrapper or prosecution history in the Patent Office. Claims as allowed must be read and interpreted with reference to rejected ones and to the state of the prior art; and claims that have been narrowed in order to obtain the issuance of a patent by distinguishing the prior art cannot be sustained to cover that which was previously by limitation eliminated from the patent. n32

It is proposed here that the question of who interprets patents was resolved a century ago in *Coupe v. Royer* where the Court held that judges, not juries, interpret patents. n33 The quoted commentator whose reasoning the Court relied on, Professor Robinson, had elaborated on the reasons for the rule. n34

The Federal Circuit followed the *Coupe* rule starting with a trio of opinions in 1983 and continuing until recently. n35

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Although no Federal Circuit cases have held that interpretation of patent claims by a jury is mandated by the Seventh Amendment or case law, it has been held that summary judgment might be inappropriate where extrinsic evidence should be admitted, n36 and that parties may agree to submit the issue of patent interpretation to the jury. n37 In another decision a Federal Circuit Panel stated that when extrinsic evidence is needed to determine the meaning of a term in a claim, the construction of the claim may be left to a jury. n38

These Federal Circuit decisions influenced some trial courts to accept the proposition that if the interpretation of a patent involved a materially disputed question of fact, the jury should be asked to interpret the patent. For example, such instructions were given in *Alpex v. Nintendo* where a judgment for over \$ 250 million in royalties for patent infringement depended crucially upon the jury interpretation of the patent n39 and *Litton Systems, Inc. v. Honeywell*, where on appeal, the jury verdicts were reinstated. n40

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Before the en banc opinion of the Federal Circuit in *Markman v. Westview Instruments, Inc.*,⁴¹ there was a tendency in the courts to let juries interpret patents. In *Markman*, the trial court granted the alleged infringer's motion for a judgment notwithstanding the verdict based on its own interpretation of the patent and the Federal Circuit affirmed.⁴² The Federal Circuit rejected arguments that claim interpretation was a question of fact,⁴³ stated that the court was following Supreme Court cases which had "repeatedly held that the construction of a patent claim is a matter of law exclusively for the court,"⁴⁴ and clarified the trial court's

[*216] responsibilities. n45 The court focused "on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean." n46 Referring to the requirements of clarity imposed by 35 U.S.C.

112, the court stated that the "statutory language has as its purpose the avoidance of the kind of ambiguity that allows introduction of extrinsic evidence in the contract law analogy." n47 The majority opinion for eight judges was written by Chief Judge Archer. n48

In addition to their reliance on the Seventh Amendment, n49 Judge Newman, dissenting, and Judge Mayer, concurring in the judgment on the question of non-infringement, argued n50 that the authority of *Coupe v.*

[*217] Royer n51 had been limited by Silsby v. Foote, n52 Bischoff v. Wethered, n53 Tucker v. Spalding n54 and Singer Mfg. Co. v. Cramer. n55 All except Singer were decided long before Coupe.

The dissent's reliance on Silsby was misplaced. There, the court had held that "construction of the claim was undoubtedly for the court." n56

While Silsby also held that "the application of the claim" was left to the jury, n57 in the context of the case "application" referred to a specific condition allowed at the time but no longer allowed by reason of the "distinctly claiming" allegations of the 1870 statute. n58 Silsby was not regarded either by Professor Robinson or the Coupe Court as being inconsistent with the Coupe rule; nor was Bischoff v. Wethered, in which the Court commented that "[i]t is not the construction of the instrument, but the character of the thing invented," n59 or Tucker v. Spalding, which involved validity not interpretation. n60 Silsby had been decided 42 years, Bischoff 26 years and Tucker 23 years before Coupe, and it was a strained argument that the cases were inconsistent with the Coupe rule.

[*218] Additionally, Singer merely held that infringement could be decided as a question of law because the facts were clear n61 and is consistent with Coupe. n62 The Federal Circuit majority in Markman seems to have had by far the better part of the argument.

In any event, the Supreme Court's unanimous affirmance in Markman vindicated the majority opinion below. The Supreme Court held "that the construction of a patent, including terms of art within its claim, is exclusively within the province of the court." n63

The Court rejected arguments for jury interpretation of patents based on (1) the Seventh Amendment; n64 (2) the Bischoff and Tucker cases; n65 (3) characterization of the issue as factual; n66 and (4) the concept that meanings peculiar to a trade or profession had to be decided by a jury. n67

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The Court declared a number of fundamental principles, stating that the "limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject will be ultimately dedicated to the public." n68 The Court noted the perils of a "zone of uncertainty," n69 the risk of depriving the public of rights supposed to belong to it, without being clearly told of the limits of those rights, n70 and the need for uniformity recognized by Congress in the creation of the Court of Appeals for the Federal Circuit. n71

III. The Background And Anticipated Consequences of Hilton Davis and the Doctrine of Equivalent

In analyzing any patent's scope, one must distinguish between statutory equivalents and the doctrine of equivalents. The sixth paragraph of 35 U.S.C.

112 regarding statutory equivalents was added to the 1952 Patent Statute to reverse the Supreme Court's decision in *Halliburton v. Walker*. n72 The amendment provides that if an element in a combination

[*220] claim is expressed as a means for performing a specified function, it "shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." n73

Section 112 equivalents involve a legal determination which is "not devoid of equitable considerations." n74 In the *Valmont Industries* case, the Federal Circuit held that "a court must construe the functional claim language 'to cover the corresponding structure, material, or acts described in the specifications and equivalents thereof.'" n75 *Valmont* declared that the sixth paragraph of section 112 "limits the broad language of means-plus-function limitations in combination claims to equivalents of the structures, materials, or acts in the specifications," n76 and contrasted it with the judicial doctrine of equivalents which "equitably expands exclusive patent rights." n77

The judicial doctrine of equivalents, developed long before 35 U.S.C.

112 was amended in 1952, expands a patent holder's right to exclude beyond the literal terms of the claims of a patent. Equivalents are said to cover products or processes which perform substantially the same function in substantially the same way to obtain the same result.

There is also a concomitant doctrine of "reverse equivalents" under which the literal claims of the patent will be held not to cover products or processes which, although within the terms of the claims and performing the same or a similar function to that of the patented article, do so in a substantially different way. n78

Patent specifications should give the public the full benefit of a patentee's discovery and "guard against prejudice or injury [to the public] from the use of an invention which a party might otherwise innocently suppose not to be patented." n79 As a leading text points out, there is a "tension between the [judicial] doctrine of [equivalents] and the fundamental notion that the claim measures the scope of the patent monopoly." n80

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The doctrine of equivalents was declared by the Supreme Court in *Winans v. Denmead*,⁸¹ decided after the Patent Act of 1836, but before the Patent Act of 1870. There the Court held that patents were not issued "for a change of form" but for "a new mode of operation."⁸² Recognizing that a patentee may restrict his claims to less than what he invented, or limit his invention to a particular form of machine, the Supreme Court nevertheless held that the trial court's interpretation of that patent should not be adopted "if [the patent] can fairly be construed otherwise."⁸³ Express declarations that the claim extends to "the thing patented, however its form or proportions may be varied" were unnecessary because the law implied such rights.⁸⁴

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The premise of *Winans* was that a patentee was considered to have claimed every possible form of his invention that might be copied unless there was evidence of some intention to disclaim some of those forms. This proposition, however, was weakened 25 years later by *Keystone Bridge Co. v. Phoenix Iron Co.* n85 There the Court concluded that Congress passed the specification requirement to relieve courts of ascertaining the exact boundaries of the invention, and to the extent that the invention was broader than the claim, the excess was surrendered to the public. n86 Nevertheless, in the same year the Court restated the doctrine of equivalents as follows in the case of *Machine Co. v. Murphy*:

Authorities concur that the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself; so that if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape. n87

This case involved a patent issued in 1859, before the 1870 amendments, and therefore was not necessarily authority for the continuation of the doctrine of equivalents after those amendments. *Water Meter Co. v. Desper*, however, involved a patent issued shortly after the Act of July 8, 1870, and held that all parts or elements of a claimed combination were material in order to show infringement. n88 If any part or element were omitted, the court would decide whether the omission was "supplied by some other device or instrumentality which is its equivalent." n89

In *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, the Court held that the doctrine of equivalents applied to all patents, not just pioneer patents, although there might be different ranges of equivalents

[*223] depending on the breadth of the particular claim. n90 In *Sanitary Refrig. Co. v. Winters*, the Court referred to the statement of the doctrine of equivalents in *Machine Co. v. Murphy*, n91 and added that:

even where, in view of the state of the art, the invention must be restricted to the form shown and described by the patentee and cannot be extended to embrace a new form which is a substantial departure therefrom, it is nevertheless infringed by a device in which there is no substantial departure from the description in the patent, but a mere colorable departure therefrom. n92

Judicial expositions of equivalents have not been models of definitional clarity, n93 and have been characterized in contradictory terms by the Supreme Court.

In *Exhibit Supply Co. v. Ace Patent Corp.*, the Court referred to the application of the doctrine of equivalents as a question "of construction of the claim." n94 Taken literally, and following the reasoning of *Markman*, the construction of claims, and consequently of equivalents, would be for a judge not for a jury.

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In *Graver Mfg. Co. v. Linde* ("Graver II"), however, the Court referred to "equivalence" as a "determination of fact." n95 One might conclude that the Court meant that questions of equivalents were for the jury. This conclusion requires an assumption that the Court first meant to characterize the determination of equivalents as one of fact, and second, implicitly to hold that materially disputed questions of fact in patent cases are always jury questions. Neither conclusion is a necessary one, for, as will be seen the Court in *Graver II* was not even confronted with the issue of determining equivalents. n96 Further, *Markman* has again made it clear that the fact/law characterization of an issue may not be the decisive reason for deciding which issues are to be decided by juries.

In addition to the varying characterizations of the equivalents issue as "construction of the claim" and "a determination of fact," and the fact/law dichotomy, some Federal Circuit opinions prior to *Hilton Davis*, including those authored by members of the majority in *Hilton Davis*, referred to the doctrine of equivalents as an equitable one. n97 Characterizations aside, the law precludes equivalents which have been surrendered or abandoned during patent prosecution, or those otherwise covered by prosecution history estoppel. n98 The doctrine of equivalents does not "erase a plethora of meaningful structural and functional limitations of the claim on which the public is entitled to rely in avoiding infringement." n99

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The en banc rulings of the Federal Circuit in *Markman* that interpretation is an issue for the trial judge not the jury, and in *Hilton Davis* that the doctrine of equivalents is determined by a jury create a confusing question of principles. Why should the scope of a patent under the doctrine of equivalents be determined by a different entity than the one who interprets a patent generally?

The Federal Circuit *Hilton Davis* majority opinion, having restated the doctrine of equivalents as resting on the "substantiality of the difference between the claimed and the accused products or processes, assessed according to an objective standard," n100 simply declared that "Infringement, whether literal or under the doctrine of infringements, is a question of fact." n101 The majority reasoned that holding the determination of equivalents to be a jury question was compelled by Supreme Court precedent. n102 On the other hand, in holding that equivalents did not have to have been known to be equivalents at the time the patent was issued, n103 the majority ignored Supreme Court cases holding that equivalents must have been available at the time the patent issued. The majority relied on other cases dealing with improvements patents. n104 The majority also was unpersuaded by the point made by the en banc *Markman* majority, and

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later confirmed by the Supreme Court, that not all factual determinations in patent cases at law are jury issues.

The Hilton Davis majority also rejected the dissenters' arguments that the doctrine of equivalents was an equitable remedy; that the intent of the alleged infringer was relevant; that the question was one of law for the court; and that the doctrine should be limited because of the rule against enlargement of claim scope during claim construction. n105

Judge Newman's concurring opinion, which went much further, is discussed at length because of the implications of its assertions and methodology. That opinion concededly entered "the thicket of the sociology and economics of patent law" n106 and Judge Newman recognized the "sparseness of practical study of whether and how the doctrine of equivalents affects modern industrial progress and public welfare," n107 but asserted a pro-patent point of view as a justification for her conclusions. Judge Newman stressed the ever increasing importance of the patent system, and linked the "role of patents" with "Technologic Innovation and the National Interest." n108 Conceding that the public notice aspect of the patent system was "a powerful argument for strict literal reading of claims," n109 she nevertheless concluded that the factors of technology and ease of copying favored a rule that "tempers the rigor of literalness." n110 Judge Newman commented that "it has generally been concluded that 'total welfare, but not the welfare of consumers, would be increased by making it more difficult to produce close substitutes for existing products.'" n111 Judge Newman continued, "To the extent that the doctrine of equivalents enlarges the value of the patent to the innovator it also increases the net social value, as well as serving as a risk-reducing factor in commercial investment" n112 and commented "some of the analyses

[*227] relating equivalency and scientific/technologic advance, in the context of modern innovation practices, suggest the thought that the doctrine of equivalents today serves the unexpected purpose of being the only readily available tool for application of the law to new technologies." n113 Recognizing that the doctrine of equivalents will not contribute added investment confidence to the inherently risky environment of new technology if its application is so unpredictable that it cannot be relied upon, her opinion nevertheless asserted that a competitor operating within the penumbra of the claims "may be deemed to have taken a calculated commercial risk that includes possible litigation." n114

Judge Newman's opinion represents a point of view that the public good which a patent system provides is a justification for overriding concerns of lack of sufficient public notice of patent claims and the unpredictability of the scope of patents if the determination of equivalents is left to juries. Diametrically different views were expressed in the Federal Circuit dissenting opinions in *Hilton Davis*. Judge Plager, in whose opinion Chief Judge Archer and Judges Rich and Lourie joined, argued that on appeal "we will remain as blinded as we are now in our ability to pierce the doctrinal veil." n115 Judge Lourie, in whose opinion

[*228] Judges Rich and Plager joined, after observing that the instruction given was not in accordance with the law laid down in the majority opinion, n116 agreed with Judge Plager that the court rather than the jury should apply the doctrine of equivalents, although he thought "perhaps" the jury should make special findings on each of the factors. n117 Judge Nies, with whom Chief Judge Archer concurred in part, would have held that the meaning of the words in the claim and "the scope of protection which may be given the claim beyond its words is a question of law." n118 It appears she would have further held that the only equivalents are those allowed in 35 U.S.C.

112, the statutory rule of equivalents. n119 Referring to the rights and duties in connection with reissue patents, Judge Nies stated that "Today, the doctrine of equivalents is as unfair as broadened reissues of a patent without intervening rights." n120 A historical review of precedents caused her to conclude that the principle of *Winans v. Densmead* had been changed after 1870 to require "language in the claim or at least in the specification which indicate[s] that the claim should be interpreted or construed to cover equivalents;" n121 that the equivalents must have been known at the time of the patent; and that an equivalent cannot encompass prior art. n122

Hilton Davis has been followed recently in the case of *Litton Systems, Inc. v. Honeywell Inc.* n123 There, the jury had determined that both Honeywell's hollow cathode method and its radio frequency method

[*229] had infringed the reissue patent by equivalents. n124 Although the trial court had held the reissue patent obvious, a determination reversed on appeal, it had distinguished between the two equivalents, agreeing with the jury as to the hollow cathode method but reversing as to the radio frequency method. n125 On appeal, the court upheld, by a 2-1 majority, the jury's finding of equivalents as to both methods. n126 The question was whether the hollow cathode and the radio frequency methods, were equivalents to the limitation in the reissue patent to "Kaufman-type" ion-beam sources. n127

In dissenting from the holding with respect to the radio frequency method, Judge Bryson noted that at least at the time the original patent issued in 1979, a Kaufman-type ion beam required a broad beam ion source having an anode, a hot wire, a cathode and permanent bar magnets, whereas the radio frequency method has neither anode, nor cathode and offers substantial advantages over the Kaufman type. n128 Judge Bryson found it most troubling that in the 1989 reissue patent "Litton gave up its original claims, in which it broadly claimed a method based on any 'ion beam source.' But it has now managed in effect, to regain the ceded ground through the doctrine of equivalents." n129 Judge Bryson's sounding of the same alarm n130 as the minority in Hilton Davis

[*230] demonstrates the fragility n131 of the Hilton Davis majority opinion. n132 Had Judge Bryson been sitting on the Hilton Davis court, the result in Hilton Davis might well have been an equally divided court, 6-6.

The equivalent in Hilton Davis was a dye with a different pH range to that specified in the claims of a patent for a purifying dye; in Pall it was a different chemical ratio from that specified in the claims of a patent for microfilm membranes; n133 in Litton, it was a radio frequency ion-beam different from the Kaufman type ion-beam source specified in the patent.

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As noted previously, the Federal Circuit Hilton Davis majority opinion turns on interpreting the "determination of fact" language used in *Graver II* n134 to refer to "equivalence" and concluding that fact issues must be determined by juries. Both the interpretation and the conclusion are dubious. First, *Graver II* involved a bench trial; no jury issues were raised or considered in it. Second, the trial court had held that the patented and accused welding compositions were identical in operation, produced the same kind of weld, used essentially similar mechanical methods, and the substituted element could be efficiently and effectively substituted for the element in the claim. n135 Third, the trial court decided that the substituted element was disclosed in the specification, and far from being abandoned, had been expressly included in a different claim (held invalid for overbreadth). The substituted element was held to be an equivalent under the proper construction of the words of the specification read in the light of the first application. Thus, when *Graver II* reached the Supreme Court, similarity in means, function and result of the two welding methods had been determined by the trial court, whose decision was binding unless clearly erroneous. The other question, whether the substituted element was an equivalent, had been decided by the trial court's reference to the specifications and the first application—a process which seems indistinguishable from the process of patent interpretation.

Despite those peculiar facts, Justice Jackson's opinion refers to preventing "the unscrupulous copyist" who "though adding nothing . . . [does] enough to take the copied matter outside the claim," at preventing "one who seeks to pirate an invention," and at preventing "fraud on a patent." n136 He stressed that equivalence

is not the prisoner of a formula and is not an absolute to be considered in a vacuum. It does not require complete identity for every purpose and in every respect . . . things equal to the same thing may not be equal to each other . . . things for most purposes different may sometimes be equivalents. Consideration must be given to the purpose for which an ingredient is used . . . qualities it has when combined with other ingredients, and the function which it is intended to perform. An important factor is whether persons reasonably skilled in the art would know of the interchangeability . . . n137

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The Court held that "[w]hat constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case." n138 The Court stated further that "[a] finding of equivalence is a determination of fact Like any other issue of fact, final determination requires a balancing of credibility, persuasiveness and weight of evidence. It is to be decided by the trial court and that court's decision under the general principles of appellate review, should not be disturbed unless clearly erroneous." n139

Justice Jackson's references to fraud and piracy would beg the question on the facts of Hilton Davis, and any other situation in which there was a genuine dispute whether the suggested equivalent was precluded as a substitute, or not regarded by persons of ordinary skill in the art as a substitute. One who does not literally infringe a patent and who has a genuine and informed belief of having substituted a non equivalent element cannot fairly be called a pirate or a fraud. Such language can only be applied if there is no genuine dispute on such matters. n140

Justice Jackson did not state whether his "Piracy" language specifically related to determining whether a substitute was a permitted equivalent to a claim limitation, or to the use of such an equivalent by the accused. Justice Jackson's statement that "A finding of equivalence is a determination of fact" can be construed to apply not to what is a permitted equivalent, but to its use. Such a construction is buttressed by the argument that the legal limitations precluding certain equivalents are legal standards which must be observed in drawing the boundary between patents and the patent domain according to the constitutional and statutory scheme authorizing the issuance of patents. Those legal limitations mandate that certain equivalents cannot be accepted. They and other questions relating to whether an equivalent proposed by the patent holder is a permissible equivalent seem analogous to similar questions raised in Markman. Such questions are different from whether the accused device or method using that equivalent performs in substantially the same way, function and means to that of the invention described in the claims. In line with that argument, perhaps the term

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"equivalent" should be reserved for the former-permissibility-inquiry, and the term "equivalence" for the latter-infringement-inquiry.

The *Miller v. Fenton* analysis and holding¹⁴¹ which the Supreme Court in *Markman* held applicable to the question of interpretation of patent claims¹⁴² are just as relevant to the question of the application of the doctrine of equivalents in a jury trial. There would not seem to be any Seventh Amendment or policy reasons for having juries determine the scope of a patent under the doctrine of equivalents.

Application of the doctrine of equivalents implies a two step process: first determine the scope of the patent under the doctrine of equivalents; then determine whether the patent, with that definition of its scope, has been infringed. In *Winans v. Denmead*, the Court stated that the car "must be so near to a true circle as substantially to embody the patentee's mode of operation, and thereby attain the same kind of result as was reached by his invention."¹⁴³ That language was the court's limitation on what could be an equivalent under the 1836 Patent Statute as applied to the facts of the case. Under the modern patent statutes, equivalents must meet a somewhat different statutory standard, which requires compliance with 35 U.S.C.

112.

It is suggested that the trial judge should determine whether the proposed equivalents are permitted. That, along with literal interpretation, would determine the scope of patent protection. If demanded, a jury would determine whether the accused device or method infringes the patent. Such a rule would leave the boundaries of the patent for determination by the trial judge in both literal and equivalents cases. The question of appellate review is a separate one. In literal interpretation and determination of the doctrine of equivalents, it would not be amiss to hold that as to specific incidental facts entering in to those determinations, the scope of appellate review should be under the clearly erroneous rather than the *de novo* rule.

The Federal Circuit's refusal to follow the holdings in *Gould v. Rees*,¹⁴⁴ and *Gill v. Wells*,¹⁴⁵ that the equivalent must have been known at the time the patent issued also deserves Supreme Court attention. Unless corrected, the Federal Circuit will have overruled those decisions without even citing them.¹⁴⁶ It should be noted that in *Halliburton Co. v.*

[*234] Walker, n147 the Court cited *Gill v. Wells* approvingly in stating that an alleged infringer could have prevailed if "the substituted device . . . was not known at the date of . . . [the] patent as a proper substitute . . . or had been actually invented after the date of the patent." That was a reference to the doctrine of equivalents. Although *Halliburton* was overruled by the sixth paragraph of 35 U.S.C.

112 with respect to the types of patents included therein-statutory equivalents-there is no indication that Congress meant to change the general chronological rule applicable under the doctrine of equivalents which the Court had restated in *Halliburton*.

The *Hilton Davis* holding on the time of knowledge of equivalents was based on *Sanitary Refrigerator. Co. v. Winters*; n148 prior Federal Circuit decisions had also cited decisions of the Court of Claims, which, in turn ultimately relied on *Temco Corp. v. Apco Corp.* n149 *Sanitary*, however, merely held that the fact that the accused products were manufactured under a later patent did not preclude their infringing an earlier patent. *Sanitary* did not deal with the question of the need for an equivalent to be regarded as a substitute at the time the patent issued. The holding in *Sanitary* that an earlier patent (A) might be infringed by an improvement patent (A+B) would not appear to compel a holding that a permissible equivalent (B=A) can come into existence or become known after the issuance of the original patent. *Temco* held that an improvement patent

[*235] cannot be used without a license from the holder of the unexpired patent of which it is an improvement. n150 Like *Sanitary*, it is no authority for overruling *Gould and Gill*. Holding the original patent infringed by the improvement patent leaves both patents in force, unless and until one or both are declared invalid, but neither patent holder can use the other's patent without permission. In the case of a permitted equivalent, not involving an improvement patent, only one patent remains in force. Under the doctrine of equivalents, the presence or absence of the permitted equivalent is relevant; whether the accused product is the subject of an improvement patent is irrelevant.

In considering the conflict between the *Gould and Gill* cases and the Federal Circuit cases, one hopes that the Supreme Court will also consider the following points. Compliance with 35 U.S.C.

112 requires that disclosure be sufficient for a person of ordinary skill in the art to practice the invention as of the time of filing the specification. n151 Prior art, to which reference must be made in the obviousness inquiry under 35 U.S.C.

103, is not determined as of the date of infringement, it is determined in accordance with 35 U.S.C.

102(d) as to foreign patents and

102(e) as to United States patents. If the doctrine of equivalents were to permit equivalents to be determined at the time of infringement, prior art patents would seem to be entitled to no lesser time expansions than the patent in suit, with the result that an equivalent that became known after the prior art patent would be entitled to be considered as prior art for obviousness. Finally, the Federal Circuit has held that even if the function-way-result test for equivalents were met, "there can be no infringement if the asserted scope of equivalency of what is literally claimed would encompass the prior art." n152 In *Hooganas AB v. Dresser Indus., Inc.*, n153 the court held that as the Examiner had knowledge of the patent in suit and issued a subsequent patent on the accused product to the

[*236] alleged infringer, the Examiner must have considered the accused product to be non-obvious and "Accordingly, the issuance of that patent is relevant to the equivalence issue." n154 Wilson necessarily holds that what is obvious from a prior patent cannot be an equivalent which expands the scope of the patent in suit. Hooganas indicates an accused patented product which is not obvious from the patent in suit cannot be an equivalent of it. Together, Wilson and Hooganas certainly link questions of obviousness or non-obviousness and equivalents.

An equivalent of a patent claim would seem to be a subset of what is obvious from that claim. Thus, when a patent holder seeks to extend the patent's right to exclude to post patent discovered equivalents, the inquiries concerning obviousness and equivalents should be congruent in time. Whether, and under what conditions, including the time of determination of equivalents and its relation to the obviousness inquiry, the doctrine of equivalents as distinct from the sixth paragraph of section 112 should be permitted to continue to exist, are matters of great importance to the patent law. It is argued that the concept of equivalents must include minor substitutions that a person of ordinary skill in the art would anticipate even though they were not available at the time of the invention, but if such a line is to be drawn, it hardly seems appropriate to have it drawn as part of a general verdict by a jury, that cannot be meaningfully reviewed on appeal. It is one thing to allow the patent holder some leeway as to substitutes that were known at the time of the invention. It is a considerable extension to allow the same leeway to cover substitutes not known at the time of the invention, particularly by a jury verdict. Assuming a patent life of 20 years from the date of filing, such substitution would be no small extension of patent rights. Most importantly, if a change is to be made in the Gould and Gill rule, it should be made by the Supreme Court with full consideration of the precedents and issues involved.

IV. Jury Participation in the Determination of Obviousness

The Supreme Court has declared the law of patent interpretation in *Markman* and has encountered the law of equivalents in *Hilton Davis*. The role of the jury in obviousness cases is also in need of clarification by the Supreme Court.

The obviousness defense to patent validity is based on 35 U.S.C.

103(a) n155 and is a mixed question of law and fact. n156 Judge

[*237] Nies, dissenting in *In re Lockwood*, n157 stated that the judicial interpretation of the 1952 Patent Statute making the issue of patent validity one of law was "in sharp contrast to interpretations of prior statutes under which patent validity was treated as a question of fact." n158 Actually, the Supreme Court's position has changed over time.

In *Battin v. Taggart* the Supreme Court held that both enablement and novelty were jury questions. n159 In *Bischoff v. Wethered* a breach of contract case in which the validity of an English patent was contested on the basis of a prior English patent, the Court held that the "identity or

[*238] diversity" of the two patents was a question for the jury. n160 The Court referred, among other things, to an 1862 English case noted "in the last edition of Curtis on Patents . . . which had reversed prior authority." n161 In Bischoff, the Court appeared to hold that the admissibility of expert evidence affected the question of who determined the issue of validity, the judge or the jury, and gave the trial court wide authority to control the verdict if it was "unsatisfactory." n162 By the time of Tucker v. Spalding, the question of patent validity was viewed as a mixed question of fact and law. n163

The holdings in Bischoff and Tucker must be compared with holdings such as Mahn v. Harwood, n164 A & P Tea Co. v. Supermarket Corp., n165 and Graver Tank & Mfg. Co. v. Linde Air Products n166 (Graver I). In Mahn, for instance, the Court stated:

In cases of patents for inventions, a valid defense not given by the statute often arises where the question is, whether the thing patented amounts to a patentable invention. This being a question of law, the courts are not bound by

[*239] the decision of the commissioner, although he must necessarily pass upon it.
n167

Both A & P and Graver I involved non-jury trials in which, on the point in question, the court of appeals affirmed the trial court's findings of fact. n168 In Graver I, Justice Jackson stated that, "A court of law, such as this Court is, rather than a court for correction of errors in fact finding, cannot undertake to review concurrent findings of fact by two courts below in the absence of a very obvious and exceptional showing of error," n169 and continued "the ultimate question of patentability is one of meeting the requirements of the statute. n170

The Court's holding in *Graham v. John Deere Co.* that under the 1952 Patent Statute, "[T]he ultimate question of patent validity is one of law," n171 was consistent with Graver I and A & P in according deference to factual standards while recognizing that compliance with statutory

[*240] requirements was a question of law. Graham's holding may appear difficult to reconcile with Battin, Bischoff, and Tucker. Nonetheless, it is suggested that Graham represents the consequences of the realization that patent validity is commonly a mixed question of fact and law involving, as Mahn pointed out, the underlying precept that the standards decreed by patent statute are matters of law enforceable by judges. Graham may be viewed as having reconciled the conflicting authorities by holding that, under the law derived from *Hotchkiss v. Greenwood*,¹⁷² the ultimate issue of validity in obviousness cases is a question of law, although there may be subsidiary questions of fact. That, however, leaves questions of who should decide the subsidiary issues of fact in a jury case, and what is the proper standard of review for such findings of fact.

Regional circuit court answers to these questions before the creation of the Federal Circuit were summarized by one commentator:

Thus, although a few of the regional circuits had treated obviousness as properly decided by a jury, the great majority of the circuits and particularly those circuits which had reviewed the issue en banc, had held the obviousness issue to be one of law to be decided by the court and to be subject to full appellate review.¹⁷³

Other attempts were made to address the problem by using an advisory jury to give an opinion on factual questions arising in the obviousness inquiry. As previously noted, advisory juries in patent cases brought on the equity side of courts were authorized by

2 of the Patent Act of 1875.¹⁷⁴ Advisory juries are now authorized, by consent of the parties or order of the court, in actions where there is no right to a jury or where the right to a jury has been waived.¹⁷⁵ Decisions by an advisory jury are not binding on the trial court, and are of no effect on appeal.¹⁷⁶

In *Sarkisian v. Winn-Proof Corp.*,¹⁷⁷ decided one month prior to the creation of the Federal Circuit, the problem of background factual issues in the legal determination of obviousness led the Ninth Circuit to sanction the use of an advisory jury verdict on the ultimate issue of obviousness. The Ninth Circuit held that the trial court must determine

[*241] obviousness as a matter of law on the basis of the three findings required by Graham, but may submit the question of obviousness to the advisory jury for its guidance. n178 However, the trial court retains the duty to decide the question independent of the advisory jury's conclusion. n179 The court specifically disapproved of comments in a prior opinion which appeared to approve leaving the ultimate question of obviousness to the jury. n180

Confronted with the choice of a general verdict, special interrogatories or an advisory verdict, the Federal Circuit in *Perkin-Elmer Corp. v. Computervision Corp.* emphatically refused to follow the Ninth Circuit's holding pertaining to advisory verdicts. n181 The vehemence of the Federal Circuit's reaction to the Ninth Circuit's use of advisory verdicts on the ultimate issue of obviousness is odd in view of the Federal Circuit's permitted use of advisory juries for issues of inequitable conduct and willful infringement as a factor in enhanced damages. In *Richardson v. Suzuki Motor Co.*, where the trial court used and agreed with an advisory

[*242] verdict, the Federal Circuit went out of its way to refer to the "discredited procedure of advisory verdicts" n182 before treating the verdict as an ordinary verdict and upholding it under the substantial evidence rule. n183 The Federal Circuit has also held that the background facts on obviousness come within the Seventh Amendment's right of jury trial, n184 a holding that may be in doubt after *Markman*.

In *Connell v. Sears, Roebuck & Co.*, the Federal Circuit conceded that the practice of submitting the obviousness issue to a jury on a general verdict left "a wide area of uncertainty on review" n185 but referred to the safeguards of special verdicts, general verdicts accompanied by answers to interrogatories, motions for directed verdict and judgment notwithstanding the verdict and motions for new trial. n186 Invoking this litany of "safeguards," the court said, "We hold that it is not error to submit the question of obviousness to the jury." n187 Nevertheless, because of the difficulties in ascertaining what the jury decided when the district court rules on a motion for judgment notwithstanding the verdict, on appeal the court held that "[s]ubmission of the obviousness question to the jury should therefore be accompanied by detailed special interrogatories designed to elicit responses to at least all the factual inquiries enumerated in *Graham* . . . and based on the presentations made in the particular trial." n188

[*243]

In *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, the court criticized the use of a general verdict without specific interrogatories in an obviousness case. n189 In *Structural Rubber Products Co. v. Park Rubber Co.*, the court expressed the patent bar's concern that jury trials create "a black box in which patents are thrown and emerge intact or invalid by an unknown and unknowable process." n190 The court also stressed that jury trials must be informed and fair and that these goals can be accomplished when both "judge and jury perform appropriate functions" n191 and the trial court "provides a record that clearly delineates the basis for the decision." n192

In *Newell Companies, Inc. v. Kenney Manufacturing Co.*, n193 one panel of the Federal Circuit attempted to apply some limits: "All of our precedent holds that, where the only issue is, as here, the application of the statutory standard of obviousness (35 U.S.C.

103) to an established set of facts, there is only a question of law to be resolved by the trial judge." n194

Judge Nies, dissenting in *Hilton Davis*, similarly objected to the en banc court's remand of the issues of validity to the original panel which, in an unpublished opinion, had affirmed the judgment. n195 Judge Nies stated that it was error to instruct the jury that the defendant had the burden of showing invalidity by clear and convincing evidence because obviousness was a question of law. n196 Further, she argued the jury should have been instructed with respect to specific disputed facts; and if a general verdict were used, the jury should have been instructed that if it found facts A,B,C & D a certain way, the jury should find for the plaintiff, and if another way, for the defendant. n197 Otherwise, in Judge

[*244] Nies' view, there would be an abdication of the court's duty to retain ultimate control over the issue of obviousness. n198

The recent Federal Circuit decision in *Litton Systems, Inc., v. Honeywell Inc.*, n199 reversing the trial court's holding on motion for judgment as a matter of law after a jury verdict of nonobviousness, illustrates the problem of where to allocate the question of obviousness in a validity action. There, the court asked the jury in special verdict forms to determine whether the patent at issue included only the ion-beam gun mentioned in the specification, as Honeywell contended, or any broad beam multiapertured sources, as Litton contended; whether the phrase "continuously rotating said base during the deposition" covered Honeywell's planetary substrate motion, as Litton contended; and whether the claims of the 1989 patent were invalid for obviousness. n200

In reinstating the jury's verdict that the patent was not invalid, n201 the court of appeals cited *Dennison Mfg. Co. v. Panduit Corp.* for the proposition that "[t]he Supreme Court has underscored the fact intensive nature of the test for obviousness" n202 and held that "[b]ecause substantial evidence supports the jury's verdict that the claims of the '849 reissue were not invalid for obviousness—a highly fact-specific inquiry—this court reverses the trial court's determination of obviousness and reinstates the jury's verdict." n203

The citation to *Dennison* is odd, for in that case the Court, in remanding, held that "most importantly, we lack the benefit of the Federal Circuit's informed opinion on the complex issue of the degree to which the obviousness determination is one of fact." n204 The Federal Circuit decisions have not satisfactorily explained that degree. General verdicts on obviousness of the kind submitted in the *Litton* case certainly do not provide an explanation or any meaningful solution to the problem.

[*245]

The Litton holding on obviousness reinforces the need for the Supreme Court to clarify which issues of obviousness are to be determined by the court and which by the jury. n205

The Supreme Court has provided some guidance concerning this problem; in Graham, the Court held that: (1) the ultimate question of obviousness is one of law; n206 (2) obviousness is to be determined against the background of factual inquiries concerning the scope and content of prior art, the difference between the prior art and the claims at issue, and the level of skill in the art; n207 and (3) "claims that have been narrowed in order to obtain the issuance of a patent by distinguishing the prior art cannot be sustained to cover that which was previously by limitation eliminated from the patent." n208 In Graham, the Court, referring to an attempted distinction of prior art as not pertinent because it related to liquid containers having spouts rather than pump sprayers, stated that such a "restricted a view of the applicable prior art is not justified. The problems confronting Scoggin [the inventor] and the insecticide industry were not insecticide problems; they were mechanical closure problems.

[*246] Closure devices in such a closely related art as pouring spouts for liquid containers are at the very least pertinent references." n209

The Supreme Court in *Markman* held that in interpreting the literal claims of the patent, the questions of what claims were given up during the patent prosecution were for the trial court not the jury. n210 *Markman* may well be the source of future precedent, holding that, similar to *Graham*, the court, not the jury, determines: (1) what claims were given up in connection with equivalents or obviousness issues; (2) the interpretation of the claims of prior patents (a major source of prior art); (3) the interpretation of other written sources of prior art such as publications; (4) the differences between such prior art and the claims in issue; and (5) the level of skill of the ordinary person in the art from whose point of view the interpretation and comparisons are sought to be made.

Other questions may be left to the jury regarding obviousness, including commercial success, long felt and previously unmet need and copying. However, neither general verdicts, whether ordinary or advisory verdicts with consent of the parties, nor special verdicts of the kind used in *Litton* should be used. The Federal Circuit's present practice which permits general jury verdicts on an issue of law reserved to the judge invites arbitrariness and lack of meaningful review on appeal.

The preferable rule would be to identify factual questions for jury determination, require specific answers to interrogatories by the jury as to those questions, and leave the remainder of the issue of validity to the trial judge. Subject to the power to order a new trial, the jury's specific answers to interrogatories would hold so long as there were substantial evidence in the record to justify them. Upon appeal, the appellate court would review the trial court's residual findings of fact for clear error and then review the trial court's decision on patent validity for error of law.

Of course, an advisory jury could be used with the consent of the parties on background facts in obviousness cases just as it has been used with their consent in determining inequitable conduct. The effect of an advisory jury's verdict should be left entirely to the trial court which must make findings and conclusions that can be meaningfully reviewed.

[*247]

V. Jury Participation in Determining Enablement

Under 35 U.S.C.

112, a patent must contain a disclosure sufficiently clear and complete to enable one of ordinary skill in the art to make and use the claimed invention without undue experimentation. Whether enablement is a question of law or fact has changed throughout the history of U.S. patent law. Under the Patent Statute of 1836, the Supreme Court held in *Battin v. Taggart* that "[i]t was the right of the jury to determine from the facts in the case, whether the specifications, including the claim, were so precise as to enable any person skilled in the structure of machines, to make the one described. This the statute requires, and of this the jury are to judge." n211 Under the 1952 Patent Statute, however, the Federal Circuit has held enablement to be a question of law, n212 although "it may involve subsidiary questions of fact." n213

Apart from the common requirement that there be an objective judgment from the point of view of a person of ordinary skill in what is determined to be the relevant field of prior art, the legal constraints on enablement seem to be less pervasive than those applicable to interpretation and the determination of equivalents. Determining enablement appears to be much closer to what juries normally do than is the case with claim interpretation, determination of equivalents or even obviousness. n214

VI. Jury Participation in Determining Inequitable Conduct

The issue of inequitable conduct is unquestionably to be determined entirely by the judge. Nevertheless, in *Connell v. Sears, Roebuck & Co.*, where the issue was presented and argued at trial and on appeal as related to enforceability not fraud, n215 the trial court submitted the issue of enforceability of the patent to the jury. The question was whether the applicant had concealed material prior art and committed fraud in the prosecution of the patent. The jury found the patent enforceable. The trial judge stated that had he been sitting as a trier of fact he would have found otherwise. n216 Nevertheless, finding substantial though not overwhelming evidence for the jury's verdict, he did not disturb it. n217

The Federal Circuit affirmed in a confusing opinion. The court stated that unenforceability is a question of law that rests on factual findings, and in light of the trial court's finding of substantial evidence supporting the verdict, to disturb the jury's verdict would render it a nullity. n218 The court failed to recognize that the entire question of inequitable conduct was a matter for the trial court and not for the jury, and that, at minimum, the matter should have been remanded to the trial court to decide the issue. Unless the court meant, sub silentio, to hold that there had been a waiver of the right to have the issue of inequitable conduct tried to a judge, its holding is inexplicable. It is also thematically inconsistent with the previously discussed decisions in *Perkin-Elmer* and *Richardson* that a jury properly impaneled to decide matters within its powers cannot also be used as an advisory jury for the issue of obviousness. If it is not possible to use the jury in an advisory capacity in determining obviousness, why is it possible to do so in determining inequitable conduct?

In *To-Ō-Matic, Inc. v. Proma Produkt-Und Marketing, G.m.b.H.* n219 the trial court found inequitable conduct, but the jury's advisory verdict found that while the patent applicant had made material misrepresentations during patent prosecution with gross negligence or gross recklessness, the applicant did not intend to deceive the Examiner. n220 The Federal Circuit held that the trial court's finding of inequita-

[*249] ble conduct was clearly erroneous and contrary to law because the (advisory) jury had found that intent to deceive had not been proven n221 and so appeared to enlarge the holding in Connell. Advisory verdicts, however, are not binding. Tol-O-Matic made such an advisory verdict binding.

The Federal Circuit has held that intent to deceive is a requirement of inequitable conduct; n222 equitable questions are properly within the sole province of the trial judge, subject to review only for abuse of discretion in determining inequitable conduct and for clear error in findings of fact. n223

Surely, if a jury verdict is to be advisory, all aspects of the jury's findings should remain advisory. If a jury is permitted to answer any question concerning inequitable conduct or the ultimate legal question of obviousness, its verdict must remain advisory. Tol-O-Matic's holdings with respect to jury interpretation of patents were disapproved by the Federal Circuit in *Markman v. Westview Instruments*, n224 and its holdings on inequitable conduct should be similarly overruled.

VII. Enhancement of Damage Awards

35 U.S.C.

284 provides that either in a bench trial or a jury trial "the court may increase the damages up to three times the amount found

[*250] or assessed" n225 but does not specify the basis for such awards. In *Bott v. Four Star Corp.* the Federal Circuit identified three factors material to that determination. n226 Six years later the court added six more factors to consider. n227 In *Paul Corp. v. Micron Separations, Inc.*, the court reaffirmed that "willful infringement must be established by clear and convincing evidence, for it is a punitive finding, and can have the consequence of multiplication of damages." n228

Given the criteria for determining enhanced damages, the question of who determines them in a jury trial is answered by the statute which directs that the court determines enhanced damages. n229 Thus, absent consent to a jury trial of issues reserved to the court and with the court's permission, the determination of enhanced damages under 35 U.S.C.

284 is for the court. If the trial is by jury, then the jury's function is to determine actual damages only, and the jury's determination of willfulness is only advisory to the trial judge. n230

Again, we must consider the subject of advisory juries. Fed. R. Civ. P. 39 (c) provides that:

In all actions not triable as of right by a jury the court upon motion or of its own initiative may try any issue with an advisory jury, or except in actions against the United States when a statute of the United States provides for trial without a jury, the court with the consent of both parties, may order a trial

[*251] with a jury whose verdict has the same effect as if trial by jury had been a matter of right.

In *White v. Mar-Bel, Inc.* the Fifth Circuit held that "the jury's finding that defendants willfully infringed and therefore that the compensatory damages should be trebled is advisory only." n231 The Federal Circuit, in *Shiley v. Bentley Laboratories, Inc.*, n232 however, indicated a different point of view. There, the trial court treated the jury verdict of willful infringement as advisory and made an independent finding of willfulness and awarded double damages as well as attorneys fees, prejudgment interest, and a permanent injunction. n233 In affirming the judgment n234 the court stated that "[a]ll fact findings of a jury are non-advisory, unless made in an area expressly removed from jury verdict." n235 If the *Shiley* court meant that express statutory removal of an "area" of a patent case is required in order to preclude a right to trial by jury, its holding is inconsistent with *Markman* in which the Supreme Court held that there was no right of jury trial in the interpretation of a patent. There is no express statutory removal of the issue of patent interpretation from jury determination.

In *Shiley*, however, the court stated that 35 U.S.C.

284 had removed the issue of enhancement of damages from jury consideration reasoning that the second sentence of the statute "deals with increasing damages, which is assigned to the court, whether the facts of willful infringement justifying an increase are found by a jury, or by a court in a non-jury trial." n236 The court appears to suggest that whether to award increased damages is a judicial decision, but determining the "facts" justifying the increase may be a jury question. The court concluded that if a jury finding of willful infringement is not overturned on a motion for judgment notwithstanding the verdict, "the court has discretion to award increased damages on the basis of the jury's finding." n237 If the jury finds non-willfulness, the judge can only award increased damages if he overturns the verdict on a motion notwithstanding the verdict. n238

[*252]

It is unclear whether the parties in Shiley consented to a trial jury with respect to the issues of enhanced damages. If they did not, the Shiley language indicates a Federal Circuit view that the jury's verdict on willfulness in connection with an award of increased damages is to be treated as something more than advisory, particularly if it finds non-willfulness. Such a view appears to be erroneous; 35 U.S.C.

284 leaves the enhancement of damages to the judge and that would appear necessarily to include the determination of the facts necessary for that decision.

In *Modine Mfg. Co. v. Allen Group, Inc.* the jury determined there had been willful infringement, but the trial court reduced the jury's verdict from \$ 55.6 to \$ 14 million and declined to award enhanced damages. n239 The court held that "a district court's refusal to award increased damages will not be overturned absent a clear showing of abuse of discretion." n240 With respect to an argument that the judge's decision was inconsistent with the jury verdict, the court held:

Far from ignoring the jury's verdict, Judge Jensen's opinion demonstrated that he carefully considered the finding of willful infringement in light of the deterrent function of enhanced damages in reaching his determination that enhanced damages were not appropriate in this particular case. *Modine* has utterly failed to demonstrate that this determination was an abuse of discretion. n241

Recently, in *Jurgens v. CBK, Ltd.* n242 a jury verdict found willful infringement but the trial judge refused to award enhanced damages because the defendant had relied on the opinion of its patent counsel and the patent holder had failed clearly to mark their decoys with notice of their patent. n243 A Federal Circuit panel held that the only way the jury could have reached a determination of willful infringement was to reject

[*253] the defendant's contention that it relied in good faith on the opinion of counsel. n244 Although the trial court had discretion to weigh the closeness of the case and the scope of the infringer's investigation in deciding whether to increase a damages award, it was held not to "have discretion to reweigh this evidence once the matter has been decided by the jury and the court finds evidence sufficient to support the jury determination." n245 The case was remanded for further proceedings. n246 Senior Judge Cowen dissented on the ground that the decision was contrary to *Modine* and *Brooktree*. n247

There appears to be no reason why the issue of willful infringement should be submitted to the jury. The question of enhanced damages is statutorily entrusted to the court and should be determined by it along with all the subsidiary issues set forth in *Bott* and *Read*. Even if the trial judge should decide to use an advisory jury on willfulness, advisory jury determinations should have no effect on appeal. The concept espoused in *Shiley* and *Jurgens* that a jury determination of willfulness should occupy some status intermediate between an ordinary verdict and an advisory verdict has no root.

VIII. Trial By Jury On A Declaratory Judgment Action Or Counterclaim After Summary Judgment Of Non-Infringement

Since 1934 the Declaratory Judgment Act has permitted a person threatened with patent infringement to institute an action against the threatening party to obtain a declaration of rights including the invalidity or unenforceability of the patent, noninfringement, or damages payable. n248 In *In re Lockwood*, a claim of patent infringement was followed by a counterclaim for declaration of non- infringement and invalidity at the district court level. n249 After the close of discovery, the defendant obtained summary judgment on the counterclaim of noninfringement; the court then struck the jury demand, and the plaintiff appealed. n250 The

[*254] Federal Circuit reversed the trial court on the ground that a declaratory judgment action was an inverted patent infringement suit in which the issue of validity would have been tried at common law for purposes of the Seventh Amendment. n251 As a patentee in 1791 had the option of suing in equity or at law for patent infringement, the Lockwood patentee had the same choice under the Seventh Amendment in a declaratory relief action. n252

Judge Nies' dissent in Lockwood pointed out the different consequences of judicial and jury determination of a question, n253 the element of public interest involved in a determination of patent validity, n254 and the resulting confusion. n255 These arguments, however, also seem to apply to the usual patent infringement case in which a jury is demanded and there is an admitted right to trial by jury as to some issues pertaining to validity. Although Judge Nies' arguments may be policy arguments against a right of trial by jury if it were not commanded by the Seventh Amendment, by themselves they do not seem to add to her other reasons for denying a Seventh Amendment right of trial by jury where summary judgment of non-infringement has been granted.

The first reason for Judge Nies' dissent was that the declaration of validity of a patent involved the adjudication of a public right n256 within the meaning of *Granfinanciera, S.A. v. Nordberg*. n257 Congress has the

[*255] power to make public rights be adjudicated without juries. n258 It exercises that power by providing for reexamination of patent validity before the Board of Patent Appeals and Interferences and for adjudications before the International Trade Commission as well as in the Federal District Courts. n259 Second, Judge Nies reasoned that patent validity questions in England in 1791 could be raised not only in actions for infringement, but also by writ of scire facias on grounds of previous patent, fraud or inequitable conduct. n260 Lastly, Judge Nies asserted that the nature of the remedy was the most important factor in Seventh Amendment cases, and since there was no longer any issue in the case concerning damages, there should be no right to a jury. n261

Showing that Congress may provide and has provided for the determination of patent validity questions without juries merely establishes that there is no impediment to such remedies if Congress wishes to provide them. It does not show that Congress had an intent to substitute that remedy when infringement was no longer an issue under a suit instituted pursuant to the Declaratory Judgment Act. Congress enacted various remedial provisions for patentees. For example, the 1793 statute did not allow general damage recovery by the patentee; it contemplated a royalty type of recovery. n262

There are also practical problems with Judge Nies' solution in this area. If the jury is discharged, and the trial court adjudicates the remaining case, but the summary judgment of no infringement is reversed on appeal, then the trial court's judgment of validity or non-validity might have to be reversed as well, if there were a Seventh Amendment right to trial by jury on infringement and damages issues. The dilemma might be avoided by keeping the jury and treating its verdict as advisory if the summary judgment is affirmed and as an ordinary verdict if the judgment of non-infringement is reversed. That may be, however, an awkward solution. The dismissal of Lockwood from the Supreme Court's docket as moot and the grant of certiorari in both *Markman* and *Hilton Davis* will permit development of the law by clarifying the roles of judge and jury on those issues. The process may make it easier to decide the Lockwood case. At the moment, it would seem that the right to trial by jury depends on the issues that remained in the declaratory judgment case after the summary judgment on infringement.

[*256]

IX. Conclusion

Markman holds that judges not juries interpret patents. These are suggestions for delineation of jury and judicial roles on the other issues discussed in this paper. Hilton Davis should be reversed. Judges not juries should determine what are permitted equivalents. Such factual questions as are involved in the determination of obviousness and enablement should, where juries are demanded, be presented to them in the form of specific interrogatories. General verdicts on such matters should be prohibited. The verdicts of advisory juries, if used on the issues of inequitable conduct or willful misconduct, should not bind the trial court and should have no effect on appeal. In declaratory judgment actions, if non-infringement has been determined on summary judgment, jury involvement in the remainder of the case as to invalidity or unenforceability of the patent should be handled in the same way it would have been handled had no summary judgment been granted.

X. Postscript: The Supreme Court Decision in Hilton Davis

In reversing the judgment of the Court of Appeals and remanding for proceedings consistent with its opinion, the Supreme Court held: (1) the doctrine of equivalents was not repealed by the Patent Act of 1952, n263 (2) its "legal limitation" of prosecution history estoppel had to be applied in relation to the reason for an amendment, n264 (3) although the alleged infringer's intent was irrelevant, the presence or absence of independent experimentation would in many cases be relevant to the interchangeability

[*257] of substitutes, n265 and (4) equivalents were not limited to those existing when the patent was issued or to those referred to in the specifications. n266

The Court found it unnecessary to decide the judge-jury question. n267 Nevertheless, in dicta, the Court discussed that question. It referred to the argument that permitting juries to expand claims by equivalents was at cross-purposes with requiring that judges interpret patents, but mistakenly characterized the argument as going "more to the alleged inconsistency between the doctrine of equivalents and the claiming requirement than to the role of the jury in applying the doctrine as properly understood." n268 The Court also stated that:

Because resolution of whether, or how much of, the application of the doctrine of equivalents can be resolved by the court is not necessary for us to answer the question presented, we decline to take it up. The Federal Circuit held that it was for the jury to decide whether the accused process was equivalent to the claimed process. There was ample support in our prior cases for that holding [that a jury should decide the issue of equivalents]. n269

[*258]

The Court continued:

Nothing in our recent Markman decision necessitates a different result than that reached by the Federal Circuit. Indeed, Markman cites with considerable favor, when discussing the role of judge and jury, the seminal Winans decision. Whether, if the issue were squarely presented to us, we would reach a different conclusion than did the Federal Circuit is not a question we need decide today. n270

The Court did note that if juries were to decide the issue, "a special verdict and/or interrogatories on each claim element, could be very useful in facilitating review, uniformity and possibly post verdict judgments as a matter of law." n271 Finally, the Court left it to the Federal Circuit to "refine the formulation of the test for equivalence in the ordinary course of case- by-case determinations . . . [in] that court's sound judgment in this area of its special expertise." n272

If juries are to continue to determine equivalents, special verdicts and interrogatories would be better than general verdicts, but the Supreme Court's opinion misses the main points that Markman not only used the requirement of a claim to distinguish English precedent for purposes of the Seventh Amendment, n273 it held that the requisite certainty and uniformity for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject will ultimately be dedicated to the public can only be provided by judicial construction of patent claims. n274

[*259]

The Supreme Court's failure to consider the problems referred to at pages 233-36 of this article is a major disappointment.

n1 See *Seymour, et al. v. McCormick*, 57 U.S. (16 How.) 480 (1853). The first cases held infringement had to be continuing at the time of the suit. See, e.g., *Root v. Railway Co.*, 105 U.S. 189, 209-10 (1881). Later cases held that equity jurisdiction would also be appropriate if the infringement, though ceased, was threatened to resume. See, e.g., *Goshen Mfg. Co. v. Myers Mfg. Co.* 242 U.S. 202, 207-08 (1916); see also 5 Donald S. Chisum, Patents 20.02, at 20-23, 24 (1995).

n2 See 1 Stat. 109 4 (1790).

n3 See 5 Donald S. Chisum Patents 20.02 (1995).

n4 See *Livingston v. Van Ingen*, 15 F. Cas. 697, 700 (C.C.D.N.Y. 1810).

n5 3 Stat. 481 (1819).

n6 16 Stat. 198 55 (1870).

n7 18 Stat. 316 2 (1875). Advisory juries are now governed by Fed. R. Civ. P. 39(c).

n8 In the non-patent case of *Dimick v. Schiedt*, the Supreme Court noted that "With, perhaps some exceptions, trial by jury has always been, and still is, generally regarded as the normal and preferable mode of disposing of issues of fact in civil cases at law as well as in criminal cases." 293 U.S. 474, 485-86 (1935).

n9 "Common Law" refers to the established rules of the common law in 1791, when the Seventh Amendment was adopted. *Id. at 476*. The constitutional right of trial by jury does not extend to suits in equity or to equitable issues. See *Parsons v. Bedford*, 28 U.S. (3 Pet.) 433, 447 (1830); *Tull v. United States*, 481 U.S. 412, 417 (1987). For Seventh Amendment purposes, actions created by statute are compared to 18th century English actions prior to the merger of the courts of law and equity, and a determination is made as to whether the remedy sought is legal or equitable. *Teamsters v. Terry*, 494 U.S. 558, 565 (1990).

n10 In 1961, 125 patent cases were tried to the court and none to a jury. In 1981, 75 were tried to the court and 20 to juries. In 1991, 45 were tried to the court and 40 to juries. United States Dept. of Commerce Advisory Commission on Patent Law Reform, Report to the Secretary of Commerce (August 1992) [hereinafter Report to the Secretary of Commerce].

n11 In 1971, the Supreme Court noted that in fiscal year 1968, 2 out of 131 patent cases were tried to juries; in fiscal 1969, 8 out of 132; in fiscal 1970, 3 out of 119; the three year total was 13 out of 382 patent cases. *Blonder Tongue Lab. v. University of Illinois Found.*, 402 U.S. 313, 338 n.30, 169 U.S.P.Q. (BNA) 513, 522 n.30 (1971).

n12 In overruling *Triplett v. Lowell*, 297 U.S. 638 (1936), the Court in *Blonder Tongue* observed: It has been argued that one factor to be considered in deciding whether to allow a plea of estoppel in a second action is the possibility that the judgment in the

first action was a compromise verdict by a jury. This problem has not, however, been deemed sufficient to preclude abrogation of the mutuality principle in other contexts. Nor would it appear to be a significant consideration in deciding when to sustain a plea of estoppel in patent litigation, since most patent cases are tried to the court. *Blonder Tongue*, 402 U.S. at 333-34 (emphasis added).

n13 1994 Dir. of the Admin. Office of the U.S. Dist. Cts., Table C-4, at A1-79 (1994).

n14 Report to the Secretary of Commerce, *supra* note 10, at 107.

n15 See 28 U.S.C. 1295, 1338 (1996).

n16 See Anthony Baldo, *Juries Love the Patent Holder*, *Forbes*, June 17, 1985, at 147.

n17 See, e.g., Robert L. Harmon, *Patents and the Federal Circuit* (2d ed. Supp. 1993) 151. Mr. Harmon stated that the current enforcement climate "is one that very strongly favors the patentee and I routinely advise my clients of that belief. That belief is grounded upon many factors, but a large component has to do with my observations of the work of the Federal Circuit and its impact upon the U.S. patent system." In his third edition (1994), Mr. Harmon stated that "At the present time, I feel comfortable in advising clients that the patent enforcement pendulum is swinging toward a more neutral position, where it really ought to be," but did not speculate that neutrality has yet been achieved. Robert L. Harmon, *Patents and the Federal Circuit* (3d ed. 1994) 794. Indeed, Mr. Harmon further stated that patentees are being "overcompensated." *Id.* at 478.

n18 H.R. Rep. No. 312, 97th Cong., 1st Sess., at 20 (1981).

n19 S. Rep. No. 275, 97th Cong., 1st Sess., at 5 (1981).

n20 52 F.3d 967, 34 U.S.P.Q.2d (BNA) 1321 (*Fed. Cir.* 1995) (en banc), *aff'd*, 116 S.Ct. 1384, 38 U.S.P.Q.2d (BNA) 1461 (1996).

n21 Judge Mayer stated that the court's opinion: jettisons more than two hundred years of jurisprudence, and eviscerates the role of the jury [which] . . . portends turbulence and cynicism in patent litigation. For this is not just about claim language, it is about ejecting juries from infringement cases The quest to free patent litigation from the 'unpredictability' of jury verdicts, and generalist judges, results from insular dogmatism inspired by unwarrantable elitism; it is unconstitutional. *Id.* at 989 (Mayer, J., dissenting).

n22 62 F.3d 1512, 35 U.S.P.Q.2d (BNA) 1641 (*Fed. Cir.* 1995) (en banc), *rev'd*, 65 U.S.L.W. 4162 (U.S. Mar. 4, 1997) (No. 95-728).

n23 Judge Plager, joined by Chief Judge Archer and Judges Rich and Lourie, dissenting, characterized the majority decision that juries determine the application of the doctrine of equivalents as giving "a virtually uncontrolled and unreviewable license to juries to find infringement if they so chose." *Id.* at 1538, 35 U.S.P.Q.2d (BNA) at 1662 (Plager, J., dissenting). Judge Nies expressed a similar sentiment in a separate dissenting opinion stating that the instructions to the jury on claim construction and obviousness were "an abdication of the court's responsibility. Without knowing the meaning given to the claim language by the jury, the correctness of a validity or infringement verdict cannot be meaningfully reviewed." *Id.* at 1556, 35 U.S.P.Q.2d (BNA) at 1677 (Nies, J.,

dissenting). Judge Nies continued: The jury was literally put to sea without navigational aid. It was repeatedly told that it was the judge of the obviousness of the invention The instructions on obviousness could only have been gibberish to a lay jury. The instructions did not tell the jury what fact issues, if any, were in dispute which the jury must decide. An appellate court cannot provide proper appellate review on the basis of such general instructions The ultimate decision on the validity of a patent should not be thrown into the black box of a jury to be reviewed under the substantial evidence standard. *Id. at 1557, 35 U.S.P.Q.2d (BNA) at 1678* (citations and footnote omitted). Judge Nies concluded, "From the instructions in this case, it cannot be determined whether the jury decided against the defendant on the factual issues or the legal issues." *Id.*

n24 For other examples of the tendency to use characterizations to avoid or restrict analysis of key issues in intellectual property law, see James Boyle, *Shamans, Software, and Spleens* 36-42 (Harvard Univ. Press) (1996).

n25 In a non-patent case, the Court held that the "decision to label an issue a 'question of law,' a 'question of fact,' or a 'mixed question of law and fact' is sometimes as much a matter of allocation as it is of analysis." *Miller v. Fenton, 474 U.S. 104, 113-114 (1985)* (citing Henry P. Monaghan, *Constitutional Fact Review, 85 Colum. L. Rev. 229, 237 (1985)*). In *Miller*, the Court stated: At least in those instances in which Congress has not spoken and in which the issue falls somewhere between a pristine legal standard and a simple historical fact, the fact/law distinction at times has turned on a determination that, as a matter of the sound administration of justice, one judicial actor is better positioned than another to decide the issue in question. *Miller, 474 U.S. at 114*. The Court rejected the argument that it should reverse fifty years of precedent that the voluntariness of a confession was a "legal inquiry requiring plenary federal review." *Id. at 115*. It noted that the voluntariness of a confession has always had an "uniquely legal dimension" and that the circumstances surrounding the taking of a confession "almost invariably occur in secret." *Id. at 116- 17*. Another case supplemented the *Miller* analysis by noting that a court did not have a first person vantage and holding that the "law declaration aspect of independent review potentially may guide police, unify precedent, and stabilize the law." *Thompson v. Keohane, 116 S. Ct. 457, 466-67 (1995)*. The *Miller* and *Thompson* factors apply by analogy in patent cases.

n26 *In re Lockwood, 50 F.3d 966, 33 U.S.P.Q.2d (BNA) 1406* (Fed. Cir.), cert. granted sub nom., *American Airlines Inc. v. Lockwood, 115 S. Ct. 2274*, and subsequently dismissed as moot, *116 S. Ct. 29 (1995)*.

n27 *In re Lockwood, 50 F.3d at 980, 33 U.S.P.Q.2d (BNA) at 1417*. The Federal Circuit had first granted a petition for mandate. *In re Lockwood, 30 U.S.P.Q.2d (BNA) 1292 (Fed. Cir. 1994)*. The court then granted a petition for rehearing, and affirmed its issuance of the writ on amended grounds. *In re Lockwood, 50 F.3d at 980, 33 U.S.P.Q.2d (BNA) at 1417*. Judge Nies, joined by Chief Judge Archer and Judge Plager filed an opinion dissenting from the denial of a rehearing en banc. *Id., 33 U.S.P.Q.2d (BNA) at 1907* (Nies, J., dissenting).

n28 *116 S. Ct. 1384, 1395, 38 U.S.P.Q.2d (BNA) 1461, 1470 (1996)*.

n29 62 *F.3d* 1512, 35 *U.S.P.Q.2d* (BNA) 1641 (*Fed. Cir.* 1995), rev'd, 65 *U.S.L.W.* 4162 (U.S. Mar. 4, 1997) (No. 95-728).

n30 48 *F.3d* 1247 (*Fed. Cir.* 1995), cert. granted, 116 *S. Ct.* 1562, 1562 (1996).

n31 The Patent Statute provides that: [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 . . . [and that t]he 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, 1-2 (1996) (emphasis added).

n32 383 *U.S. 1*, 33, 148 *U.S.P.Q.* (BNA) 459, 473 (1966) (citations omitted).

n33 155 *U.S.* 565, 579 (1895). The Court stated: [t]he doctrine of the cases is aptly expressed by Robinson in his work on Patents, vol. 3, page 378, as follows: 'where the defense denies that the invention used by the defendant is identical with that included in the plaintiff's patent, the court defines the patented invention as indicated by the language of the Claims; the jury judge whether the invention so defined covers the art or article employed by the defendant.' *Id.* (quoting 3 William C. Robinson, *The Law of Patents for Useful Inventions* 1075 (1890)).

n34 Robinson had stated: The duty of interpreting letters-patent has been committed to the courts. A patent is a legal instrument, to be construed like other legal instruments, according to its tenor. Whether its Claims are valid or invalid, whether or not they embrace a given invention, and what may be the actual nature of the invention which they do embrace, are questions of law for the court, to be decided upon an inspection of the instrument itself. No evidence of any kind, no opinions of other persons, can have any direct influence upon this decision. Where technical terms are used, or where the qualities of substance or operations mentioned or any similar data necessary to the comprehension of the language of the patent are unknown to the judge, the testimony of witnesses may be received on these subjects, and any other means of information be employed. But in the actual interpretation of the patent, the court proceeds on its own responsibility, as an arbiter of the law, giving the patent its true and final character and force. 2 William C. Robinson, *The Law of Patents for Useful Inventions* 731-32, at 481-83 (1890) (footnotes omitted). See also 2 Robinson 731-32, at 483-84, 501.

n35 See *Kalman v. Kimberly-Clark Corp.*, 713 *F.2d* 760, 770-71, 218 *U.S.P.Q.* (BNA) 781, 788 (*Fed. Cir.* 1983), cert. denied, 465 *U.S.* 1026, 224 *U.S.P.Q.* (BNA) 520 (1984) (following *Coupe*, court defines patent and jury determines whether the invention so defined covers the art or article used by the alleged infringer); *SSIH Equipment S.A. v. United States Int'l Trade Comm'n*, 718 *F.2d* 365, 376, 218 *U.S.P.Q.* (BNA) 678, 687 (*Fed. Cir.* 1983) (what is patented is a question of law, whether what was patented has been made, used or sold by alleged infringer is a question of fact); *Fromson v. Advance Offset Plate, Inc.*, 720 *F.2d* 1565, 1569-71, 219 *U.S.P.Q.* (BNA) 1137, 1140-41 (*Fed. Cir.* 1983) (reversed judgment of non-infringement as interpretation of patent is question of law); *Specialty Composites v. Cabot Corp.*, 845 *F.2d* 981, 986 n.3, 6 *U.S.P.Q.2d* (BNA) 1601, 1609 n.3 (*Fed. Cir.* 1988) (same); *SRI Int'l v. Matsushita Elec. Corp. of Am.*, 775

F.2d 1107, 1118, 227 U.S.P.Q. (BNA) 577, 583 (Fed. Cir. 1985) (en banc); Senmed, Inc. v. Richard-Allen Medical Indus., Inc., 888 F.2d 815, 818, 12 U.S.P.Q.2d (BNA) 1508, 1510 (Fed. Cir. 1989) (reversed judgment of infringement for error of law in interpretation of patent); and Read Corp. v. Portec, Inc., 970 F.2d 816, 822, 23 U.S.P.Q.2d (BNA) 1426, 1432 (Fed. Cir. 1992) (judgment affirmed by interpreting patent as a matter of law).

n36 See, e.g., *Palumbo v. Don-Joy Co., 762 F.2d 969, 974, 226 U.S.P.Q. (BNA) 5, 7 (Fed. Cir. 1985), and Moeller v. Ionetics, Inc., 794 F.2d 653, 656, 229 U.S.P.Q. (BNA) 992, 994 (Fed. Cir. 1986).*

n37 See, e.g., *Bio-Rad Labs., Inc., v. Nicolet Instrument Corp., 739 F.2d 604, 614, 222 U.S.P.Q. (BNA) 654, 661 (Fed. Cir.), cert. denied, 469 U.S. 1038 (1984).*

n38 *McGill, Inc. v. John Zink Co., 736 F.2d 666, 672, 221 U.S.P.Q. (BNA) 944, 948 (Fed. Cir.), cert. denied, 469 U.S. 1037 (1984).* See also *Tol-O-matic Inc. v. Proma Produkt-und Mktg. Gesellschaft m.b.H., 945 F.2d 1546, 20 U.S.P.Q.2d (BNA) 1332 (Fed. Cir. 1991).*

n39 *Alpex Comp. Co. v. Nintendo Co., 34 U.S.P.Q.2d (BNA) 1167 (S.D.N.Y. 1994), aff'd in part, rev'd in part, 102 F.3d 1214, 40 U.S.P.Q.2d (BNA) 1667 (Fed. Cir. 1996).* The trial court had previously suggested a different meaning, and certified that ruling for an interlocutory appeal, which the court of appeals did not accept. *Alpex, 34 U.S.P.Q.2d (BNA) at 1169.* The trial court then appointed a Special Master, who after a one day hearing, recommended that unless the matter was clear after the introduction of evidence, the court should instruct the jury in a very complicated way. *Id. at 1171-72.* The trial court gave a much simpler instruction. *Id. at 1172.* The verdict was reversed on appeal on the ground that there was no infringement because prosecution history estoppel precluded a meaning which covered the accused product. See *Alpex, 102 F.3d at 1221-23, 40 U.S.P.Q.2d (BNA) at 1673-74.*

n40 *Litton Sys., Inc. v. Honeywell, Inc., 1995 U.S. Dist. LEXIS 729 (C.D. Cal. Jan. 4, 1995), aff'd in part, rev'd in part, 87 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1996), petition for cert. filed (Nov. 26, 1996).* In *Litton*, the jury was asked to determine whether the patent included "only the ion beam gun described in the specification . . . which includes any ion beam gun with a hot wire cathode, an anode, magnets, and multi-aperture grids" or "[A]ny broad-beam, multi-apertured, gridded ion beam source, which includes any hollow cathode gun and any radio frequency gun." *Litton, 1995 U.S. Dist. LEXIS 729, at *133.*

n41 *52 F.3d 967, 34 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1995), aff'd, 116 S. Ct. 1384, 38 U.S.P.Q.2d (BNA) 1461 (1996).*

n42 *Id. at 988-89, 34 U.S.P.Q.2d (BNA) at 1337.*

n43 The court cited *McGill Inc. v. John Zink Co., 736 F.2d 666, 672, 221 U.S.P.Q. (BNA) 944, 948 (Fed. Cir.), cert. denied, 469 U.S. 1037 (1984); Bio-Rad Labs., Inc. v. Nicolet Instr. Corp., 739 F.2d 604, 614, 222 U.S.P.Q. (BNA) 654, 661 (Fed. Cir.), cert. denied, 469 U.S. 1038 (1984); Palombo v. Don-Joy Co., 762 F.2d 969, 974, 226 U.S.P.Q. (BNA) 5, 7 (Fed. Cir. 1985); Moeller v. Ionetics, Inc., 794 F.2d 653, 657, 229 U.S.P.Q. (BNA) 992, 994 (Fed. Cir. 1986); H.H. Robertson, Co. v. United Steel Deck, Inc., 820*

*F.2d 384, 389, 2 U.S.P.Q.2d (BNA) 1926, 1928 (Fed. Cir. 1987); Perini Am., Inc. v. Paper Converting Machine Co., 832 F.2d 581, 584, 4 U.S.P.Q.2d (BNA) 1621, 1624 (Fed. Cir. 1987); and ToI-O- Matic Inc. v. Proma Productt-und Mktg. Gesellschaft m.b.H., 945 F.2d 1546, 1550, 20 U.S.P.Q.2d (BNA) 1332, 1336 (Fed. Cir. 1991). The Markman majority noted that McGill and Bio-Rad erroneously relied on *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 221 U.S.P.Q. (BNA) 473 (Fed. Cir. 1984); that Palombo cited no authority; that Moeller cited Palombo; that Robertson cited Moeller and Palombo; and that Perini cited *Palombo and McGill. Markman*, 52 F.3d. at 976-77, 34 U.S.P.Q.2d (BNA) at 1327. None of those decisions had held that there was a right to a jury trial on the interpretation of a patent.*

n44 *Id.*, at 977, 34 U.S.P.Q.2d (BNA) at 1327. The majority also observed the "fundamental principle" that written evidence is construed by the court; that a patent is a fully integrated written instrument which is required to have claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention, and, thus, a patent is "uniquely suited for having its meaning and scope determined entirely by a court as a matter of law." *Id.* at 978, 34 U.S.P.Q.2d (BNA) at 1328. The majority emphasized that a patent was a government grant, and that it was only fair, as well as statutorily required, that competitors be able to reasonably ascertain the scope of a patentee's right to exclude. *Id.* at 978-79, 34 U.S.P.Q.2d (BNA) at 1328-29.

n45 The court observed that claims must be read in view of the specification, of which the claims are a part. A patentee is free to be his own lexicographer, but "any special definition given to a word must be clearly defined in the specification." *Id.* at 980, 34 U.S.P.Q.2d (BNA) at 1330. A court should also consider the patent's prosecution history, if it is in evidence. The court further stated: [e]xtrinsic evidence is to be used for the court's understanding of the patent, not for the purpose of varying or contradicting the terms of the claims When, after considering the extrinsic evidence, the court finally arrives at an understanding of the language as used in the patent and prosecution history, the court must then pronounce as a matter of law the meaning of that language. *Id.* at 981, 34 U.S.P.Q.2d (BNA) at 1331 (citations omitted). Extrinsic evidence is defined as "evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises" *Id.* at 980, 34 U.S.P.Q.2d (BNA) at 1330.

n46 *Id.* at 986, 34 U.S.P.Q.2d (BNA) at 1335.

n47 *Id.*

n48 Judges Rich, Nies, Michel, Plager, Lourie, Clevenger and Schall joined in the majority opinion. Judge Rader concurred on the ground that, regardless of whether it be considered a question of law or fact, the determination by the trial judge was correct. *Id.* at 998-99, 34 U.S.P.Q.2d (BNA) at 1345-46. Judge Mayer also filed a concurring opinion. See notes 49-50, *infra*, and accompanying text.

n49 *Markman*, 52 F.3d at 992, 1010-17, 34 U.S.P.Q.2d (BNA) at 1340-41, 1355-61.

n50 *Id.* at 994-96, 1021-23, 34 U.S.P.Q.2d (BNA) at 1342-44, 1364-66. Additionally, Judge Newman's dissent and Judge Mayer's concurrence suggested a distinction between the factual meaning of the terms ("interpretation") and the legal effect of the terms ("construction"). *Id.* at 992, 1000-01, 34 U.S.P.Q.2d (BNA) at 1340, 1347. Although both

Judge Mayer and Judge Newman contended that the Seventh Amendment required jury determination of questions of fact incidental to interpretation, Judge Mayer thought it only applied to issues in which extrinsic evidence had been admitted. *Id. at 991, 34 U.S.P.Q.2d (BNA) at 1339-40*. Judge Newman did not state any such limitation.

n51 *155 U.S. 565 (1895)*.

n52 *55 U.S. (14 How.) 218 (1853)*.

n53 *76 U.S. (9 Wall.) 812 (1869)*.

n54 *80 U.S. (13 Wall.) 453 (1872)*.

n55 *192 U.S. 265, 275 (1904)*.

n56 *Silsby, 55 U.S. at 225*.

n57 *Id. at 226*.

n58 The Patent Act of 1870 added a requirement for setting forth "the best mode in which [the inventor] has contemplated applying that principle [of the invention] so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement or combination, which he claims as his [own] invention or discovery" 16 Stat. 198, sec. 26 (1870) (emphasis added). The Silsby court specifically noted that the claim did "not point out and designate the particular elements which compose a combination, but only declares . . . that the combination is made up of so much . . . as effects a particular result" *Silsby, 55 U.S. at 226*. It was in that circumstance, subsequently disallowed by reason of the 1870 Patent Act's requirement of distinct claims, that the court in Silsby continued that "it is a question of fact which the described parts are essential to produce that result; and to this extent, not the construction of the claim, strictly speaking, but the application of the claim, should be left to the jury." *Id.* (emphasis added).

n59 *Bischoff, 76 U.S. at 816*. This case involved a contract dispute over English patents; English law at that time did not include the distinct claim requirement of the 1870 U.S. statute.

n60 *Tucker, 80 U.S. at 455-56*.

n61 *Singer, 192 U.S. at 275*.

n62 A holding that infringement can become a question for the court when there is no material dispute of fact obviously does not establish that interpretation becomes a question for the jury when there is a material dispute over the meaning of claims.

n63 *Markman v. Westview Instruments, Inc., 116 S. Ct. 1384, 1387, 38 U.S.P.Q.2d (BNA) 1461, 1463 (1996)*.

n64 In support of its argument, the Court stated: The closest 18th-century analogue of modern claim construction seems, then, to have been the construction of specifications, and as to that function the mere smattering of patent cases that we have from this period shows no established jury practice sufficient to support an argument by analogy that today's construction of a claim should be a guaranteed jury issue. *Id. at 1391, 38 U.S.P.Q.2d (BNA) at 1466*.

n65 The Court stated that "Bischoff does not . . . hold that the use of expert testimony about the meaning of terms of art requires the judge to submit the question of their construction to the jury." *Id. at 1394, 38 U.S.P.Q.2d (BNA) at 1469*. "In sum, neither Bischoff nor Tucker indicates that juries resolved the meaning of terms of art in construing a patent" *Id. at 1395, 38 U.S.P.Q.2d (BNA) 1469-70*.

n66 *Id.* (citing *Miller v. Fenton, 474 U.S. 104, 114 (1985)*). The Markman Court concluded that judges were likely to do better than jurors in the construction of written instruments, that patent construction is a special occupation, and that a judge is more likely to give a proper interpretation than a jury. *Markman, 116 S. Ct. at 1395, 38 U.S.P.Q.2d (BNA) at 1470*.

n67 *Id.* The Court stated, "In the main, we expect, any credibility determinations [between experts] will be subsumed within the necessarily sophisticated analysis of the whole document, required by the standard construction rule that a term can be defined only in a way that comports with the instrument as a whole." *Id.* A jury's capability to "evaluate demeanor" or "sense the mainsprings of human conduct" were held to be "much less significant than a trained ability to evaluate the testimony in relation to the overall structure of the patent." *Id.* Referring to the need to ascertain whether an expert's proposed definition fully comports with the specification and claims and so will preserve the patent's "internal coherence," the court held that construction of terms of art should be treated "like many other responsibilities that we cede to a judge in the normal course of trial, notwithstanding its evidentiary underpinnings." *Id. at 1395-96, 38 U.S.P.Q.2d (BNA) at 1470*.

n68 *Id. at 1396, 38 U.S.P.Q.2d (BNA) at 1470* (quoting *General Elec. Co. v. Wabash Appliance Corp., 304 U.S. 364, 369 (1938)*) (footnote omitted).

n69 *Id.* (quoting *United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236, 55 U.S.P.Q. (BNA) 381, 385 (1942)*).

n70 *Id.* (quoting *Merrill v. Yeomans, 94 U.S. 568, 573 (1877)*)

n71 The Court held that the uniformity of defining the limits of a patent "would, however, be ill served by submitting issues of document construction to juries." *Markman, 116 S. Ct. at 1396, 38 U.S.P.Q.2d (BNA) at 1471*.

n72 *Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1, 71 U.S.P.Q. (BNA) 175 (1946)*. In *Halliburton*, the Court had expressed concern over the "broadness, ambiguity, and overhanging threat of the functional claims" *Id. at 12, 71 U.S.P.Q. (BNA) at 179*. The Court observed that "inventive genius may evolve many more devices to accomplish the same purpose . . . [but] if Walker's blanket claims be valid, no device to clarify echo waves, now known or hereafter invented, whether the device be an equivalent of Walker's ingredient or not, could be used in a combination such as this, during the life of Walker's patent." *Id. at 12, 71 U.S.P.Q. (BNA) at 180*. On the other hand, had Walker accurately described the machine he claimed to have invented, an "alleged infringer could have prevailed if its substitute device (1) performed a substantially different function; (2) was not known at the date of Walker's patent as a proper substitute for the resonator, or (3) had been actually invented after the date of the patent." *Id. at 13, 71 U.S.P.Q. (BNA) at 180* (emphasis added).

n73 35 U.S.C 112 (1996).

n74 See *Texas Instruments v. U.S. Intern. Trade Comm'n*, 805 F.2d 1558, 1569, 231 U.S.P.Q. (BNA) 833, 839 (Fed. Cir. 1986).

n75 *Valmont Industries, Inc. v. Reinke Mfg. Inc.*, 983 F.2d 1039, 1042, 25 U.S.P.Q.2d (BNA) 1451, 1454 (Fed. Cir. 1993) (citing 35 U.S.C. 112).

n76 *Id.* at 1043-44, 25 U.S.P.Q.2d (BNA) at 1445.

n77 *Id.* at 1044, 25 U.S.P.Q.2d (BNA) at 1445.

n78 See *Graver Tank Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608-09, 85 U.S.P.Q. (BNA) 328, 330-31 (1950); *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, 904 F.2d 677, 683, 14 U.S.P.Q.2d (BNA) 1942, 1947-48 (Fed. Cir. 1990).

n79 *Evans v. Eaton*, 20 U.S. (7 Wheat.) 356, 434 (1822).

n80 Donald S. Chisum, Patents 18.04[1] (1995).

n81 56 U.S. (15 How.) 330 (1853).

n82 *Id.* at 343. Winans involved a patent for a coal transportation car "in the form of a frustrum of a cone, substantially as herein disclosed, whereby the force exerted by the weight of the load presses equally in all directions" *Id.* at 342. The trial court had instructed the jury that defendant's octagonal railroad coal car design did not infringe plaintiff's patent for a conical design of such cars. The Supreme Court reversed.

n83 *Id.* at 341. The Court went on to state that specifications are to be construed liberally, in accordance with the design of the Constitution and the patent laws of the United States, to promote the progress of the useful arts, and allow inventors to retain to their own use, not any thing which is a matter of common right, but what they themselves have created. *Id.* (citations omitted).

n84 *Id.* at 342. The Court stated that such express declarations were unnecessary because: [t]he law so interprets the claim without the addition of these words. The exclusive right to the thing patented is not secured, if the public are at liberty to make substantial copies of it, varying its form or proportions. 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 contemplation 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. Indeed, it is difficult to perceive how any other rule could be applied, practicably, to cases like this. How is a question of infringement of this patent to be tried? It may safely be assumed, that neither the patentee nor any other constructor has made, or will make, a car exactly circular. In practice, deviations from a true circle will always occur. How near to a circle, then, must a car be, in order to infringe? May it be slightly elliptical, or otherwise depart from a true circle, and, if so, how far? In our judgment, the only answer that can be given to these questions is, that it must be so near to a true circle as substantially to embody the patentee's mode of operation and thereby attain the same kind of result as was reached by his invention. It is not necessary that the defendant's cars should employ the plaintiff's invention to as good advantage as he employed it, or that the result should be precisely the same in degree. It must be the same in kind, and effected by the employment of his mode of operation in substance. Whether,

in point of fact, the defendant's cars did copy the plaintiff's invention, in the sense above explained, is a question for the jury *Id.* at 343-44 (emphasis added). The four dissenting justices questioned the patentability of the conical form of the railroad car, arguing that the statutory requirements of exactness in description of the invention and particularity precluded the holding by the majority and warned, "Nothing, in the administration of this law, will be more mischievous, more productive of oppressive and costly litigation, of exorbitant and unjust pretensions and vexatious demands, more injurious to labor, than a relaxation of these wise and salutary requisitions of the act of Congress." *Id.* at 347.

n85 95 U.S. (5 Otto) 274, 278-79 (1877).

n86 *Id.* Accord *McLain v. Ortmyer*, 141 U.S. 419, 423-24 (1891); *Alexander Milburn Co. v. Davis-Bournonville Co.*, 270 U.S. 390, 400-01 (1926).

n87 97 U.S. (7 Otto) 120, 125 (1877) (citations omitted).

n88 101 U.S. (11 Otto) 332, 335 (1879). The litigated patent issued on November 22, 1870.

n89 *Id.* at 337.

n90 210 U.S. 405, 414-15, (1907); Cf. *Singer Mfg. Co. v. Cramer*, 192 U.S. 265, 278 (1903).

n91 280 U.S. 30, 42 (1929) (citing *Machine Co. v. Murphy*, 97 U.S. (7 Otto) 120, 125 (1877)).

n92 *Id.* (citation omitted).

n93 For example, Judge Learned Hand referred to equivalents "as examples of a class which may be extended more or less broadly as the disclosure warrants, the prior art permits, and the originality of the discovery makes desirable." *Claude Neon Lights, Inc. v. E. Machlett & Son*, 36 F.2d 574, 575-76, 3 U.S.P.Q. (BNA) 320, 322 (2d Cir. 1948). He observed that the doctrine had been developed to "temper unsparing logic and prevent an infringer from stealing the benefit of an invention." *Royal Typewriter Co. v. Remington, Inc.* 168 F.2d 691, 693, 77 U.S.P.Q. (BNA) 517, 518 (2d Cir.), cert. denied, 335 U.S. 825, 79 U.S.P.Q. (BNA) 454 (1948). In *Autogiro Co. of Am. v. United States*, the Court of Claims referred to the doctrine of equivalents as casting "a penumbra around a claim." 384 F.2d 391, 400, 155 U.S.P.Q. (BNA) 697, 704-05 (Ct. Cl. 1967). In *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, Judge Rich declared that the doctrine of equivalents does not extend or enlarge the claims of the patent, but that the claims "remain the same and application of the doctrine expands the right to exclude to 'equivalents' of what is claimed." 904 F.2d 677, 684, 14 U.S.P.Q.2d (BNA) 1942, 1948 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990) (emphasis in original). Judge Nies, dissenting in *Hilton Davis Chemical Co. v. Warner Jenkinson Co. Inc.*, asserted that under the doctrine of equivalents "The 'scope' [of the claims] is not enlarged if courts do not go beyond the substitution of equivalent elements." 62 F.3d 1512, 1574, 35 U.S.P.Q.2d (BNA) 1641, 1692 (Fed. Cir. 1995) (en banc) (Nies, J. dissenting), rev'd, 65 U.S.L.W. 4162 (U.S. Mar. 4, 1997) (No. 95-728).

n94 315 U.S. 126, 137, 52 U.S.P.Q. (BNA) 275, 280 (1942).

n95 339 U.S. 605, 609, 85 U.S.P.Q. (BNA) 328, 331 (1950) [hereinafter *Graver II*].

n96 See notes 134-35, *infra*, and accompanying text.

n97 See *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 957, 4 U.S.P.Q.2d (BNA) 1737, 1758 (Fed. Cir. 1987) (Newman J., dissenting), cert. denied, 485 U.S. 961 (1988); *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538, 20 U.S.P.Q.2d (BNA) 1456, 1458 (Fed. Cir. 1991); *Texas Instruments v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1572, 231 U.S.P.Q. (BNA) 833, 842 (Fed. Cir. 1986); *International Visual Corp. v. Crown Metal Mfg. Co.*, 991 F.2d 768, 773-75, 26 U.S.P.Q.2d (BNA) 1588, 1592 (Fed. Cir. 1994).

n98 See, e.g., *Leggett v. Avery*, 101 U.S. (11 Otto) 256, 259 (1879); *Shepard v. Carrigan*, 116 U.S. 593, 597 (1886); *Smith v. Magic City Kennel Club, Inc.*, 282 U.S. 784, 789-90 (1931); *Schriber-Schroth Co. v. Cleveland Trust Co.*, 311 U.S. 211, 220-21, 47 U.S.P.Q. (BNA) 345, 349 (1940); *Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 136-37, 52 U.S.P.Q. (BNA) 275, 280 (1942).

n99 *Perkin-Elmer Corp. v. Westinghouse Elec.*, 822 F.2d 1528, 1532, 3 U.S.P.Q.2d (BNA) 1321, 1324 (Fed. Cir. 1987). See also *Southwall Technologies v. Cardinal IG Co.*, 54 F.3d 1570, 1579, 34 U.S.P.Q.2d (BNA) 1673, 1679 (Fed. Cir.), cert. denied, 116 S. Ct. 515 (1995); *Mark I Mktg. Corp. v. R. R. Donnelly & Sons Co.*, 66 F.3d 285, 289-92, 36 U.S.P.Q.2d (BNA) 1095, 1099-1105 (Fed. Cir. 1995), cert. denied, 116 S. Ct. 917 (1996). Indeed, the Federal Circuit has stated, "Determining the limitations on the doctrine of equivalents is a question of law, which we review *de novo*." *Texas Instruments*, 988 F.2d at 1173, 26 U.S.P.Q.2d (BNA) at 1025. See also *Wilson Sporting Goods Co. v. David Geoffrey & Assoc.*, 904 F.2d 677, 683, 14 U.S.P.Q.2d (BNA) 1942, 1948 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990); *Hoganas AB v. Dresser Indus.*, 9 F.3d 948, 952, 28 U.S.P.Q.2d (BNA) 1936, 1939 (Fed. Cir. 1993).

n100 *Hilton Davis Chemical Co. v. Warner Jenkinson Co. Inc.*, 62 F.3d 1512, 1518, 35 U.S.P.Q.2d (BNA) 1641, 1645 (Fed. Cir. 1995) (en banc), rev'd, 65 U.S.L.W. 4162 (U.S. Mar. 4, 1997) (No. 95-728). The court held that the "function-way-result test" would often but not invariably be determined by whether the "claimed and accused products or processes include substantially the same function, way and result." *Id.* The court added that "known interchangeability of the accused and claimed elements is potent evidence that one of ordinary skill in the relevant art would have considered the change insubstantial." *Id.* at 1519, 35 U.S.P.Q.2d (BNA) at 1646. The majority further held that copying was relevant to show that the doctrine of equivalents applied; that intent need not be proven in order to show copying; that evidence of designing around the patent weighed against application of the doctrine; and that evidence of independent research, although not directly relevant, was relevant to refute copying. *Id.* at 1519-20, 35 U.S.P.Q.2d (BNA) at 1646-47.

n101 *Id.* at 1520, 35 U.S.P.Q.2d (BNA) at 1647.

n102 See *Graver II*, 339 U.S. 605, 85 U.S.P.Q. (BNA) 328 (1950).

n103 *Hilton Davis*, 62 F.3d at 1535, 35 U.S.P.Q.2d (BNA) at 1653. The majority cited *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 40-43 (1929) and its own cases: *Moleculon Research Corp. v. CBS, Inc.*, 872 F.2d 407, 409, 10 U.S.P.Q.2d (BNA) 1390,

1392 (*Fed. Cir. 1989*) and *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1365, 219 U.S.P.Q. (BNA) 473, 484 (*Fed. Cir. 1983*).

n104 *Gould v. Rees*, 82 U.S. (15 Wall.) 187 (1872); accord *Gill v. Wells*, 89 U.S. (22 Wall.) 1 (1874).

n105 *Hilton Davis*, 62 F.3d at 1522-26, 35 U.S.P.Q.2d (BNA) at 1648-51.

n106 *Id.* at 1529, 35 U.S.P.Q.2d (BNA) at 1654 (Newman, J., concurring).

n107 *Id.* at 1531, 35 U.S.P.Q.2d (BNA) at 1656.

n108 *Id.* at 1531, 35 U.S.P.Q.2d (BNA) at 1654-55.

n109 *Id.* at 1530, 35 U.S.P.Q.2d (BNA) at 1656.

n110 *Id.* at 1531, 35 U.S.P.Q.2d (BNA) at 1656.

n111 *Id.* at 1532, 35 U.S.P.Q.2d (BNA) at 1657 (quoting Stanley M. Besen & Leo J. Raskind, An Introduction to the Law and Economics of Intellectual Property, 5 J. Econ. Persp. 3, 5 n.2 (1991)). Unless such opinions represented a common consensus, they would not even seem to be evidence for policy decisions by legislators. Their acceptance as a basis for judicial action seems even more tenuous. Attempts to separate "total welfare" from "consumer welfare" appear to be subjective and inconsistent with the concept of a market economy that underlies modern antitrust analysis.

n112 *Id.* at 1533, 35 U.S.P.Q.2d (BNA) at 1658 (citing Janusz A. Ordovery, Economic Foundations and Considerations in Protecting Industrial and Intellectual Property, 53 *Antitrust L.J.* 503, 506-07 (1985)). This is simply an economist's ipse dixit. Two contrary examples indicate its fallacy: (1) if the patent holder or its assignee does not market the product, there is a negative social value from applying the doctrine of equivalents to that patent; and (2) the uncertainty of what is an equivalent increases risks. It would be most unwise to base legislative or judicial policy on such generalizations.

n113 *Id.* at 1532, 35 U.S.P.Q.2d (BNA) at 1657 (citing Yusing Ko, The Economic Analysis of Biotechnology Patent Protection, 102 *Yale L. J.* 777 (1992)).

n114 *Id.* at 1534, 35 U.S.P.Q.2d (BNA) at 1659.

n115 *Id.* at 1537, 35 U.S.P.Q.2d (BNA) at 1661. The doctrine of equivalents is "regularly used by patentees to seek greater coverage for their patents than the patent statute grants," *id.*; that juries were told to decide the issue based on "a formulaic chant," *id.*; that there is no explanation "of the rationale behind [the jury's] verdict," *id.* at 1538, 35 U.S.P.Q.2d (BNA) at 1662; that the majority holding gave a "virtually uncontrolled and unreviewable license to juries to find infringement if they so choose." *Id.* Judge Plager read the Supreme Court precedents as providing an equitable remedy. He stressed "the need for clear and reviewable boundaries . . . lest the power inherent in the doctrine of equivalents destroy the reliance on the scope of claims to which every competitor is entitled." *Id.* at 1541, 35 U.S.P.Q.2d (BNA) at 1664. He suggested that the Supreme Court instruct trial judges in the equitable principles to be applied into the otherwise statutorily defined infringement context. *Id.* at 1539-41, 1663-65. Alternatively, he suggested that the judge could decide whether the differences between patent claims and the infringing product are so insubstantial and the circumstances so compelling as to

warrant the remedy of the doctrine of equivalents, leaving it to the jury to determine whether the doctrine entitled the patent holder to relief. *Id.* at 1544, 35 U.S.P.Q.2d (BNA) at 1667. He concluded by stating that the issue "is not only the claims of the parties against each other, but the interest of the public in protecting reliance by competitors on the public record, and in ensuring that patent rights are given their due and no more." *Id.* at 1544-45, 35 U.S.P.Q.2d (BNA) at 1668.

n116 *Id.* at 1545, 35 U.S.P.Q.2d (BNA) at 1668.

n117 *Id.* at 1549-50, 35 U.S.P.Q.2d (BNA) at 1671-72.

n118 *Id.* at 1550, 35 U.S.P.Q.2d (BNA) at 1672-73.

n119 See *id.* at 1551, 35 U.S.P.Q.2d (BNA) at 1673.

n120 *Id.* at 1560, 35 U.S.P.Q.2d (BNA) at 1681.

n121 *Id.* at 1568, 35 U.S.P.Q.2d (BNA) at 1687 (emphasis in original).

n122 See *id.* at 1568-75, 35 U.S.P.Q.2d (BNA) at 1687-93. On the merits of the infringement question involved in the case, Judge Nies noted that there was nothing in the specification to indicate that the invention extended beyond the specific ranges. The Examiner had required the specific pH range in order for applicant to overcome prior art, and the low side pH range of 6.0 was selected because the process foamed at a pH of 5.0. *Id.* at 1580-82, 35 U.S.P.Q.2d (BNA) at 1697-99.

n123 *87 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1996)*, petition for cert. filed (Nov. 26, 1996).

n124 *Id.* at 1571, 39 U.S.P.Q.2d (BNA) at 1329.

n125 *Id.*

n126 *Id.* at 1572, 39 U.S.P.Q.2d (BNA) at 1329.

n127 *Id.*

n128 *Id.* at 1579, 39 U.S.P.Q.2d (BNA) at 1335. Judge Bryson stated: (1) the jury's finding on equivalents was "infected by its broad construction of the scope of the claims," *id.*; (2) the claims are "expressly limited to Kaufman-type ion-beam sources," *id.*; (3) the district court correctly held that the term 'Kaufman-type ion beam source' as used in the patent included only a source having the four elements set forth in the specification, *id.*; and (4) the district court properly held that the radio frequency ion-beam source could not reasonably be held to be equivalent to the Kaufman- type source. *Id.*

n129 *Id.* at 1580, 39 U.S.P.Q.2d (BNA) at 1336.

n130 Judge Bryson opined: Patent counselors should be able to advise their clients, with some confidence, whether to proceed with a product or process of a particular kind. The consequences of advice that turns out to be incorrect can be devastating, and the costs of uncertainty-unjustified caution or the devotion of vast resources to the sterile enterprise of litigation-can be similarly destructive. An expansive doctrine of equivalents can make counseling clients on infringement an exercise in hedging. *Id.*

n131 Judge Bryson stated: Four judges have now looked at the question; two have concluded that infringement by equivalents cannot reasonably be found, and the other

two have concluded that a jury could reasonably find infringement. That diversity of views suggests that the infringement question cannot be answered with the level of confidence the court ought to provide to lawyers and businessmen facing multi-million dollar decisions. The application of the doctrine of equivalents in a case such as this one thus seems to me to fuel the case against the doctrine, not to support its continued existence within the narrow limits where its purposes are most clearly served and its costs kept to a minimum. *Id. at 1581, 39 U.S.P.Q.2d (BNA) at 1336-37.*

n132 The verdicts on two state law claims were reinstated. *Id. at 1572-75, 39 U.S.P.Q.2d (BNA) at 1330-32.* The court affirmed the holding that intervening rights prevented Honeywell from being held liable for patent infringement before the date of the reissue patent, but held Honeywell liable for intentional interference with contractual relations and interference with prospective economic advantage. *Id. at 1577, 39 U.S.P.Q.2d (BNA) at 1334.* Judge Bryson would have held that (1) because the original patent was surrendered in reissue and none of the reissue claims were identical to the original claims, Litton had no valid patent when Louderback contracted with Litton in 1981 or began manufacturing for Honeywell in 1985; (2) there was no proof that Louderback disclosed any trade secrets; (3) California Business and Professions Code section 16600 voided the 15 year contract between Litton and Louderback restraining him from engaging in a lawful profession, trade or business; (4) the verdict as to intentional interference with business relations should have been reversed for failure to show unlawful means, but that issue should have remanded for a new trial concerning how it might be affected by Litton's 1989 reissue patent. *Id. at 1581-84, 39 U.S.P.Q.2d (BNA) at 1337-39.*

n133 Defendant's microfiltration membranes did not infringe literally because the chemical ratio of its constituents was 4:1 rather than about 5:1 to about 7:1 as specified in the claims. Nevertheless, infringement under the doctrine of equivalents was upheld after the en banc court remanded to the panel in the light of its decision in *Hilton Davis*. The holding on equivalents was reviewed as a question of fact. The court affirmed with the statement that: "We discern no reversible error in the application of the law of estoppel to the facts of this case, or in the court's finding that the nylon 46 membranes infringed under the doctrine of equivalents." *Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1220, 36 U.S.P.Q.2d (BNA) 1225, 1236 (Fed. Cir. 1995).*

n134 *Graver II, 339 U.S. at 609-10, 85 U.S.P.Q. (BNA) at 331.*

n135 *Linde Air Products Co. v. Graver Tank & Mfg. Co., 86 F. Supp. 191, 199, 75 U.S.P.Q. (BNA) 231, 238 (N.D. Ind. 1947).*

n136 *Graver II, 339 U.S. at 609, 85 U.S.P.Q. (BNA) at 330.*

n137 *Id. at 607-09, 85 U.S.P.Q. (BNA) at 330-31.*

n138 *Id. at 609, 85 U.S.P.Q. (BNA) at 331.*

n139 *Id. at 609-10, 85 U.S.P.Q. (BNA) at 331 (emphasis added).*

n140 For example, the Supreme Court in *Markman* recently stressed the need for the limits of the patent to be known not only in the interest of the patentee, but also to encourage the inventive genius of others, to assure that the subject will ultimately be dedicated to the public, to avoid a zone of uncertainty and to assure that the public is not

deprived of rights supposed to belong to it without being clearly told what it is that limits those rights. *Markman v. Westview Instruments*, 116 S. Ct. 1384, 1396, 38 U.S.P.Q.2d (BNA) 1461, 1470-71 (1996).

n141 474 U.S. 104, 113-14 (1985).

n142 *Markman*, 116 S. Ct. at 1384, 38 U.S.P.Q.2d (BNA) at 1470.

n143 56 U.S. (15 How.) 330, 343 (1853).

n144 82 U.S. (15 Wall.) 187 (1872).

n145 89 U.S. (22 Wall.) 1 (1874).

n146 See *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1528, 35 U.S.P.Q.2d (BNA) 1641, 1653 (Fed. Cir.) (en banc), rev'd, 65 U.S.L.W. 4162 (U.S. Mar. 4, 1997) (No. 95-728). Previous panel decisions of the Federal Circuit had reached the same result as the majority in *Hilton Davis*; see *American Hosp. Supply Corp. v. Travenal Labs Inc.*, 745 F.2d 1, 9, 223 U.S.P.Q. (BNA) 577, 583 (Fed. Cir. 1984); *Atlas Powder Co. v. E.I. Du Pont De Nemours*, 750 F.2d 1569, 1581, 224 U.S.P.Q. (BNA) 409, 417 (Fed. Cir. 1984); *Texas Instruments v. U.S. Int'l Trade Comm'n*, 805 F.2d 1558, 1563, 231 U.S.P.Q. (BNA) 833, 835 (Fed. Cir. 1983); *Hughes Aircraft v. United States*, 717 F.2d 1351, 219 U.S.P.Q. (BNA) 473 (Fed. Cir. 1983); *Saes Gettero SPA v. Ergonomics Inc.*, 15 U.S.P.Q.2d (BNA) 1212 (D.N.J. 1990). In *Micro Motion Inc. v. Exac Corp.*, 741 F. Supp. 1426, 1433-34, 16 U.S.P.Q.2d (BNA) 1001, 1007 (N.D. Cal. 1990), the trial court followed the Federal Circuit cases on the ground that it was a specialized court, but noted the conflict with *Gould and Gill*. The Federal Circuit cases were based on Court of Claims cases: *Bendix Corp. v. United States*, 600 F.2d 1364, 1383, 204 U.S.P.Q. (BNA) 617, 632 (Ct. Cl. 1979); *Decca Ltd. v. United States*, 544 F.2d 1070, 1080-81, 191 U.S.P.Q. (BNA) 439, 448 (Ct. Cl. 1976); and *Eastern Rotcraft Corp. v. United States*, 397 F.2d 978, 158 U.S.P.Q. (BNA) 294 (Ct. Cl. 1968). See also *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1220, 36 U.S.P.Q.2d (BNA) 1225, 1236 (Fed. Cir. 1995); and *Litton Sys., Inc. v. Honeywell Inc.*, 87 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1996), petition for cert. filed (Nov. 26, 1996).

n147 329 U.S. 1, 13, 71 U.S.P.Q. (BNA) 175, 180 (1946).

n148 280 U.S. 30, 40-43 (1929).

n149 *Temco Elec. Motor Co. v. Apco Mfg. Co.*, 275 U.S. 319, 328 (1928).

n150 *Id.*

n151 *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1556-58, 220 U.S.P.Q. (BNA) 303, 315-17 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

n152 *Wilson Sporting Goods v. David Geoffrey & Assocs.*, 904 F.2d 677, 683, 14 U.S.P.Q.2d (BNA) 1942, 1948 (Fed. Cir.) cert. denied, 498 U.S. 992 (1990). In *Wilson*, the Court held that the hypothetical claim for the equivalent that was sought would have been obvious from a prior patent. The rule that a patentee should not be able to claim under the doctrine of equivalents, coverage which he could not lawfully have obtained from the PTO by literal claims was the reason why prior art "limits the range of permissible equivalents of a claim." *Id.* at 684, 14 U.S.P.Q.2d (BNA) at 1948.

n153 9 *F.3d* 948, 954, 28 *U.S.P.Q.2d* (BNA) 1936, 1946 (*Fed. Cir.* 1993) (citing *Atlas Powder Co. v. E. I. du Pont de Nemours*, 750 *F.2d* 1569, 1580 n.3, 224 *U.S.P.Q.* (BNA) 409, 417 n.3 (*Fed. Cir.* 1984)).

n154 *Id.*

n155 The statute states: 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 negated by the manner in which the invention was made. 35 *U.S.C.* 103(a) (1996).

n156 The Supreme Court has held: While the ultimate question of patent validity is one of law, the 103 condition, which is but one of three conditions, each of which must be satisfied, lends itself to several basic factual inquiries. Under 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy. *Graham v. John Deere Co.*, 383 *U.S.* 1, 17-18, 148 *U.S.P.Q.* (BNA) 459, 467 (1966) (citations omitted).

n157 50 *F.3d* 966, 33 *U.S.P.Q.2d* (BNA) 1406 (*Fed. Cir.*), cert. granted sub nom., *American Airlines Inc. v. Lockwood*, 115 *S. Ct.* 2274, and subsequently dismissed as moot, 116 *S. Ct.* 29 (1995).

n158 *Id.* at 987 (Nies, J., dissenting) (citations omitted).

n159 58 *U.S.* (17 *How.*) 74, 84 (1854). The Court stated: It was the right of the jury to determine, from the facts in the case, whether the specifications, including the claim, were so precise as to enable any person skilled in the structure of machines, to make the one described. This the statute requires, and of this the jury are to judge. The jury are also to judge of the novelty of the invention as the original patent, . . . and they are to determine whether the invention has been abandoned to the public. There are other questions of fact which come within the province of a jury; such as the identity of the machine used by the defendant with that of the plaintiff's, or whether they have been constructed and act on the same principle. *Id.*

n160 76 *U.S.* (9 *Wall.*) 812, 814 (1869).

n161 *Id.* at 816 (citing *Betts v. Menzies*, 10 *H.L.C.* 117 (1862)).

n162 *Bischoff*, 76 *U.S.* at 815. The Court stated: The control which the courts can always exercise over unsatisfactory verdicts will enable them to prevent any wrong or injustice arising from the action of juries; whereas, if the courts themselves were compellable to decide on these often recondite and difficult questions, without the aid of scientific persons familiar with the subjects of the inventions in question, they might be led into irremediable errors, which would produce great injustice to suitors. *Id.*

n163 See *Tucker v. Spalding*, 80 U.S. (13 Wall.) 453, 453 (1871). The Court stated: Whatever may be our personal opinion of the fitness of the jury as a tribunal to determine the diversity or identity in principle of two mechanical instruments, it cannot be questioned that when plaintiff, in the exercise of the option which the law gives him, brings his suit in the law in preference to the equity side of the court, that question must be submitted to the jury, if there is so much resemblance as raises the question at all. And, though the principles by which the question must be decided may be very largely propositions of law, it still remains the essential nature of jury trial that while the court may on this mixed question of law and fact, lay down to the jury the law which should govern them, so as to guide them to truth and guard them against error, and may, if they disregard instructions, set aside their verdict, the ultimate response to the question must come from the jury. *Id.*

n164 *Mahn v. Harwood*, 112 U.S. 354, 358 (1884).

n165 340 U.S. 147, 87 U.S.P.Q. (BNA) 303 (1950).

n166 336 U.S. 271, 80 U.S.P.Q. (BNA) 451 (1949).

n167 *Mahn*, 112 U.S. at 358. In *A & P*, the Court, in an opinion by Justice Jackson, held: The questions of general importance considered here are not contingent upon resolving conflicting testimony, for the facts are little in dispute. We set aside no finding of fact as to invention, for none has been made except as to the extension of the counter, which cannot stand as a matter of law. The defect that we find in this judgment is that a standard of invention appears to have been used that is less exacting than that required where a combination is made up entirely of old components. It is on this ground that the judgment below is reversed. 340 U.S. at 153-154, 87 U.S.P.Q. (BNA) at 306. Justice Douglas' concurring opinion stated "The standard of patentability is a constitutional standard; and the question of validity of a patent is a question of law." *Id.* at 155. Justice Jackson, who wrote for the Court, was also the author of the Court's opinions in *Graver I*, 336 U.S. 271, 80 U.S.P.Q. (BNA) 451 (1949), and *Graver II*, 339 U.S. 605, 85 U.S.P.Q. (BNA) 328 (1950).

n168 In *Graver I*, the Court affirmed a judgment that four welding flux claims were not invalid. In doing so, the Court referred to expert testimony, Federal Rule of Civil Procedure 52(a), its understanding that the ultimate question of patentability was whether the requirements of the statute had been met, and concluded that "the facts as found with respect to these four flux claims warrant a conclusion here that as a matter of law those statutory requirements have been met." *Graver I*, 336 U.S. at 275, 80 U.S.P.Q. (BNA) at 452. In the same opinion, the Court reinstated the trial court's opinion, set aside by the court of appeals, that three flux claims were invalid for overbreadth. In ruling on both the claims held valid and those held invalid, the Supreme Court seems to have regarded validity as a question of law. Where incidental facts were involved, the trial court's decision was reviewed under the clearly erroneous rule. *Id.* at 278-79, 80 U.S.P.Q. (BNA) at 454. No jury issues were raised because there was no jury at the trial court level.

n169 *Id.* at 275, 80 U.S.P.Q. (BNA) at 452.

n170 *Id.* at 279, 80 U.S.P.Q. (BNA) at 454.

n171 383 U.S. 1, 17, 148 U.S.P.Q. (BNA) 459, 467 (1966).

n172 52 *U.S. (11 How.) 248 (1850)*. The holding in *Hotchkiss* was later statutorily enacted as the obviousness standard of 35 *U.S.C. 103*.

n173 J. Robert Chambers, *Jury Trials in Patent Cases: The First Six Years Of The Federal Circuit*, 29 *IDEA* 275, 282 (1989).

n174 18 Stat. c. 77 2 (1875).

n175 Fed. R. Civ. P. 39(c).

n176 9 Charles A. Wright & Arthur R. Miller, *Federal Practice and Procedure*, 2335 (1971).

n177 688 *F.2d* 647 (9th Cir. 1982) (en banc).

n178 *Id. at* 650.

n179 *Id.*

n180 *Id. at* 650-51 (criticizing *Hammerquist v. Clarke's Sheet Metal, Inc.*, 658 *F.2d* 1319, 1323, 212 *U.S.P.Q. (BNA)* 481, 483-84 (9th Cir. 1981)).

n181 732 *F.2d* 888, 895 *n.5*, 221 *U.S.P.Q. (BNA)* 669, 674, *n.5* (Fed. Cir.), cert. denied, 469 *U.S.* 857, 225 *U.S.P.Q. (BNA)* 792 (1984). The view suggested in *Sarkisian*, *supra*, that a jury verdict on nonobviousness is at best advisory, would make charades of motions for directed verdict or JNOV under Fed. R. Civ. P. 50 in patent cases. Those motions apply only to binding jury verdicts. See 9 Charles A. Wright and Arthur R. Miller, *Federal Practice and Procedure* 2523 (1982). Moreover, use of an advisory jury is limited to actions not triable of right by a jury. Fed. R. Civ. P. 39(C). Further, Fed. R. Civ. P. 52(a), requires the court to enter its own set of findings and conclusions just as it must do when sitting without a jury. That requirement and the reluctance to take days or weeks of jury persons' lives for service as mere advisors appear to account for the virtually universal non-use of advisory juries. Moreover, the notion that patent cases are somehow outside the mainstream of the law, and that special, judge-designated rules not applicable to other types of jury trials must be applied when a "patent case" is tried before a jury, finds no support in the statute, in the Federal Rules of Civil Procedure, or in the *Seventh Amendment to the Constitution*. *Perkin-Elmer Corp.*, 732 *F.2d at* 895 *n.5*, 221 *U.S.P.Q. (BNA)* at 674 *n.5*. Unless the Seventh Amendment guarantees the right to a jury determination of such issues, none of these reasons seem persuasive. Of course, motions for directed verdict and JNOV would not apply to advisory verdicts, and, therefore the court would have to make findings. In fact, neither the Seventh Amendment nor the Federal Rules of Civil Procedure prohibit the use of advisory jury verdicts on issues of fact to be determined by the trial judge, either in non-patent or, as is shown by the practice with inequitable conduct issues, in patent cases.

n182 868 *F.2d* 1226, 1234, 9 *U.S.P.Q.2d* (BNA) 1913, 1918-19 (Fed. Cir.), cert. denied, 493 *U.S.* 853 (1989).

n183 *Id. at* 1240, 9 *U.S.P.Q.2d* (BNA) at 1924.

n184 See, e.g., *In re Lockwood*, 50 *F.3d* 966, 33 *U.S.P.Q.2d* (BNA) 1406 (Fed. Cir.), cert. granted sub nom., *American Airlines Inc. v. Lockwood*, 115 *S. Ct.* 2274, and subsequently dismissed as moot, 116 *S. Ct.* 29 (1995).

n185 722 *F.2d* 1542, 1546, 220 *U.S.P.Q.* (BNA) 193, 196 (*Fed. Cir.* 1983).

n186 *Id.*

n187 *Id.* at 1547, 220 *U.S.P.Q.* (BNA) at 197.

n188 *Id.* See also *White v. Jeffrey Mining Mach. Co.*, 723 *F.2d* 1553, 1558, 220 *U.S.P.Q.* (BNA) 703, 705 (*Fed. Cir.* 1983); *Railroad Dynamics, Inc. v. A. Stucki Co.*, 727 *F.2d* 1506, 1514-15, 220 *U.S.P.Q.* (BNA) 929, 937-38 (*Fed. Cir.* 1984); *Perkin-Elmer Corp. v. Computervision Corp.*, 732 *F.2d* 888, 894-95, 221 *U.S.P.Q.* (BNA) 669, 674 (*Fed. Cir.*), cert. denied, 469 *U.S.* 857, 225 *U.S.P.Q.* (BNA) 792 (1984); *Bio-Rad Lab., Inc. v. Nicolet Instrument Corp.*, 739 *F.2d* 604, 611, 614-15, 222 *U.S.P.Q.* (BNA) 654, 659, 662-63 (*Fed. Cir.*), cert. denied, 469 *U.S.* 1038 (1984); *Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc.*, 750 *F.2d* 1552, 1558, 224 *U.S.P.Q.* (BNA) 259, 261 (*Fed. Cir.* 1984); *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 *F.2d* 613, 620-21, 225 *U.S.P.Q.* (BNA) 634, 637-38 (*Fed. Cir.*), cert. dismissed, 474 *U.S.* 976 (1985); *Othokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 *F.2d* 1565, 1574-75, 1 *U.S.P.Q.2d* (BNA) 1081, 1087 (*Fed. Cir.* 1986) (all opposing use of special interrogatories when question of obviousness submitted to jury).

n189 725 *F.2d* 1350, 1354-56, 220 *U.S.P.Q.* (BNA) 763, 767-68 (*Fed. Cir.* 1984).

n190 749 *F.2d* 707, 718, 223 *U.S.P.Q.* (BNA) 1264, 1272 (*Fed. Cir.* 1984).

n191 *Id.*

n192 *Id.*

n193 864 *F.2d* 757, 9 *U.S.P.Q.2d* (BNA) 1417 (*Fed. Cir.* 1988), cert. denied, 493 *U.S.* 814 (1989).

n194 *Id.* at 762, 9 *U.S.P.Q.2d* (BNA) at 1421. Judge Newman dissented. *Id.* at 769-88, 9 *U.S.P.Q.2d* (BNA) at 1427-42.

n195 *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 *F.3d* 1512, 1556-58, 35 *U.S.P.Q.2d* (BNA) 1641, 1677-79 (*Fed. Cir.* 1995) (en banc) (Nies, J., dissenting), rev'd, 65 *U.S.L.W.* 4162 (U.S. Mar. 4, 1997) (No. 95-728).

n196 *Id.* at 1556, 35 *U.S.P.Q.2d* (BNA) at 1678.

n197 *Id.*

n198 *Id.*

n199 87 *F.3d* 1559, 39 *U.S.P.Q.2d* (BNA) 1321 (*Fed. Cir.* 1996), petition for cert. filed (Nov. 26, 1996).

n200 *Id.* at 1565-56, 39 *U.S.P.Q.2d* (BNA) at 1324.

n201 In reinstating the jury verdicts, the Federal Circuit reversed the trial court's setting aside of those verdicts on a motion for judgment as a matter of law. See *id.* at 1570, 39 *U.S.P.Q.2d* (BNA) at 1327.

n202 *Id.* at 1567, 39 *U.S.P.Q.2d* (BNA) at 1325 (citing *Dennison Mfg. Co. v. Panduit Corp.*, 475 *U.S.* 809, 229 *U.S.P.Q.* (BNA) 478 (1986)).

n203 *Id.* at 1570, 39 *U.S.P.Q.2d* (BNA) at 1327.

n204 See *Dennison Mfg. Co.*, 475 U.S. at 811, 229 U.S.P.Q. (BNA) at 479 (emphasis added).

n205 In the *Litton* case, the Kaufman-type ion beam source has already been mentioned as the basis for the court's having sustained a jury verdict that a radio frequency ion beam source was infringing under the doctrine of equivalents. On the obviousness question, there were four major prior art references: (1) the Molitor article; (2) the Laznovsky article; (3) the Bernard patent; and (4) Veeco catalogs. *Litton*, 87 F.3d at 1567-69, 39 U.S.P.Q.2d (BNA) at 1325-27. The Molitor article was obviously a key item. Despite the recited fact that Kaufman had developed his ion gun for interplanetary propulsion, the court held that because the Molitor article was published in a paper which primarily described propulsion systems for space vehicles "a reasonable jury could find that Molitor is not analogous art." *Id.* at 1568, 39 U.S.P.Q.2d (BNA) at 1326 (emphasis added). The court found that the all the above prior art references, alone or in combination failed to suggest many limitations in the claimed method, and the record disclosed no teaching or suggestion to combine them. *Id.* at 1568-69, 39 U.S.P.Q.2d (BNA) at 1326-27. The court also noted that Honeywell had copied the reissue technology, both *Litton* and Honeywell had enjoyed commercial success and Honeywell and others had failed to build durable E-beam mirrors. *Id.* at 1569-70, 39 U.S.P.Q.2d (BNA) at 1327. The specific question of whether the Molitor article was non-analogous art was not presented to the jury and the jury's general verdict does not establish this conclusion, except by legal fiction. Moreover, prior art related to space vehicles is hardly distinguished from an element of a patent claim developed for interplanetary propulsion systems. The type of appellate review of jury determinations of obviousness espoused in *Litton* simply leaves the jury free to do whatever it chooses, to give no reasons for its decision, and to have any decision sustained.

n206 *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. (BNA) 459, 467 (1966).

n207 *Id.* at 17-18, 148 U.S.P.Q. (BNA) at 466-67.

n208 *Id.* at 33, 148 U.S.P.Q. (BNA) at 473.

n209 *Id.* at 35, 148 U.S.P.Q. (BNA) at 473-74 (citation omitted).

n210 *Markman v. Westview Instruments*, 116 S. Ct. 1384, 38 U.S.P.Q.2d (BNA) 1461 (1996).

n211 58 U.S. (17 How.) 74, 84 (1854).

n212 See, e.g., *In re Wright*, 999 F.2d 1557, 1561, 27 U.S.P.Q.2d (BNA) 1510, 1513 (Fed. Cir. 1993); *In re Vaeck*, 947 F.2d 488, 495, 20 U.S.P.Q.2d (BNA) 1438, 1444 (Fed. Cir. 1991); *In re Wands*, 858 F.2d 731, 735, 8 U.S.P.Q.2d (BNA) 1400, 1402 (Fed. Cir. 1988); *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 960 n.6, 220 U.S.P.Q. (BNA) 592, 599 n.6 (Fed. Cir. 1983).

n213 *Quaker City Gear Works Inc. v. Skil Corp.*, 747 F.2d 1446, 1453-54, 223 U.S.P.Q. (BNA) 1161, 1166 (Fed. Cir. 1984), cert. denied, 471 U.S. 1136 (1985); *Gould v. Quigg*, 822 F.2d 1074, 1077, 3 U.S.P.Q.2d (BNA) 1302, 1303-04 (Fed. Cir. 1987) (noting that evidence may be presented regarding the "numerous factual underpinnings of enablement"); *Spectra-Physics Inc. v. Coherent Inc.*, 827 F.2d 1524, 1533, 3 U.S.P.Q.2d

(BNA) 1737, 1742 (*Fed. Cir. 1987*) (noting that there may be underlying issues of fact involved). See also *In re Chilowsky*, 306 F.2d 908, 909, 134 U.S.P.Q. (BNA) 515, 516 (C.C.P.A. 1962) (affirmed because no factual showing of enablement); *In re Naquin*, 398 F.2d 863, 866, 158 U.S.P.Q. (BNA) 317, 319 (C.C.P.A. 1968) (reversed because of Board's disregard of factual statements in affidavits).

n214 35 U.S.C. 112 also requires that the specification describe the invention and that the inventor disclose his best mode. It has been stated that the sufficiency of the disclosure is a question of law but that the adequacy of the written disclosure is a question of fact. See *Utter v. Hiraga*, 845 F.2d 993, 998, 6 U.S.P.Q.2d (BNA) 1709, 1714 (*Fed. Cir. 1986*); *Ralston Purina Co. v. Far-Mar Co.*, 772 F.2d 1570, 1574, 227 U.S.P.Q. (BNA) 177, 178 (*Fed. Cir. 1985*).

n215 722 F.2d 1542, 1550 n.1, 220 U.S.P.Q. (BNA) 193, 200 n.1 (*Fed. Cir. 1983*).

n216 *Id.* at 1542, 220 U.S.P.Q. (BNA) at 198.

n217 *Id.* at 1550-51, 220 U.S.P.Q. (BNA) at 199-200.

n218 *Id.* at 1550, 220 U.S.P.Q. (BNA) at 200.

n219 945 F.2d 1546, 20 U.S.P.Q.2d (BNA) 1332 (*Fed. Cir. 1991*).

n220 *Id.* at 1553, 20 U.S.P.Q.2d (BNA) at 1338. The court also (1) affirmed the judgment of no infringement based on a jury verdict; and (2) reversed the judgment on non-usefulness, which had also been based on a jury verdict that a patent claim was not useful. *Id.* at 1552-53, 20 U.S.P.Q.2d (BNA) at 1338.

n221 *Id.* at 1553, 20 U.S.P.Q.2d (BNA) at 1338.

n222 See *Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 876, 9 U.S.P.Q.2d (BNA) 1384, 1392 (*Fed. Cir. 1989*), cert. denied, 490 U.S. 1067 (1989). Note, however, the *ToI-O-Matic* court did not specifically reverse for the trial court's error on the ground of intent to deceive, but simply substituted the jury verdict for the trial court's finding. *Tol- O-Matic*, 945 F.2d at 1553, 20 U.S.P.Q.2d (BNA) at 1339.

n223 In *ToI-O-Matic*, the court also stated that "although the jury was not precluded from deciding the ultimate question of inequitable conduct, in this case the district court undertook to do so." *Id.* at 1553, 20 U.S.P.Q.2d (BNA) at 1338. This comment looks very much like an invitation to leave inequitable conduct, an issue traditionally decided by a judge, for jury determination. Such a decision seems plainly wrong, as does relying on an advisory verdict, which a judge is supposed to be able to heed or ignore and which cannot be used by the court of appeal to show an abuse of discretion. See also *Modine Mfg. Co. v. Allen Group, Inc.*, 917 F.2d 538, 542, 16 U.S.P.Q.2d (BNA) 1622, 1625 (*Fed. Cir. 1990*), cert. denied, 500 U.S. 918 (1991) (submission of inequitable conduct to the jury may be consented to by failure to object to jury instructions despite pre-trial objections to submission).

n224 52 F.3d 967, 974, 34 U.S.P.Q.2d (BNA) 1321, 1324, (Fed. Cir. 1995) (en banc), aff'd 116 S. Ct. 1384, 38 U.S.P.Q.2d (BNA) 1461 (1996).

n225 35 U.S.C. 284 (1996).

n226 807 *F.2d* 1567, 1572, 1 *U.S.P.Q.2d* (BNA) 1210, 1213 (*Fed. Cir.* 1986). The court stated that: In determining whether an infringer acted in bad faith as to merit an increase in damages awarded against him, the court will consider the totality of the circumstances, including (1) whether the infringer deliberately copied the ideas or design of another; (2) whether the infringer, when he knew of the other's patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid, or that it was not infringed, and (3) the infringer's behavior as a party to the litigation. *Id.* (citations omitted).

n227 *Read Corp. v. Portec, Inc.*, 970 *F.2d* 816, 827, 23 *U.S.P.Q.* (BNA) 1426, 1435 (*Fed. Cir.* 1992). The additional factors were: (4) Defendant's size and financial condition and the concern that exemplary damages should not unduly prejudice defendant's non-infringing business; (5) closeness of the case; (6) duration of defendant's misconduct; (7) remedial action by defendant; (8) defendant's motivation for harm; and (9) whether defendant attempted to conceal its conduct. *Id.*

n228 66 *F.3d* 1211, 1221, 36 *U.S.P.Q.2d* (BNA) 1225, 1231 (*Fed. Cir.* 1995) (citations omitted).

n229 See 35 *U.S.C.* 284 (1996).

n230 5 Donald S. Chisum, *Patents* 20.03 [4], 20-381 (1995).

n231 509 *F.2d* 287, 292, 185 *U.S.P.Q.* (BNA) 129, 131 (5th *Cir.* 1975).

n232 794 *F.2d* 1561, 1567-68, 230 *U.S.P.Q.* (BNA) 112, 115 (*Fed. Cir.* 1986).

n233 *Id.* at 1564, 230 *U.S.P.Q.* (BNA) at 113.

n234 *Id.* at 1571, 230 *U.S.P.Q.* (BNA) at 117.

n235 *Id.* at 1568, 230 *U.S.P.Q.* (BNA) at 115.

n236 *Id.*

n237 *Id.*

n238 *Id.*

n239 917 *F.2d* 538, 540, 16 *U.S.P.Q.2d* (BNA) 1622, 1623-24 (*Fed. Cir.* 1990), cert. denied, 500 *U.S.* 918 (1991).

n240 *Id.* at 542, 16 *U.S.P.Q.2d* (BNA) at 1625 (citing *Rite-Hite Corp. v. Kelley Co.*, 819 *F.2d* 1120, 1126, 2 *U.S.P.Q.2d* (BNA) 1915, 1919 (*Fed. Cir.* 1987)).

n241 *Id.* at 543, 16 *U.S.P.Q.2d* (BNA) at 1626 (footnote omitted). Accord *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 *F.2d* 1555, 24 *U.S.P.Q.2d* (BNA) 1401 (*Fed. Cir.* 1992). There the court stated that a "finding of willful patent infringement supports, but does not compel enhancement of damages. The increase of damages based on willfulness of the infringement is within the discretionary authority of the trial court, 'informed by the court's familiarity with the matter in litigation and the interest of justice.'" *Id.* at 1581, 24 *U.S.P.Q.2d* (BNA) at 1419-20 (quotation and citations omitted).

n242 80 *F.3d* 1566, 38 *U.S.P.Q.2d* (BNA) 1397 (*Fed. Cir.* 1996).

n243 *Id.* at 1569, 38 *U.S.P.Q.2d* (BNA) at 1399.

n244 *Id. at 1572, 38 U.S.P.Q.2d (BNA) at 1401-02.*

n245 *Id. at 1572, 38 U.S.P.Q.2d (BNA) at 1402.*

n246 *Id. at 1573, 38 U.S.P.Q.2d (BNA) at 1403.*

n247 *Id.*

n248 See 28 U.S.C. 2201 (1996).

n249 *In re Lockwood, 50 F.3d 966, 968-69, 33 U.S.P.Q.2d (BNA) 1406, 1407-08* (Fed. Cir.), cert. granted sub nom., *American Airlines Inc. v. Lockwood, 115 S. Ct. 2274*, and subsequently dismissed as moot, *116 S. Ct. 29 (1995)*.

n250 *Id.*

n251 *Id. at 975, 33 U.S.P.Q.2d (BNA) at 1413.*

n252 *Id. at 980, 33 U.S.P.Q.2d (BNA) at 1417.*

n253 Judge Nies stated that when a jury makes the determination, the instructions need not delineate factual disputes in the case and certain general jury instructions have been held sufficient. No reasoned analysis from the trial judge need be made, and, subject to the substantial evidence rule, the appellate court presumes all facts in favor of the verdict winner. *Id. at 989, 33 U.S.P.Q.2d (BNA) at 1915* (Nies, J., dissenting).

n254 Judge Nies commented that the "validity/invalidity of a patent is a matter which affects the public, not merely the litigants. Yet, under the confusing jury jurisprudence of this court, the matter can be treated as if only the rights of the litigants were involved." *Id.*

n255 Judge Nies noted that: As jury cases are now tried, in accordance with our precedent, the evidence respecting validity of a patent is thrown into the black box of the jury room, and the verdict is returned either valid or invalid. If both parties agree to that procedure, so be it. But where a party objects, I believe that a litigant has a right to a trial court's decision with findings of fact and conclusions of law on the issue of validity. The judge has an essential role to play in a constitutional jury trial. *Id. at 990, 33 U.S.P.Q.2d (BNA) at 1916.*

n256 *Id. at 981, 33 U.S.P.Q.2d (BNA) at 1909.*

n257 *492 U.S. 33 (1989).*

n258 *In re Lockwood, 50 F.3d at 982, 33 U.S.P.Q.2d (BNA) at 1909* (Nies, J., dissenting).

n259 *Id. at 982-83, 33 U.S.P.Q.2d (BNA) at 1910.*

n260 *Id. at 984, 33 U.S.P.Q.2d (BNA) at 1911-12.*

n261 *Id. at 986-87, 33 U.S.P.Q.2d (BNA) at 1912-13.*

n262 See 1 Stat. 318 5 (1793).

n263 The Court stated that it adopted the formulation of Judge Nies rather than that of the majority below, and that the doctrine of equivalents "must be applied to individual elements of the claim, not the invention as a whole." *Warner-Jenkinson Co. v. Hilton*

Davis Chemical Co., 65 U.S.L.W. 4162, 4163-65 (U.S. Mar. 4, 1997) (No. 95-728). Judge Nies actually referred both to the individual elements of the claim and the invention as a whole, 62 F.3d 1512, 1573-74, 35 U.S.P.Q.2d (BNA) 1641, 1692 (Fed. Cir. 1995) (en banc) (Nies, J. dissenting), rev'd, 65 U.S.L.W. 4162 (U.S. Mar. 4, 1997) (No. 95-728). Presumably, the Supreme Court's "not" was in contrast to a concept of merely looking at the invention as a whole, and intended to preserve the application to the whole as well as to the individual elements.

n264 The Court held that absent an explanation for an amendment containing a limitation inconsistent with a claimed equivalent, application of the doctrine of equivalents would be barred by prosecution history estoppel because of a presumption that the Patent Office had a substantial reason related to patentability for including the limiting element. *Hilton Davis*, 65 U.S.L.W. at 4165-66.

n265 *Id.* at 4167.

n266 *Id.* at 4167-68. This bare holding concerning the time for determination of equivalents did not discuss the Court's own precedents to the contrary (i.e., *Gould and Gill*) or the relationship of time limits on substitutes under the doctrine of equivalents to time limits on substitutes for elements of prior art. If, as the Court assumed, permitting post patent substitutes to be equivalents necessarily determined that equivalents were not confined to those referred to in the specifications, the latter effect should have been considered in determining whether to overrule those precedents. The court also neglected to take into account that, in addition to promissory estoppel, what is disclosed in the specifications but not claimed is abandoned and may not be claimed as an equivalent. See *Smith v. Magic City Club*, 282 U.S. 784, 789-90; *Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 136-37, 52 U.S.P.Q. (BNA) 275, 280 (1942). See also *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 39 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996). As pointed out in this article and in *Maxwell*, *Graver II* involved an equivalent that was included as part of a claim held invalid only for overbreadth.

n267 *Hilton Davis*, 65 U.S.L.W. at 4163-65.

n268 *Id.* at 4167. The *Markman* reasons for the rule requiring judicial construction of a patent claim would seem to apply, a fortiori, to the extension of the scope of a patent beyond the claims under the doctrine of equivalents created in *Winans v. Denmead*, 56 U.S. (15 How.) 330, 343 (1853), under the theory that the patentee was deemed to have claimed equivalents. Those reasons and their a fortiori application to equivalents are not rebutted to any extent by referring to them as relating to an asserted inconsistency between the doctrine of equivalents and the requirements of claims. In any event, the courts have declared that there is no such inconsistency.

n269 *Hilton Davis*, 65 U.S.L.W. at 4167 (emphasis added). The Court cited *Machine Co. v. Murphy*, where the Court had stated: in determining the question of infringement, the court or jury, as the case may be . . . are to look at the machines or their several devices or elements in the light of what they do, or what office or function they perform, and how they perform it, and to find that one thing is substantially the same as another, if it performs substantially the same function in substantially the same way to obtain the same result . . . 97 U.S. (7 Otto) 120, 125 (1877). Further the Court cited *Winans*, 56 U.S.

at 344 ("[It] is a question for the jury" whether the accused device was "the same in kind, and effected by the employment of [the patentee's] mode of operation in substance").

n270 *Hilton Davis*, 65 U.S.L.W. at 4168 (footnote omitted) (citing *Markman v. Westview Instruments*, 116 S. Ct. 1384, 1393, 38 U.S.P.Q.2d (BNA) 1461, 1469 (1996)). The *Markman* opinion, however, referred to two elements of a patent case: construing the patent and determining whether infringement occurred, citing *Winans* for the latter point.

n271 *Id.* at 4168 n.8.

n272 *Id.* at 4168.

n273 *Markman*, 116 S. Ct. 1384 (1996).

n274 *Id.* at 1390.