

Expert Evidence Report

Volume 2 Number 7
Monday, April 22, 2002
ISSN 1536-190X

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Analysis & Perspective

Patent Reform by Daubert Litigation

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This Term the Supreme Court will decide a remarkably large number of intellectual property law cases -- four -- on seven issues including the Patent and Copyright Clause, the First Amendment, what is patentable and the scope of the Federal Circuit's jurisdiction.¹ 🗳️ The seven issues are:

1. Did the D.C. Circuit err in holding that Congress has the power under the Copyright Clause to extend retrospectively the term of existing copyrights?
2. Is a law that extends the term of existing and future copyrights "categorically immune from challenge[] under the First Amendment"?
3. Whether every claim-narrowing amendment designed to comply with any provision of the Patent Act--including those provisions not related to prior art--automatically creates prosecution history estoppel regardless of the reason for the amendment.
4. Whether the finding of prosecution history estoppel completely bars the application of the Doctrine of Equivalents.
5. Does 28 U.S.C. §1295(a)(1) divest regional Circuits of jurisdiction over cases in which the well-pleaded complaint of the prevailing plaintiff does not allege any claim arising under federal patent law?
6. Did the Court of Appeal for the Federal Circuit err in concluding that this action is a 'patent case,' that is, a 'civil action arising under' federal patent law for purposes of 28 U.S.C. §1295(a)(1) and §1338(a)?

7. Whether sexually reproduced plants are patentable subject matter under 35 U.S.C. 101?

Purely from a litigation perspective, irrespective of the subject matter, when the Supreme Court shows this much interest in a subject area, litigators listen. No matter how the Court decides the four cases (short of indicating they are no longer interested in the subject), the cases are likely to have a far reaching effect on American patent and intellectual property law by themselves and as a predictor of future cases.

This article by a non-patent law litigator and antitrust practitioner, thanks to the quick learning made possible by the pending FTC/DOJ Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy,² argues that the Supreme Court's interest could not be more timely; that American patent law over the last 20 years has become seriously out of balance by over-legalizing the regulation of innovation through patent law; that the legalization of innovation has happened at the worst possible time for the U.S. because of five extraordinary developments, outside patent law, that make innovation and the free exploitation of ideas essential to American prosperity in the future, and finally, that the four Supreme Court cases suggest and support a new and probably the most viable means of patent law reform--litigation focused on the Constitution, the Daubert Quartet and other selected law, both in court and as the basis for Federal agency action, presented in an overview next.³

I. THE AMERICAN PATENT LAW SYSTEM

A. The Supreme Court's Carefully Crafted Constitutional Balance

In 1989, a unanimous Supreme Court in *Bonito Boats*⁴ established the modern Constitutional contours of the place of patents in the overall American system of innovation and intellectual property protection.⁵ The Court explained that the Constitution's Patent and Copyright Clause in Article I, §8, "reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the 'Progress of Science and useful Arts,'" and held that the proper balance is for the "free exploitation of ideas [to] be the rule" and "a federal patent ...the exception."⁶

In *Graham*, two decades before, the Court went to considerable lengths to explain the origins and limitations of the Patent and Copyright Clause in the course of invalidating two patents for being "obvious:"⁷

The clause is both a grant of power and a limitation. This qualified authority, unlike the power often exercised in the sixteenth and seventeenth centuries by the English Crown, is limited to the promotion of advances in the "useful arts." It was written against the backdrop of the practices - eventually curtailed by the Statute of Monopolies - of the Crown in granting monopolies to court favorites in goods or businesses which had long before been enjoyed by the public. *** The Congress in the exercise of the patent power may not overreach the restraints imposed by the stated constitutional purpose. Nor may it enlarge the patent monopoly without regard to the innovation, advancement or social benefit gained thereby. Moreover, Congress may not authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available. Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by

constitutional command must "promote the Progress of ... useful Arts." This is the standard expressed in the Constitution and it may not be ignored.

The Court further explained that the "underlying policy of the patent system is that 'the things which are worth to the public the embarrassment of an exclusive patent,' as Jefferson put it, must outweigh the restrictive effect of the limited patent monopoly" and then set forth a "but for" test to "weed out" what is patentable, and what is not--only those "inventions which would not be disclosed or devised but for the inducement of a patent" merit a patent.⁸

B. The Numbers Today Are Out of Balance

In 1966, the Supreme Court expressed great concern over the performance of the patent system at that time, noting that:⁹

- 100,000 patents were filed annually;
- 50,000 patents were granted annually;
- the backlog was 200,000;
- two-thirds of patents issued were held invalid by the courts -- a "notorious difference."

Today, the situation is worse.¹⁰

- 344,000 patent applications were filed last year;
- 100,000 patents are issued annually;
- about 95% of the patents filed are eventually granted.¹¹
- there has been a 62% increase in patent infringement litigation over the last 10 years¹² (patent litigation is one of the most protracted and expensive types of litigation known to the U.S. judicial system, illustrated by the 18 year long American Maize litigation and its nine court opinions).¹³
- 20 years ago about two-thirds of litigated patents were found invalid, and today the numbers are reversed -- about one-third of litigated patents are found invalid, not because the patents issued are better but because, as elaborated in part C, patentability standards have been lowered.¹⁴ The "poster child" of the lowered standards is Amazon.com's patent for one-click shopping¹⁵ -- a great idea, but hardly seems to meet the Supreme Court's Constitutional standards for patentability.¹⁶

No single numbers summarize the problem for innovation in America better than John Barton's data on the ratio of intellectual property lawyers relative to dollars invested in R&D in the United States, a number that has nearly doubled from 1970 to today--from 45 to 70.¹⁷ These numbers show what has happened over the last twenty years to American patent law. Namely, the growth in the number of IP lawyers has vastly exceeded growth in R&D expenditures, because additional lawyers are needed to file more patent applications made necessary by lowered standards for

obtaining a patent; by the resulting increase in the number of patents granted, which in turn means more lawyers are needed to evaluate the increased number of patents and their claims, and, of course, more lawyers are needed for the additional litigation that results from the increase in the number of patents and claims and the additional uncertainty and larger damages that are involved (discussed further in C below).

MIT Technology Review writer Seth Shulman controversially yet provocatively summarizes the problem as being "[a]bsurdly broad patents are channeling resources from innovation into lawyers pockets."¹⁸

How did this come to be? Does it pass Constitutional muster?

C. American Patent Law Today:

A Legal Quagmire and Litigation Minefield for Innovation.

With all due respect, the Federal Circuit since its creation in 1982 has issued numerous opinions as the sole Court of Appeals on patent matters that have greatly expanded the reach of American patent regulation and litigation. Some of Federal Circuit's key patent law rulings include the following.

1. Lowering the Standard -- "Secondary Considerations".

One of the key conditions of patentability is that an invention not have been obvious to a person having ordinary skill in the art to which the invention pertains, in the words of patent law, that it be "nonobvious." As the Court stated in *Graham*, the "the test of obviousness" is "whether '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.'"¹⁹

The Federal Circuit has lowered the standard for patentability by lowering the "nonobviousness" standard by making it easier to prove "nonobvious" and harder to prove "obvious." One of the several ways the court has changed the "not obvious" requirement for patentability is the elevation of so-called "secondary considerations" from a position of secondary relevance at best under previous Supreme Court and Court of Appeals case law²⁰ (they were considered only if doubt remained after application of the Supreme Court's three-step test), to primacy. Now secondary factors must always be considered, and, if sufficiently present, trump the three-step test to make inventions patentable that are not patentable as "obvious" under the three step test.²¹ In addition, the Federal Circuit has used "secondary considerations" to lower patent standards in a number of other ways, including:²²

- **More Secondary Considerations** may be used as proof of nonobviousness;
- **Relaxed Proof of "Commercial Success,"** so that the required showing that commercial success was the result of the nonobvious nature of the claimed invention, rather than some other factor such as marketing;

● **Restricted Use of Negative Secondary Considerations** when used to establish that a patent was obvious, and thus not patentable.

2. Lowering the Standard -- Prior Art.

Another change involves "prior art" and the "person of ordinary skill in the art." In the Supreme Court cases, a "person of ordinary skill in the art" was someone of intelligence and imagination who kept himself or herself informed of developments in the fields pertinent to his or her work. The Supreme Court in *Graham* stated:²³ 📖

[T]he ambit of applicable art in given fields of science has widened by disciplines unheard of half a century ago. It is but an evenhanded application to require that those persons granted the benefit of a patent monopoly be charged with an awareness of these changed conditions.

This is to be contrasted with the person of ordinary skill in the Federal Circuit cases, who is defined to be "one who thinks along the line of conventional wisdom ... and is not one who undertakes to innovate."²⁴ 📖 Further, he or she in effect is defined to be a literalist, without imagination or creativity, unaware of developments pertinent to his or her work, one who is incapable of considering collectively the combined teachings of relevant prior art unless "motivated" to do so by explicit directions in the references themselves.²⁵ 📖 This "motivation" requirement is absent from the Supreme Court cases, which by contrast, assumes that the "person of ordinary skill" had sufficient professionalism and imagination to consider collectively the teachings of relevant art, even if the references did not themselves suggest that they be considered together.

This change has narrowed the scope of prior art considered in the three-step analysis prescribed by *Graham*, and has rendered patentable inventions that once could not have been the subject of a valid patent. More than one commentator has suggested that the effect of this change is to have read the requirement for nonobviousness in §103 out of the statute entirely, and to have made patentable all inventions that are not "identically described or disclosed" in a single reference.²⁶ 📖

3. Lowering the Standard - Combination Patents.

For "combination" patents, the Federal Circuit has reversed the Supreme Court's presumption that when all of the elements of the combination were known to prior art, the combination was presumed "obvious" and thus not patentable unless shown otherwise. The Federal Circuit has reversed this presumption, so that a combination is presumed nonobvious, unless it is shown otherwise.²⁷ 📖

4. Excessive Damages.

The patent statute in 35 U.S.C. Sec. 284 provides for compensatory damages, stating that damages are to be "adequate to compensate for the infringement, but in no event less than a reasonable royalty." The Supreme Court held in *Aro*²⁸ 📖 that this means that patent damages are "the difference between [the patentee's] pecuniary condition after the infringement, and what his [pecuniary] position would have been if the infringement had not occurred." That is to say the object of the patent damages statute as interpreted by the Supreme Court is to restore the patentee to the position he or she would have enjoyed had there been no infringement.

However, damages determined in accordance with decisions of the Federal Circuit more often than not place the patentee in a better position than if the infringement had never occurred.²⁹ Federal Circuit cases require that the patentee recover lost profits damages on the infringer's sales the patentee would have made in the absence of the infringement (i.e., on the "but for" assumption that the infringer was absent from the market), and, in addition, award reasonable royalty damages on any additional sales by the infringer which could not have been made by the patentee (i.e., on the contrary "but for" assumption that the infringer was in the market and licensed by the patentee). This "but-for" world in which the alleged infringer is assumed to be simultaneously absent from and present in the market is not at all like the real world, which the Supreme Court in *Aro* said we are supposed to emulate.

In the real world, licensing and not licensing are mutually exclusive, and the patentee does one or the other, but not both simultaneously. He or she either licenses and faces competition, or does not license and does not face competition. A damages rule that would emulate the real world in accordance with *Aro* would not combine lost profits and reasonable royalty damages as Federal Circuit decisions mandate, but instead would award the patentee his or her lost profits on their lost sales, or a reasonable royalty on all of the infringer's sales, whichever is the greater, but not some combination of the two which is larger than either, and which puts the patentee in better financial position than if the infringement had never occurred.

The damages award in *Polaroid v. Kodak*³⁰ was just such a combined award, as mandated by Federal Circuit decisions, and the completeness of Judge Mazzone's findings permits the excess to be determined, the former General Counsel of Kodak, has recused himself from this Kodak discussion). A compensatory damages award would have been about \$197 million, based on the royalty rate the court said would have been acceptable to Polaroid, since that was more than an award based on Polaroid's lost profits from its lost sales. But the district court believed it was compelled by Federal Circuit decisions to enter a judgment combining lost profits and reasonable royalties, and Kodak paid \$873 million, plus post-judgment interest:

- \$197 million using the compensatory standard
- \$873 million using the Federal Circuit's standard

Obviously the difference between \$873 million and \$197 million gives patentees a tremendous incentive to sue, rather than settle.³¹

5. Trial Procedure Limiting Challenges to Patent Validity.

Ignoring a 50 year old Supreme Court admonition that courts should address, not avoid, the issue of patent validity because of its "public importance,"³² the Federal Circuit has, nonetheless, adopted a "validity-only-if-necessary" procedure that avoids the issue of patent validity when the litigation can be resolved on other grounds. This law obviously has major practical implications for patent litigation. Postponing the validity issue significantly increases the patent holder's incentive to bring, and leverage during, infringement litigation by significantly reducing the risk the patent will be ruled invalid.

6. Property Rights Theory of Patents.

Some commentators assert that the Federal Circuit has adopted a property rights theory of patents,³³ which seems contrary to the Supreme Court's dicta rejecting a property rights theory

of patents. In *Graham*, the Supreme Court observed in strong dicta that Thomas Jefferson "rejected a natural rights theory in intellectual property rights," was of the view that "the patent monopoly was not designed to secure to the inventor his natural right in his discoveries," that a patent was "at odds with the inherent free nature of disclosed ideas," instead, patents were only be granted as "an inducement to bring forth new knowledge."³⁴

7. Legal Uncertainties for Innovation.

The uncertainties in U.S. patent law resulting from those which were already there and those introduced by the Federal Circuit, are one of patent law's worst failings. Any legal regime is supposed to inform those affected by it of their rights and duties in advance so they can act accordingly. The current American system of patent laws does not meet that test. There are many areas, including claim interpretation and whether a patent is valid or not, where the answers cannot be known in the absence of litigation and an appeal to the Federal Circuit, which is certainly not the mark of a legal regime that is doing its job.

The lowered standard for patentability has injected uncertainty into the evaluation of inventions and patents because the only analysis prescribed by the Federal Circuit for weighing the nonstatutory factors against a determination of obviousness under the statutory test is to consider the evidence "collectively," whatever that may mean. Thus one cannot know in the absence of litigation and appeal to the Federal Circuit whether a patent that is obvious under the statutory test is nonetheless valid because of the presence of some undefined quantum of nonstatutory factors.

The *Kodak-Polaroid*³⁵ case provides an important illustration of the uncertainty that exists in U.S. patent law. *Kodak* was adjudged to have followed a patent clearance process that is "a model for what the law requires."³⁶ Yet *Kodak* lost on 60% (7 of the 12) of the patents. Unacceptable legal uncertainty for innovators and the public is obvious when a "model process" of reviewing patents loses at trial 60% of the time, at enormous cost both as to damages, legal fees and business diversion.

8. Claim Construction Uncertainty and Expense.

The Supreme Court in the *Markman* case affirmed a Federal Circuit decision that claim construction is a question of law for judges, not a question of fact for juries.³⁷ As a result, district court judges began holding "Markman hearings" to construe claims before submitting the case to the jury. Unfortunately for the district court judges and those who hoped this decision would bring clarity, the Federal Circuit accords no deference to claim construction decisions by district court judges and, according to a 1998 report, reversed 40 percent of them. In addition, it was reported that the Federal Circuit reversed, in whole or in part, 53 percent of patent infringement decisions by district court judges.³⁸ According to a more recent report, this has led many district court judges to hold only perfunctory "Markman hearings" since the Federal Circuit accords their decisions no weight, and deals with them *de novo*, as if the district courts didn't exist.³⁹

Briefly, a number of commentators have identified the following additional Federal Circuit decisions as tilting the Supreme Court's Constitutional placement of patent law out of balance:⁴⁰

9. Held a clear and convincing standard applies in patent validity litigation.

10. Made choice of law and jurisdictional rulings that favor the Federal Circuit.

11. Expanded their authority to reach copyrights.

12. Added an "anticompetitive effect" element for patent misuse "extension of the monopoly" theories.

D. The Adverse Impact of Current Patent Law on Innovation in America.

The increased numbers of patents resulting from the lowered standards has meant that innovators face more patents of others that must be considered for possible infringements and dealt with in the course of commercializing their new products and new processes. This means more infringement studies, more validity investigations, more consultations with outside patent advisers, and, of course, more licensing, since patents that once could safely have been disregarded as not infringed or invalid can no longer be ignored.⁴¹ Sometimes it means no new products or processes are made available because a license is unavailable or too costly, even though the patent is one that would not have been valid under the prior, higher standards. Of course, in order to get more patents, and do more infringement and validity studies, one has to employ more patent attorneys, have more frequent consultations with outside patent advisers, defend more infringement suits, seek more licenses, increase the size of one's licensing staff, and pay more and larger licensing fees and legal fees.

Most important of all, large amounts of the time and energy of the R&D staff must be diverted to the task of assisting patent attorneys and litigators, rather than devising new products and more efficient processes.

The data shows that the increase in application filings as a consequence of the lowered standards has been dramatic.⁴² The increased application filings, given the volume and lack of rigor by the U.S. patent Office, have resulted in more patents, and these additional patents have further increased the costs that innovators must bear in commercializing their innovations. When higher standards for patentability prevailed, innovators could rely on the courts to protect them from those patents that never should have been granted in the first place (the "notorious" two-thirds of litigated patents that were found invalid). But, after the lowering of the standards for patentability by the Federal Circuit, innovators could no longer rely on the courts to protect them. Instead they had to engage in "self help," seeking patents on what once were unpatentable inventions in the hope of preempting others, to protect themselves from patent litigation, and to preserve the opportunity to commercialize their research and development work with a minimum of interference from others' patents.

In addition, the increased uncertainty in the American patent law system has two major effects, increased patent litigation and higher capital costs to innovate. First, increased uncertainty increases the amount of patent litigation. Answers to many of the key questions about a patent, for example, whether there is infringement, or whether the nonstatutory factors trump a determination of obviousness under the statutory test, cannot be known in the absence of litigation and appeal to the Federal Circuit. This uncertainty, and the risk of excessive damages awards, combine to turn patent litigation into a "lottery" in which the plaintiff's litigation costs are simply the price of the lottery ticket for the chance at a windfall damages award. The uncertainty,

and the risk of excessive, possibly crippling, damages combine to make patent lawsuits and threats thereof frequent instruments of extortion.⁴³ 📖

Merz and Pace have documented this increase in patent litigation and tied the increase directly to formation of the Federal Circuit whose decisions are the source of much of the uncertainty, and of the damages rules that result in excessive awards. They show litigation as flat before 1982, jumping in 1982 when the Federal Circuit began deciding cases, and continuing to rise ever since.⁴⁴ 📖 This increased litigation, of course, must be paid for, and those costs manifest themselves as increased innovation costs.

The second effect of uncertainty is even larger, the increased cost of capital for innovation investments.⁴⁵ 📖 The financial markets deal with risk and uncertainty through the cost of capital. Capital costs are higher for risky projects than for less risky projects. A concrete illustration is the Kodak-Polaroid case. The case was bifurcated and the initial damages judgment was in 1990, five years after the liability judgment in 1985. During this interval there was uncertainty as to the amount of damages Polaroid would be awarded. The damages judgment was announced at \$905 million (later reduced to \$873 million) and the equity market value of Kodak immediately increased by \$921 million. That is, the elimination of the uncertainty as to the amount of damages was followed by an immediate increase in Kodak's market equity value, and a corresponding decrease in the cost of Kodak's equity capital. Given that the market equity value of Kodak was \$11.2 billion immediately prior to the judgment, this represented a decrease of about 7 percent in the cost of Kodak's equity capital.

Imagine the savings to Kodak if the cost of its equity capital had been 7% less throughout the fifteen years the Polaroid litigation was pending. This figure indicates the additional cost of capital--and cost to innovation--borne by American innovators as a consequence of the uncertainty in the American patent system today.

Finally, there are new antitrust costs. Innovators have developed a variety of contracting practices in an effort to protect themselves from patent harm and to assure their ability to commercialize their new products and new processes. Understandably, these contracting practices, some among "competitors," have attracted the attention of antitrust enforcers and antitrust plaintiffs' attorneys. This antitrust dimension also adds to the legal costs of and diversions from innovation made necessary by the patent proliferation.⁴⁶ 📖

II. THE FIVE DEVELOPMENTS THAT MAKE PATENT REFORM ESPECIALLY IMPORTANT TO AMERICAN INNOVATION AND PROSPERITY

There are five developments, some well-known and others not well-known, some uncontroversial and others undoubtedly controversial, that underscore the importance of patent reform to the U.S., first, as a policy matter, and second, in litigation if presented properly, reflecting one of the advantages the litigation approach advocated here where there is one ultimate decision-maker on Constitutional issues, the Supreme Court. The five developments are:

- The Shift to A Knowledge-Based Economy.
- America's Critical Dependence on Innovation.

- The Historic Shift in Knowledge Creation From Discrete Cartesian Parts To Cumulative Interactive Systems
- A New Dynamic Economic Theory
- The Inevitable Evolution of Antitrust From Static to Dynamic Economics and Innovation.

A. The Unprecedented Shift to Knowledge As The Key Source of Wealth.

The first development is probably the best known, and it is unprecedented in human history. "[K]nowledge," Peter Drucker has incisively observed, "has become the primary resource for individuals and for the economy overall."⁴⁷ "Since a babe was born in a manger, it may be doubted whether so great a thing has happened with so little stir," borrowing Alfred North Whitehead's description of the birth of modern reasoning in the 1600s.⁴⁸

The implications of a knowledge economy are difficult to overstate. For one, knowledge as the primary source of wealth requires "a radical shift from previous conceptions of the sources of wealth," from the common assumption that wealth is fixed and that cheap natural resources, cheap labor and efficiency were determinative, to a new realization that "knowledge, investment, insight, and innovation" are determinative, that wealth is not fixed by, for example, the amount of gold but as limitless as knowledge, and that the focus needs to be on "superior productivity in assembling resources to create valuable products and services."⁴⁹

That is, "the potential for wealth is limitless" because wealth "is based on ideas and insights, not fixed because of scarce resources."⁵⁰ Rather than a fixed amount of gold and other hard resources, knowledge has no limitations. This means that two key assumptions underlying conventional thinking about wealth, as Peter Drucker incisively explains, the "scarcity axiom" and the assumption "that if you sell something you alienate it, you have lost it," are no longer tenable.⁵¹

Accordingly for present purposes, the shift to a knowledge economy underscores the importance of the American patent system and overall system of intellectual property being in proper balance to "promote the Progress of Science and useful Arts."

B. America's Critical and Growing Dependence on Innovation.

The "future prosperity" of the United States will "increasingly hinge on innovation" and the U.S. will not be able to "support high wages" or prosperity "by producing standard products and services."⁵²

Yet a recent study demonstrates that, even though today the U.S. economy is "the envy of the world," this "moment of greatest apparent success" may be the "nation's moment of greatest vulnerability:" the evidence shows that United States "could lose its status as the world's preeminent innovator nation in the next decade."⁵³

Why? One of the reasons is regulation. "Overall, the U.S. regulatory and legal environment still inflicts substantial, unnecessary costs on industry, and is ranked poorly relative to other countries."⁵⁴ In quantitative terms, over the past three decades the number and cost of regulatory requirements in the U.S. at 53 levels of Federal, state and local government have grown to about 9% of America's gross domestic product, over \$700 billion annually.⁵⁵

The same study demonstrates that a "problem facing the United States" compared to other major country competitors is "inefficient, litigious, and time-consuming regulatory processes."⁵⁶

In a world in which companies have many choices about where to invest, the policy framework that encourages or impedes investment in innovation is becoming ever more important. Through policy choices, government can create an array of structural incentives (or impediments) to investments in innovation.... The effect of regulatory processes on cost and time-to-market has an especially strong influence on innovation.

Accordingly, the U.S. needs to "streamline" government regulatory processes and "make them more flexible, and pro-innovation"⁵⁷-- including patent law.

C. The Historic Shift in Knowledge Creation: From Discrete Cartesian Parts To Cumulative Interactive Systems Even More Dependent on the "Free Exploitation of Ideas."

Yale University President Richard Levin co-chairs the Intellectual Property Rights in the Knowledge-Based Economy Committee of the National Academy of Sciences' Board on Science, Technology and Economic Policy (STEP). Mr. Levin at recent DOJ/FTC hearing identified yet another force that underscores the importance of a patent system that supports and encourages innovation and does not tie up or slow down innovation with inappropriate legal rules, regulations, litigation and financial risks: the key distinction between "discrete" technologies and "cumulative" technologies.⁵⁸

In the 1980s, the valuable and effective patents in ...[the pharmaceutical and certain other chemical industries] gave exclusive rights to a particular chemical compound, a specific molecule. In such cases, patent rights were relatively easily enforced, and the rights to one patented molecule were rarely required to obtain or practice a patent on another molecule.

In contrast to the discrete nature of chemical and pharmaceutical innovation, progress in other key technologies -- such as microelectronics, telecommunications, and computers -- was cumulative. Virtually any advance required access to a bundle of prior patents.

Peter Drucker supplements and underscores Mr. Levin's discrete- cumulative paradigm insight by pointing out there is a fundamental change in the nature of thinking itself that, coincidentally, is underway. The change is from Cartesian parts thinking -- "the whole is the sum of the parts" -- to interactive systems thinking, illustrated in physics, "the most Cartesian of all our disciplines," by the "quantum," which in "one measurement" includes "mass and energy, time and distance, speed and direction" in "a single indivisible process."⁵⁹ A recent example of this cumulative-systems thinking paradigm shift is from biology in the March 1, 2002 issue of Science magazine, which has a Special Issue on "Systems Biology" and the "connections between components, how they are managed, and how they evolve" as "the keys" to understanding "the architecture and dynamics of biological processes from gene expression to tissue and organism function."⁶⁰ An even more recent example is the paradigm shift underway at the major drug companies.⁶¹

"Cumulative technologies," even more than "discrete technologies," require a patent system that facilitates, rather than cripples with over regulation, legal risks and litigation the interaction of people and ideas necessary for cumulative innovation, including Mr. Porter's "clusters" and other aspects of a dynamic economic model covered next.

D. New Dynamic Economics Theory Also Underscores the Importance of Innovation To the U.S.

"Living standards are, by orders of magnitude, superior" over time, not primarily because of static efficiencies, but more importantly, innovation--"the market's "capacity to stimulate and take advantage of advancing technology." ⁶²

Had the triumph of the market meant only a more efficient use of the technologies and resources then available, the gains in living standards would have been minuscule by comparison. What made the difference was the stimulation and harnessing of new technologies and resources.

Thus the "central role of technological innovation in productivity improvement, long-run economic growth, and in determining a nation's standard of living is well recognized," and not disputed. ⁶³ The problem has been that for 400 years there has been a search for an economic theory that includes innovation. Neither current static microeconomic theory nor macroeconomic theory provides an adequate theory of innovation for patent law policy specifically or generally. ⁶⁴

Fortunately, a new dynamic economic theory and empirical analysis has just been published by Michael Porter. ⁶⁵ It demonstrates that static efficiency economics is "dangerously incomplete," and theoretically and empirically is based on two forms of productivity growth, rather than static efficiency, with a "positive-sum" form of competition that increases wealth rather than the "zero sum" competition of static economics limited to allocating a fixed amount of wealth. ⁶⁶

Productivity, rightly understood, encompasses both the value (prices) that a nation's products command in the marketplace and the efficiency with which they are produced. Improving efficiency alone, or producing more units per unit of labor or capital, does not necessarily elevate wages and profits unless the prices of the products or services are stable or rising. As global competition places greater pressure on the prices of standard goods, efficiency alone is insufficient. Advanced nations improve their standard of living more by driving up the value of their products and services (because of better technology, marketing, and associated services, for example) and moving into new fields through innovation than by producing standardized products at lower cost.

This dynamic economics model based on productivity rather than efficiency also underscores the critical importance of innovation to America's future prosperity, and thus provides additional support for restoring the patent system to the proper balance to promote, not retard, innovation in accordance with Constitutional requirements. As a litigation matter, even though Mr. Porter's Dynamic Economic model is not widely known and is undoubtedly controversial in static microeconomic, macroeconomic and other circles, it is well suited to litigation if properly presented under the Daubert Quartet and the Daubert Litigation Approach outlined here because the ultimate decision-maker is the Supreme Court.

E. Antitrust Is Evolving From Static Economics to The Dynamic Economic Analysis Innovation Requires.

For the last 20 years or so, American antitrust policy has been based on static consumer welfare economics. Mr. Porter has shown empirically and theoretically, that the "current approach to antitrust is based on questionable foundations," with the "dubious goal" of "[l]imiting price/cost margins or profitability" from static consumer welfare economics.⁶⁷ In policy circles, needless to say, Mr. Porter's views are new and sometimes controversial. In litigation, however, the author has shown elsewhere how litigator's can apply the Supreme Court's Daubert Quartet, coupled with its line of Supreme Court cases rejecting various per se and other presumptive rules starting with GTE Sylvania in 1977 through, most recently, California Dental,⁶⁸ to make antitrust policy and guidelines using static microeconomics unenforceable by government or private plaintiffs.⁶⁹

Thus, antitrust policy can be either a force that blocks, or supports and encourages, innovation and patent reform, depending on whether and how the static economic model of the last 20 years is applied or a dynamic economic model that embraces innovation is used.

In summary, there are five extraordinary developments outside patent law that, purely by coincidence, when applied to the legalization of innovation by patent law in America over the last twenty years underscore the urgency for patent law reform in the U.S.

But how?

III. PATENT REFORM USING THE DAUBERT LITIGATION APPROACH.

The four pending Supreme Court intellectual property cases both suggest and confirm the viability of pursuing patent reform by litigation focusing on the Constitution, the Daubert Quartet and other law, as the following non-exhaustive ideas illustrate (a detailed analysis is not attempted here).

A. Constitutional Theories

The Patent and Copyright Clause of the Constitution both grants, and limits, the power of Congress and the courts "To promote the Progress of Science and useful Arts." Specifically, Article I, §8 empowers Congress:

To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.

For Constitutional litigators, the language of the Patent and Copyright Clause, coupled with Supreme Court decisions like *Graham* and *Bonito Boats* and First Amendment law, readily suggest a number of theories for challenging adverse elements of current American patent law,

whether enacted by Congress or adopted by lower courts. How much of the patent law of the last twenty years can meet the Constitutional requirement that it "promote the Progress of Science and useful Arts?"

The Constitutional theories become even more potent with proper use of the Daubert Quartet, covered next.

B. The Daubert Quartet

For trial lawyers and judges, the U.S. Supreme Court's "Daubert Quartet" -- four unanimous decisions since 1993, *Daubert v. Merrell Pharmaceutical, Inc.*,⁷⁰ *General Electric Co. v. Joiner*,⁷¹ *Kumho Tire Co. v. Carmichael*⁷² and *Weisgram v. Marley Co.*⁷³ -- overturned 70 years of trial practice regarding expert evidence, rewriting both when scientific and other expert evidence can and cannot be admitted at trial, and how a trial judge's decision to exclude or admit⁷⁴ expert evidence is reviewable on appeal. Before Daubert, when a judge said "call your next witness," the experts in many cases would have been allowed to testify. After Daubert, when the judge instructed a lawyer to "call your next witness," none of the experts involved in these four Supreme Court cases were ultimately allowed to testify, and the same has been true in many other cases since 1993.⁷⁵

As a trial matter, the Daubert Quartet are important to all of the Constitutional and statutory theories covered here in federal court, and also may be applied to the PTO as an administrative agency, for the reasons covered next.

C. Daubert Applies to the PTO as An Administrative Agency.

The Supreme Court with the Daubert Quartet has revolutionized the use of expert evidence in federal courts. What about the PTO, for example, when it acts as a court. As a matter of policy and statutory interpretation, the Daubert reliable, relevant and fit standard should apply to the PTO for the following reasons.⁷⁶

First, the Supreme Court held in *Zurko* in 1999 that the Administrative Procedure Act ("APA") applies to the PTO.⁷⁷

Second, the APA has express language that directly supports the application of the Supreme Court's Daubert Quartet. APA §556(d) states that "a sanction may not be imposed or rule or order issued except ... [when] supported by and in accordance with the reliable, probative, and substantial evidence."⁷⁸ Thus, agency rules, orders, and sanctions by statute must be "supported by ... reliable" evidence, which is precisely the Daubert standard for experts. Indeed, the APA case is actually simpler. Unlike Daubert, where "reliability" was added by judicial gloss to Fed. R. Evid. 702, reliability is expressly required in the language of the APA itself. As a result, Federal agencies like the PTO could still consider a wide range of evidence without the restrictions imposed in federal court, but they may not impose a sanction in adjudication or issue a rule that is not based on "reliable" expert or other evidence.

As to appellate review, APA §706 expressly contains the same "abuse of discretion" standard the Supreme Court held applies to expert evidence in federal courts. Section 706 of the APA states that "the reviewing court shall ... hold unlawful and set aside agency action, findings, and conclusions found to be ... arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" ⁷⁹ This is precisely the Daubert standard for courts announced in Joiner.

Third, and alternatively, the Supreme Court's expert evidence rulings in Daubert have already been applied to Federal agency actions outside the APA. In *Libas Ltd. v. United States*, ⁸⁰ the Federal Circuit Court of Appeals applied Daubert to the U.S. Customs Service, even though the Federal Rules of Evidence did not apply. It then reversed the agency's use of an expert witness that was not demonstrated to be "reliable." In so ruling, Judge Cudahy cogently captured the Supreme Court's fundamental instruction in the Daubert Quartet: ⁸¹

[I]f a trial court relies upon expert testimony, it should determine that the expert testimony is reliable. It would make little sense to say that a trial court in its fact-finding role should accord much if any weight to expert testimony, the reliability of which is not established.

This same analysis readily applies to the PTO. ⁸²

Obviously the application of the Daubert reliable, relevant and fit standard to experts in PTO proceedings would represent a sea-change in law. Federal agencies, like the federal courts before Daubert, may have operated for decades under different standards for experts. Before Daubert, the federal courts, like federal agencies, liberally admitted expert evidence under a "general acceptance" standard. This standard is no longer the law in federal courts.

Why should the PTO be any different?

D. Early Daubert Hearings on Dispositive Issues


The Manual for Complex Litigation includes a variety of examples of case management tailored to complex litigation. ⁸³ Experts are used on numerous key issues, and there are well known procedures used by trial judges to manage expert evidence, such as requiring the precise issues to be addressed by experts to be defined, setting deadlines for the exchange of expert reports, critiques of adverse experts' reports, the serving of rebuttal experts' reports, and taking expert depositions. ⁸⁴ In addition, as the Manual points out, "[t]he order of trial (and of the corresponding settlement discussions) can be varied to address dispositive issues first." ⁸⁵

Daubert hearings add two important dimensions to expert evidence in patent litigation. First, a Daubert hearing may result in the exclusion of an expert critical to a party's case. Second, as a practical matter, Daubert hearings increase the trial judge's persuasive powers in settlement negotiations that occur after an expert's Daubert hearing but before the ruling on the admissibility or exclusion of the expert.


Obviously if a parties "prior art" experts, for example, are excluded at a Daubert hearing or there is a risk that that will happen, the opportunity for creative settlements should increase.

Accordingly, the Daubert Litigation Approach suggests moving to exclude experts at any dispositive stage of patent litigation by use of a Daubert hearing, coupled with judicial settlement proceedings, as a means for the courts and/or parties to obtain innovative settlements and avoid protracted patent litigation.


E. Mr. Levin's Proposed Speedy, Inexpensive Patent Review Procedure.


To minimize litigation and other debilitating legal barriers to innovation, Yale President Richard Levin at the FTC/DOJ hearings on February 6, 2002 suggested the value of and need for a speedy, inexpensive process for determining patent validity:⁸⁶ 

Another idea worthy of consideration would be to institute a system of post-grant review under which third parties could challenge the validity of a patent on grounds other than the narrow ones now permitted under the current re-examination procedures. A low-cost administrative review procedure might reduce the need for costly infringement litigation, and wasteful investments by those later judged to have infringed a valid patent might be avoided. A speedy procedure might also produce great social benefit by clarifying at an early stage the appropriate standard of nonobviousness and the scope of permissible claims in emerging areas of technology.

The Supreme Court agrees, having stated in *Graham* that "litigation ... debilitate[s] the patent system."⁸⁷  There are at least three legal bases for pursuing Mr. Levin's proposal, before as well as after the issuance of a patent.

First, the Supreme Court's *Daubert* Quartet provides a sound policy basis and credible legal support, reviewed above, for using *Daubert* hearings in the course of the administrative process.

Second, the newly enacted Data Quality Act,⁸⁸  if applicable to the PTO and its proceedings, provides some interesting opportunities and authority. This new law requires each affected Federal agency to, among other things:

(A) issue guidelines ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by the agency, by not later than 1 year after the date of issuance of the [OMB] guidelines⁸⁹ ...;

(B) establish administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by the agency that does not comply with the [OMB] guidelines.

The statute's focus on the "quality, objectivity, utility and integrity of information" such as "prior art," and its mandate of "administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by the agency" could by itself provide the basis for reforming patent law substantially so that time, resources and money are converted from a legal quagmire to the innovation the Constitutional provision intended and the times require.⁹⁰



Third, Federal Rule of Evidence 706 ("FRE 706") is binding in court and provides persuasive guidance for the PTO otherwise. FRE 706(a) deals with "Court Appointed Experts," and provides:

The court may on its own motion or on the motion of any party enter an order to show cause why expert witnesses should not be appointed, and may request the parties to submit nominations. The court may appoint any expert witnesses agreed upon by the parties, and may appoint expert witnesses of its own selection. An expert witness shall not be appointed by the court unless the witness consents to act. A witness so appointed shall be informed of the witness' duties by the court in writing, a copy of which shall be filed with the clerk, or at a conference in which the parties shall have opportunity to participate. A witness so appointed shall advise the parties of the witness' findings, if any; the witness' deposition may be taken by any party; and the witness may be called to testify by the court or any party. The witness shall be subject to cross-examination by each party, including a party calling the witness.

Thus, for example, the Patent Examiner or the appeal process may consider using agency appointed experts in determining "prior art," with FRE 706 as the model. It also may be possible, and appropriate, for the NAS Committee that Mr. Levin co-chairs or some other NAS entity to be involved in assisting the PTO determine "prior art."

F. Patent-Antitrust: The Timely 1931 Supreme Court Cracking Oil Precedent.

Fortunately for sound antitrust policy and law, the Supreme Court since *GTE Sylvania* in 1977 through, most recently, *California Dental*,⁹¹ has repeatedly and appropriately limited the use of per se and other presumptive rules from an era before the global knowledge economy to arrangements where the anticompetitive effects are "immediately" or "intuitively" obvious.⁹² Mechanistic antitrust is the last thing innovation, patent law and the U.S. need now.

The Supreme Court precedent that remains unscathed and particularly incisive for patent-antitrust, although little used to date, is *Cracking Oil*.⁹³ The Supreme Court's 1931 *Cracking Oil* opinion by Justice Brandeis remains good law, and embraces the dynamic analysis patent-antitrust law now requires. In the case, the Supreme Court reversed a government judgement against four major producers of gasoline that was made using a new method called the "cracking" process. Justice Brandeis held their horizontal price agreement on royalties for pooled patent sublicenses lawful using a multi-dimensional analysis of the combination's likely effects on competition itself analytically similar to Professor Porter's Five Forces analysis. The four dimensions of competition Justice Brandeis analyzed were the production of ordinary gasoline, the production of "cracked" gasoline, the licensing of patents for the cracking process, and the sale of gasoline.

In sharp contrast to current antitrust analysis, Mr. Brandeis' multi-dimensional approach did not require the determination of a "relevant market," did not focus on the type of restraint in the abstract (a horizontal price agreement among four major oil companies), nor was it distracted by legal form (a contractual joint venture among competitors. Under his last and most sophisticated Rule of Reason analysis, the focus instead was on the competitive process, and whether the quality of competition in the market as a whole was impaired.

The economic reality Justice Brandeis described in 1931 is strikingly relevant to today's high technology world.⁹⁴ The cracking process for making gasoline from crude oil originally was not controlled by any fundamental patent. Many concerns were working independently to develop commercial processes of their own, with each securing numerous patents on its particular cracking process. Beginning in 1920, conflict developed among the four defendants and others concerning the validity, scope, and ownership of the patents. One infringement suit was begun; crossnotices of infringement, antecedent to other suits, were given; and interferences were declared on pending applications in the Patent Office. The defendants in Cracking Oil asserted that it was these patent difficulties which led to their executing three agreements which the Antitrust Division attacked in the case, and that their sole object was to avoid litigation and losses incident to conflicting patents. Justice Brandeis ruled that "[a]n interchange of patent rights and a division of royalties according to the value attributed by the parties to their respective patent claims is frequently necessary if technical advancement is not to be blocked by threatened litigation."⁹⁵

This is often the case where patents covering improvements of a basic process, owned by one manufacturer, are granted to another. A patent may be rendered quite useless, or 'blocked,' by another unexpired patent which covers a vitally related feature of the manufacturing process. Unless some agreement can be reached, the parties are hampered and exposed to litigation. And, frequently, the cost of litigation to a patentee is greater than the value of a patent for a minor improvement.

Mr. Brandeis also analyzed the effect of the agreement on competition from four dimensions. Two of the dimensions were the production of "ordinary gasoline" and the production of "cracked gasoline," where he found "no monopoly, or restriction of competition" because the "output of cracked gasoline in the years in question was about 26 % of the total gasoline production," and ordinary gasoline was "indistinguishable" from cracked gasoline.⁹⁶

Similarly, Mr. Brandeis analyzed a third dimension of competition, the sale of gasoline, and ruled that the "defendants were in active competition among themselves and with other refiners; that both kinds of gasoline were refined and sold in large quantities by other companies; and that the primary defendants and their licensees neither individually or collectively controlled the market price or supply of any gasoline moving in interstate commerce."⁹⁷

Finally, the fourth dimension of competition Mr. Brandeis analyzed was the "business of licensing patented cracking processes," where he held there was no material adverse impact on competition in this dimension because he found "the four primary defendants owned or licensed, in the aggregate, only 55 % of the total cracking capacity," with "the remainder distributed among twentyone independently owned cracking processes" providing "clear evidence" that the contracts at issue among the four defendants did not unreasonably restrain the licensing of patented processes for the production of cracked gasoline.⁹⁸

In conclusion, Mr. Brandeis reasoned that, even though four major companies had agreed to pool their patents and agreed to the prices for doing so, competition in the market as a whole was not impaired, because the combination of the four defendants could not materially effect the vitality of the competitive process. Accordingly, there was no antitrust violation. Further, by redirecting the defendants from patent litigation to innovation in technology through cooperation, competition was more likely to be improved.

The relevance, wisdom and value of the Cracking Oil precedent to today is obvious, and its reasoning compelling -- particularly when combined with the new dynamic economic analysis that takes us to the next level beyond static consumer welfare economics.

G. Patent-Antitrust: From Static to Dynamic Economic Analysis

The patent-antitrust law interface is currently one of the hottest and most important issues for competition policy in the U.S., and worldwide. Unfortunately, current antitrust policy is based on static microeconomics, which will often be inadequate and internally inconsistent for analyzing innovation at the heart of the patent system.

The problem, incisively stated by a well known economist and former Chairman of the President's Council of Economic Advisers, is that "formal economic theory" emphasizes "static-efficiency" -- the "ability to get the most out of existing resources and technology," but "[l]iving standards" are, "by orders of magnitude, superior" today because of "what is far more important," the market's "capacity to stimulate and take advantage of advancing technology" -- innovation.⁹⁹ Thus, analytically, using static economics to analyze innovation would be like using plane geometry to analyze travel around the world. Rigorous, yes, as every high school geometry student knows, but irrelevant to global navigation (it assumes the earth is flat).

From a litigation point of view, the Supreme Court has already stated--twice--that "'in the real economic world rather than an economist's hypothetical model,' the latter's drastic simplifications generally must be abandoned."¹⁰⁰ Thus static microeconomic theory and expert testimony can be successfully excluded from antitrust litigation on Daubert grounds, as they have been in Concord Boat and other cases, and shown in detail elsewhere.¹⁰¹

Instead, a dynamic, not static, economics is needed for sound patent-antitrust policy and law. The good news is that there is now available Mr. Porter's dynamic economic model, as noted above, so that the patent-antitrust interface can be informed by the dynamic economic analysis innovation requires. To the extent patent-antitrust policy, instead, is based on static microeconomics, as a litigation matter it should be unenforceable for the reasons noted above.

IV. CONCLUSION

This article shows how a litigation approach inspired by the four pending Supreme Court' cases and focusing on the Constitution, the Daubert Quartet and other law can be used, as appropriate, with five developments outside patent law as a new and viable method to reform the patent system in the U.S. so that, as the Constitution, the times and the U.S. requires, it promotes, and does not retard, "Progress of Science and useful Arts."

¹ Eldred v. Ashcroft addresses Copyright and Patent Clause and First Amendment issues raised by the Copyright Term Extension Act of 1998; Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co. deals with the Doctrine of Equivalents and Prosecution History Estoppel; Holmes Group, Inc. v. Vornado Air Circulation Systems, Inc., addresses appellate court jurisdiction; &

J.E.M. Ag Supply v. Pioneer Hi-Bred Intl. deals with patentable subject matter. The Eldred case's Constitutional theories were widely regarded as a "fanciful academic exercise" that "suddenly looked very different once the Supreme Court" granted cert. Greenhouse, "Justices to Review Copyright Extension," N.Y. Times A1 (Feb. 20, 2002).

² See generally the materials at www.ftc.gov. The author is particularly grateful to Cecil Quillen, former General Counsel for the Eastman Kodak Company, for his writings and comments on patent law; many of his writings are available on the FTC/DOJ hearings website, including "Patent Standards and Innovation" ("Quillen Paper"). The views expressed here, of course, are solely this author's, and should not be attributed to Mr. Quillen or Eastman Kodak Company.

³ The author has applied a similar litigation approach to antitrust and environmental law, for example, as a means to overrule the 40 year old antitrust merger presumption that is no longer credible. See "Daubert Sounds the Death Knell for Antitrust's Merger Presumption After Baby Foods," 1 BNA Expert Evidence Report 168 (Dec. 10, 2001); "Harmonizing Antitrust Worldwide by Evolving to Michael Porter's Dynamic Productivity Growth Analysis," 46 Antitrust Bulletin 879 (2002); "New Approaches to Environmental Law and Agency Regulation: The Daubert Litigation Approach," 30 Environmental L. Rep. 10557 (2000)(with David Graham).

⁴ *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989).

⁵ Patents, copyrights, trade secrets, the Economic Espionage Act, trademarks, contracts and a market system that rewards innovation and antitrust laws that protect markets are all relevant.

⁶ 489 U.S. at 151, 5.

⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 5-6 (1966).

⁸ 383 U.S. at 10-11 (emphasis added).

⁹ *Graham v. John Deere Co.*, 383 U.S. 1, 18 (1966).

¹⁰ PTO data available at www.pto.gov; *Technology Rev.* 71 (May 2002).

¹¹ Quillen & Webster, "Continuing Patent Applications and Performance of the U.S. Patent Office," 11 *Federal Circuit Bar J.* 1 (August 2001).

¹² Markon, "German Inventor Says Conair Stole His Idea for a Safety Mechanism," *Wall Street J.* B1 (March 19, 2002).

¹³ *Grain Processing Corp. v. Am. Maize-Products Co.*, ___ F.3d ___ (Fed. Cir. 1999).

¹⁴ Lee, "The Most Significant Patent Cases Relating to Obviousness Under 35 U.S.C. Sec. 103," August 12, 1985 presentation to the Annual Meeting of the American Bar Association. A more recent study of all written, final validity decisions from early 1989 through 1996 found the validity rate for jury trials was 67% and 57% for bench trials. Allison & Lemley, "Empirical Evidence on the Validity of Litigated Patents," 26 *AIPLA Quarterly J.* 185 (1998).

¹⁵ *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), cert. denied 525 U.S. 1093 (1999).

¹⁶ In 1851 in the landmark *Hotchkiss* case, the Supreme Court held that a patent issued for clay and porcelain doorknobs was invalid because clay and porcelain were an "obvious" improvement to wood and metal doorknobs and not patentable. *Hotchkiss v. Greenwood*, 11 How. 248 (1851). One-click shopping, with all due respect, frankly seems indistinguishable from the porcelain doorknobs in *Hotchkiss*.

¹⁷ Barton, "Reforming the Patent System," 267 *Science* 1933 (March 17, 2000).

¹⁸ See his *Technology Review* articles at www.techreview.com.

¹⁹ 383 U.S. at 3, quoting Sec. 103 of the Patent Act of 1952, 35 U.S.C. §103

²⁰ *Graham v. John Deere*, 383 U.S. 1 (1966), and *United States v. Adams*, 383 U.S. 39 (1966), decided by the Supreme Court on the same day in 1966, prescribed the statutory test for determining whether an invention has met the nonobviousness requirement of 35 U.S.C. Sec. 103. The statutory test required a three-step factual analysis: (1) determining the scope and content of the prior art, (2) ascertaining the differences between the prior art and the claims at issue, and (3) resolving the level of ordinary skill in the pertinent art. The question of obviousness or nonobviousness was resolved against this factual background.

²¹ *Graham* and subsequent Supreme Court and regional court of appeals cases made it plain that nonstatutory factors, the so-called "secondary considerations", are only of conditional relevance in ascertaining whether the nonobviousness requirement has been met, to be considered only if there is doubt remaining after application of the three-step statutory test. Further, no amount of "secondary considerations" could overcome a determination of obviousness under the three-step statutory test.

²² Lunney, "E-Obviousness," 7 *Mich. Telecomm. Tech. L. Rev.* 363, 377-85 (2001).

²³ 383 U.S. at 19

²⁴ *Standard Oil v. American Cyanamid*, 774 F.2d 448, 454 (Fed. Cir. 1985).

²⁵ Federal Circuit "motivation" cases include *Ashland Oil v. Delta Resins*, 776 F.2d 281, 293 (Fed. Cir. 1985), *Panduit v. Dennison*, 774 F.2d. 1082, 1093 (Fed. Cir. 1985), *ACS Hospital v. Montefiore*, 732 F.2d. 1572, 1577 (Fed. Cir. 1984), *Lindemann v. American Hoist*, 730 F.2d. 1452, 1462 (Fed. Cir. 1984), and *Medtronic v. Cardiac*, 721 F.2d 1563, 1575 (Fed. Cir. 1983).

²⁶ See *Quillen Paper*.

²⁷ Lunney, *supra*, at 383-85.

²⁸ *Aro v. Convertible Top*, 377 U.S. 476 (1964).

²⁹ A comprehensive critique of Federal Circuit damages law can be found at O'Brien, "Economics and Key Patent Damages Cases," 9 *U. Baltimore Intellectual Property L. J.* 1 (2000).

³⁰ Quillen Paper.

³¹ See also American Maize.

³² *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 330 (1945).

³³ See, e.g., Lunney, "E-Obviousness," 7 *Mich. Telecommunications & Technology L. Rev.* 363 (2001).

³⁴ 383 U.S. at 9.

³⁵ *Polaroid Corp. v. Eastman Kodak Co.*, 789 F.2d 1556 (Fed. Cir. 1986)?

³⁶ See Quillen Paper.

³⁷ *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

³⁸ *National Law Journal*, June 15, 1998.

³⁹ *National Law Journal*, January 15, 2001.

⁴⁰ See Lunney, *supra*; "Symposium: The Federal Circuit and Antitrust," 69 *Antitrust L.J.* 627 (2002).

⁴¹ In some industries this task has become so overwhelming that infringement studies are seldom done in the expectation that the threat of reciprocal litigation can induce cross licensing if infringement issues ever arise. See Hall and Ziedonis, "The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979-95," 32 *Rand J. of Economics* 101 (201).

⁴² Merz and Pace, "Trends in Patent Litigation: The Apparent Influence of Strengthened Patents Attributable to the Court of Appeals for the Federal Circuit," 76 *J. Patent and Trademark Office Society* 579 (1994); Hunt, "Patent Reform: A Mixed Blessing for the U.S. Economy," 1999 *Business Review*, Federal Reserve Bank of Philadelphia 15 November/December). Also see Dr. Hunt's working Paper No. 99-3 titled Nonobviousness and the Incentive to Innovate: an Economic Analysis of intellectual Property Reform, available at www.phil.org/econ/wps/wp99.html.

⁴³ See, e.g., Lemelson *Fortune*, May 14, 2001, at 202.

⁴⁴ From Merz and Pace, cited in Quillen Paper.

⁴⁵ The following is from the Quillen Paper.

⁴⁶ Shapiro, "Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting," *Innovation Policy and the Economy*, Jaffe, Lerner and Stern, eds. (2001). Currently available at <http://haas.berkeley.edu/~shapiro/thicket.pdf>.

⁴⁷ P. Drucker, *Managing in a Time of Great Change* 75 (1995). See also P. Drucker *The Age of Discontinuity* (1968).

⁴⁸ A. Whitehead, *Science and the Modern World* 3 (1925; Free Press 1967).

⁴⁹ Porter, "Attitudes, Values, Beliefs, and the Microeconomics of Prosperity," in L. Harrison & S. Huntington, *Culture Matters* 16-17 (2000).

⁵⁰ *Id.* at 14, 21.

⁵¹ "Talking About Tomorrow: Peter Drucker," *Wall St. J.* (Jan.1, 2000).

⁵² Porter & Bond, 1999 GCR at 54.

⁵³ M. Porter & S. Stern, *The New Challenge to America's Prosperity: Findings from the Innovation Index* 5 (1999) (pdf version at compete.org).

⁵⁴ *Id.*

⁵⁵ *Id.* at 8, 67.

⁵⁶ *Id.* at 69.

⁵⁷ *Id.* at 69.

⁵⁸ Levin, Testimony to the FTC/DOJ Joint Hearings on Competition and Intellectual Property Law (Feb. 6, 2002), available at www.FTC.gov.

⁵⁹ P. Drucker, *Landmarks of Tomorrow* 5 (1959); *the Age of Discontinuity*, *supra*, at 350.

⁶⁰ *Science* 1593 (March 1, 2002).

⁶¹ Harris, "Why Drug Makers Are Failing In Quest for New Blockbusters," *Wall St. J. A!* (April 18, 2002).

⁶² C. Schultze, *The Public Use of Private Interest* 25 (1977).

⁶³ M. Porter & S. Stern, *The New Challenge to America's Prosperity: Findings from the Innovation Index* 9 (1999).

⁶⁴ Drucker, *The Age of Discontinuity*, *supra*, at 350.

⁶⁵ Porter, "Competition and Antitrust: Towards a Productivity-based Approach to Evaluating Mergers and Joint Ventures," 46 *Antitrust Bulletin* 918 (2000); on clusters, see M. Porter, *On Competition* 197 (1998); for more information and empirical data, go to two web-sites: isc.hbs.edu and compete.org. See also Weller, "Harmonizing Antitrust Worldwide by Evolving to Michael Porter's Dynamic Productivity Growth Analysis," 46 *Antitrust Bulletin* 879 (2002).

⁶⁶ Quoted in Weller, 46 *Antitrust Bulletin*, *supra*, at 893.

⁶⁷ Porter, 46 Antitrust Bulletin at 936.

⁶⁸ Calif. Dental Assn. V. FTC, 143 L.Ed 2d 935 (1999).

⁶⁹ See materials in n. 4.

⁷⁰ 509 U.S. 579, 113 S. Ct. 2786, 125 L.Ed 2d 469, (1993) (holding that the Federal Rules of Evidence, not the common-law "general acceptance" test, provides the standard for admitting expert scientific testimony in federal trials). Daubert represents one of the many Bendectin cases that one commentator described as the "Taj Mahal of horror stories about the tort system." Mark Green, Bendectin and Birth Defects: The Challenge of Mass Toxic Substances Litigation 328 (1996).

⁷¹ 522 U.S. 136, 118 S. Ct. 512 (1997) (a toxic tort case alleging that exposure to PCBs "promoted" plaintiff's small cell lung cancer in which the Court held that abuse of discretion is the proper standard by which to review a district court's decision to admit or exclude scientific evidence).

⁷² 119 S. Ct. 1167, 143 L. Ed. 2d 238 (1999) (holding that Daubert applies to all experts and that a tire expert's proposed testimony regarding an allegedly defective tire was properly excluded).

⁷³ 120 S. Ct. 1011, 145 L.Ed 2d 958 (2000). Three plaintiffs' experts were allowed to testify at trial, but were excluded on appeal on Daubert reliability grounds, the jury verdict for plaintiffs reversed and the case dismissed.

⁷⁴ Justice Breyer in Kumho made clear that appellate courts can review both a trial court's decision to admit, or exclude, expert testimony. 119 S. Ct. at 1176, 143 L. Ed. 2d at 253 (quoting Joiner, 118 S. Ct. at 515). "[Excluding expertise that is *fausse* and science that is *junky*" is important, Justice Scalia underscored in his concurring opinion in Kumho, and the failure to do so is reviewable on appeal as an abuse of discretion. 119 S. Ct. at 1179, 143 L. Ed. 2d at 256.

⁷⁵ Eight members of the Supreme Court in Joiner and Kumho affirmed the exclusion of the experts at issue in those cases. The Daubert experts were not allowed to testify on remand.

⁷⁶ A thorough analysis of this issue and various types of rulemaking and adjudication is beyond the scope of this Article.


⁷⁷ Dickinson v. Zurko, 527 U.S. 150 (1999).

⁷⁸ APA §556(d) (emphasis added). The relevant text reads in full: "a sanction may not be imposed or rule or order issued except on consideration of the whole record or those parts thereof cited by a party and supported by and in accordance with the reliable, probative, and substantial evidence." *Id.*

⁷⁹ APA §706 (emphasis added).

⁸⁰ 97-1145 (Fed. Cir. Oct. 7, 1999).

⁸¹ *Id.* at *14.

- ⁸² Accord Judge Bladen opinion in *In re Lobsters Inc.*, 2001 NOAA Lexis 8.
- ⁸³ Manual for Complex Litigation (3d ed. 1995).
- ⁸⁴ *Id.* at §21.48 at 97-99.
- ⁸⁵ *Id.* at §33.72.
- ⁸⁶ Levin, *supra*.
- ⁸⁷ Graham, 383 U.S. at 18.
- ⁸⁸ The Data Quality Act, Section 515, Treasury and General Government Appropriations Act for FY2001 (Public Law 106-554).
- ⁸⁹ 67 Fed. Reg. 8452 (Feb. 22, 2002).
- ⁹⁰ How, if and when the Data Quality Act applies to the PTO in general, or can be used by the PTO, is beyond the scope of this Article.
- ⁹¹ *Calif. Dental Assn. V. FTC*, 143 L.Ed 2d 935 (1999).
- ⁹² See generally, Weller, "A New Rule of Reason," 44 Antitrust Bulletin 881 (1999).
- ⁹³ *Standard Oil of Indiana v. U.S.*, 283 U.S. 163 (1931).
- ⁹⁴ See Richards, "Baxter Beat CellPro in Court; Some Say Dying Patients Are The Case's Big Losers," *Wall St. J. A-1* (Aug. 6, 1999), for a dramatic illustration of how vibrant his sixty year old insight remains.
- ⁹⁵ *Id.* at 171, and n.5.
- ⁹⁶ *Id.* at 176-77.
- ⁹⁷ *Id.* at 178.
- ⁹⁸ *Id.* at 175-76.
- ⁹⁹ C. Schultze, *The Public Use of Private Interest* 25 (1977). Peter Drucker has identified the same fundamental limitation of economic theory: "Historically, economic theory has started out with the present arrangement of forces and projected from it. This assumes that the structure of the future is identical with the structure of the present. There is no room in such a projection for true change such as genuine innovation brings about." P. Drucker, *Age of Discontinuity* 145 (1968). See generally P. Drucker *Innovation and Entrepreneurship* (1985).
- ¹⁰⁰ *Illinois Brick Co. v. Illinois*, 431 U.S. 720, 741742 (1977), quoting *Hanover Shoe, Inc. v. United Shoe Machinery Corp.*, 392 U.S. 481, 493 (1968).
- ¹⁰¹ See Weller materials n. 4. 

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