

# **INNOVATION AND THE UNITED STATES PATENT SYSTEM TODAY<sup>1</sup>**

Cecil D. Quillen, Jr.<sup>2</sup>

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Thank you. It is a pleasure for me to be here and speak to you today. I especially want to thank Bob Taylor for the invitation and Steve Stack and Barry Grossman for including me on the program. I am also grateful for the opportunity to fulfill part of my CLE requirements.

It is not my intention to be entertaining this afternoon. Rather, it is my hope to be provocative, and to raise for you serious questions that are especially appropriate as we observe the end of a decade of radical change in the U.S. patent system.

## **THEN AND NOW**

To begin, I should like to take us back a decade and recall the patent landscape as it then existed. Patent litigation was a relatively small business, attended to only by a handful of specialists. The standards for patentability were high, and plaintiffs typically did not fare very well. Something like two thirds of

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<sup>2</sup> Senior Advisor, Putnam, Hayes & Bartlett, Inc. (Economic and Management Counsel). Formerly Senior Vice President, General Counsel and Director, Eastman Kodak Company.

the patents which were litigated were found invalid.<sup>3</sup> Lost profits damages were often not proved, and the reasonable royalty damages which were awarded approximated those that would have been agreed to by a willing licensor and a willing licensee. Preliminary injunctions were nonexistent for patents that had not previously been adjudicated valid, and final injunctions prior to an appellate decision were rare indeed.

Now all of that has changed. Patent litigation has grown by leaps and bounds. The general law firms which once limited their practices to antitrust and corporate matters, such as mergers and acquisitions, have discovered that patent litigation is equally lucrative, and provide vigorous competition for the patent specialists. Jury trials are common, and plaintiffs' attorneys have even begun taking patent cases on contingent fees. The standards for patentability have been lowered, and something like two thirds or more of the patents which are litigated now are found to be valid and infringed.<sup>4</sup> And woe be to the District Court judge who ignores the admonition that infringers should be expected to pay more than "the normal, routine royalty non-infringers might have paid."<sup>5</sup> Preliminary injunctions are frequently entered, and final injunctions before appeal are common.

All of this has happened without benefit of Congressional amendments to the relevant Sections of Title 35, or, with the exception of Devex,<sup>6</sup> Supreme Court

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<sup>3</sup> Jerome G. Lee (Senior Partner, Morgan & Finnegan), "The Most Significant Patent Cases Relating to the Question of Obviousness Under 35 U.S.C. Sec. 103," page 2. Read at the Annual Meeting of the American Bar Association, August 12, 1986.

<sup>4</sup> Lee, *id.*

<sup>5</sup> Panduit v. Stahlin, 575 F.2d 1152, 1158 (6th Cir. 1978).

decisions affecting those Sections. The exploration of the judicial activism that brought these changes about would make the subject of an interesting exercise in judicature. That however is not my purpose today. Rather my purpose today is to explore the effect of these changes on the climate for innovation -- the commercialization of new products and new processes -- and to raise the question of whether the U.S. patent system, as it presently functions, is a significant deterrent to innovation in the United States.

## **THE CHANGES**

I should begin by naming and noting the two major changes which have occurred in the U.S. patent system in the past decade. Change I is that the lowered standards for patentability have made more patents valid -- the more than two thirds of the litigated patents now valid and infringed, rather than the one third of a decade ago. And Change II is that enhanced damages and the ready availability of injunctions have made patents more valuable to their owners and more dangerous to those accused of infringement.

### **CHANGE I**

Turning first to Change I, the "lowered standards for patentability have made more patents valid" category, I want to show you a chart (Chart 1) which I have used in the past to illustrate the thought process that a company whose business depends on the introduction of new products and new processes should follow in deciding which inventions to seek to patent. This is a conventional 2x2 matrix,

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<sup>6</sup> General Motors v. Devex, 461 U.S. 648 (1983).

familiar to all MBAs, and illustrates the point that such a company should seek patents on those of its inventions which are believed to be patentable, and which the company itself might use commercially,<sup>7</sup> or which its competitors might use commercially to compete with it. These, after all, are the only patents that have value to a company which depends on innovation -- the manufacture and sale of new products -- and where the object is to offer its customers the new products they want with as little interference from others' patents as possible.

The chart changed with the advent of the lowered standards for patentability that were brought upon us in the past decade. And, as shown on the second chart (Chart 2), as the standards came down and more inventions became patentable, a "patentability gap" was created, and it became necessary for such a company to seek patents on its once unpatentable inventions in pursuit of its objective of offering new products and using new processes with a minimum of patent interference. The new area created by the lowered standards for patentability -- the "patentability gap" -- encompasses those inventions which previously were unpatentable, but which became patentable under the new, lowered standards.

Many, including Eastman Kodak, undertook to fill the "patentability gap" with patents covering their newly patentable (but once unpatentable) inventions. Those of you who follow patent statistics will know how successful Kodak's inventors and attorneys were. Kodak was first among U.S. companies in U.S. patents granted in 1991, and fifth among all 1991 U.S. patentees. This, however,

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<sup>7</sup> The term "which the company itself might use commercially" should also be understood to include those inventions its customers might use commercially employing products sold by such a company.

gives neither Kodak nor any other innovator an advantage relative to its competitors, since the competitors have the same opportunity to obtain patents on their once unpatentable inventions. Kodak's competitors, at least, have been vigorous in inventing patents to fill their own "patentability gaps." In today's patent "arms race," everyone must run harder, and incur significant additional costs, just to stay even.

From the point of view of the innovator, someone whose business depends on the introduction of new products and new processes, the lowered standards for patentability have not only increased the number of patents which must be sought, but also have drastically increased the number of patents that must be considered for possible infringements and dealt with in the course of commercializing a new product or new process. This has meant 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. And sometimes it has meant no new product or process, because a license is unavailable or too costly, even though the patent is one which would not have been valid under the prior, higher standards.

The effect has been to increase quite dramatically the costs of innovation. In order to get more patents (i.e., fill the "patentability gap"), and to do more infringement and validity studies, one has to employ more patent attorneys. More frequent consultations with outside patent advisers mean higher legal fees. And to take (and grant) more licenses, one has to increase the size of one's licensing staff - and pay more and larger licensing fees. And perhaps one has to defend more infringement suits as well. Most important of all, large amounts of the time and

energy of one's talented R&D staff must now be diverted to the task of assisting patent attorneys in filling the "patentability gap," rather than devising new products that customers might like, or new and more efficient processes for their manufacture.

Except for the payment of license fees, which an economist might regard as transfer payments from one person to another, these new costs are additional transaction costs. They are real additional costs imposed on the innovation process. And they are costs that directly result from the lowered standards for patentability which were brought upon us in the last decade, costs that did not have to be borne by the innovation process in earlier decades with a higher standard for patentability. The additional license fees, although perhaps mere transfer payments from the point of view of the economist, are very real additional costs for the innovator who must pay them.

I might also add that these additional costs do not have to be borne by our foreign competitors in their home countries, which have not followed our lead in lowering their standards for patentability.

## **CHANGE II**

Let me turn now to Change II, the "patents have become more valuable" category. Here my thesis is very simple. Patent damages awards today are excessive, far greater than mandated by the statute, and far greater than necessary to compensate patentees for losses they have suffered as a consequence of infringements.

I rest my argument on the patent damages statute (35 U.S.C. Sec. 284),<sup>8</sup> and on Aro<sup>9</sup> and Devex,<sup>10</sup> the two most important Supreme Court cases on the topic, and will illustrate it with the damages award in the Polaroid v. Kodak<sup>11</sup> case, which is typical of the excess of today's awards.

The statute states that the claimant is to be awarded:

damages adequate to compensate for the infringement,

but in no event less than a reasonable royalty for the use made of the invention by the infringer.

Aro tells us that "only damages are recoverable,"<sup>12</sup> that they are "compensation for the pecuniary loss ... [the patentee] has suffered from the infringement," and that damages are "the difference between [the patentee's] pecuniary condition after the infringement, and what his [pecuniary] condition would have been if the infringement had not occurred."<sup>13</sup> Aro also tells us that the

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<sup>8</sup> A comprehensive review of the application of 35 U.S.C. Sec. 284 in the courts as of 1991 can be found in Pincus, "The Computation of Damages in Patent Infringement Actions," 5 Harvard Journal of Law & Technology 95 (Fall Issue, 1991)

<sup>9</sup> Aro v. Convertible Top, 377 U.S. 476 (1964).

<sup>10</sup> Devex, supra.

<sup>11</sup> Polaroid v. Eastman Kodak, 16 USPQ 2d 1481 (D.C. Mass. 1990), corrected at 17 USPQ 2d 1711 (D.C. Mass. 1991).

<sup>12</sup> Aro, 377 U.S., at 506

<sup>13</sup> Aro, 377 U.S., at 507

patentee is entitled to be compensated only once for his injury,<sup>14</sup> and that the question is "had the Infringer not infringed, what would the Patent Holder .. have made?"<sup>15</sup>

In the "real world," a patentee has the choice of either keeping the invention to himself in the hope of increased sales and profits, or of licensing his patent to others in exchange for a royalty (and competing with them). The two are normally mutually exclusive. The circumstances in which the patent holder can both keep the invention to himself and simultaneously license it to others are rare indeed.

The same should be true in the "but for world" of 35 U.S.C. Sec. 284, the object of which, according to Aro, is to place the patentee in the "[pecuniary] position [he] would have been [in] if the infringement had not occurred." Thus for the patentee who has chosen to keep the invention to himself in the hope of increased sales and profits, his "pecuniary loss" would be his lost profits as a consequence of sales lost on account of the infringement. And for the patentee who has licensed his patent to others than the infringer, his "pecuniary loss" would be his foregone royalties, the patentee's established royalty applied to the infringer's use of the invention.<sup>16</sup> And, as to the "reasonable royalty for the use made of the invention by the infringer," logic and the compensatory purpose of the statute suggest that the amount necessary to place the patentee in the "pecuniary position [he] would have been [in] if the infringement had not occurred" is the

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<sup>14</sup> Aro, 377 U.S., at 502-503.

<sup>15</sup> Aro, 377 U.S., at 507.

<sup>16</sup> See Saf-Gard Products v. Service Products, 491 F.Supp 996, 1007 (D.C. Ariz. 1980) for a similar view of the statute.



royalty that would have been agreed to by a willing licensor and a willing licensee who believed the patent to be valid and infringed. This may be more or less than the patentee's "pecuniary loss," and is the minimum commanded by the statute. It is also "the normal, routine royalty non-infringers might have paid."

Thus I understand the literal interpretation of the statute to command that the patentee be compensated only once for the infringement, and that he receive as damages the greater of either his "pecuniary loss" or a "reasonable royalty," (i.e., "the normal, routine royalty non-infringers might have paid"), but not one on top of the other, or some combination of the two. This, after all, is "what [the patentee] would have made had the infringer not infringed," and would place the patentee in the "[pecuniary] condition [he] would have been [in] if the infringement had not occurred."

The literal reading of the statute certainly is not unfair to the patentee whose patent has been infringed. In effect it provides him with "20-20 hindsight" in that, at the end of the litigation, he gets as his "damages" the greater of the "pecuniary loss" or the "reasonable royalty" that he proves.<sup>17</sup> It is as if he had made a perfect

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<sup>17</sup> One apparent exception, which really is no exception at all, is the circumstance in which lost profits could not be proved for a part of the infringement period. In such a case it might be appropriate to award lost profits damages for those years for which lost profits are proved, and a reasonable royalty for the other years. For example, see TWM Manufacturing v. Dura Corp., 789 F2d 895 (Fed. Cir. 1986) This however is not awarding a "reasonable royalty" on top of "pecuniary loss," but rather continues to treat them as mutually exclusive alternatives, and then only in the circumstance in which the "pecuniary loss" proved is greater than the "reasonable royalty." Other apparent exceptions might include those circumstances in which field-of-use or geographically restricted licenses are feasible, but these again are not exceptions at all.

decision years and years ago as to whether to license his patent or keep the invention to himself.

This literal view of the "but for world" of the statute accords with the "real world," and I do not understand why it should not be followed. I am not aware of any legislative history which suggests that Congress intended the patentee to recover both his "pecuniary loss" and a "reasonable royalty," or that a "reasonable royalty" is anything other than what would have been agreed to by a willing licensor and a willing licensee.

But the courts today regularly ignore the literal interpretation of the statute and award the patentee his "pecuniary loss," e.g., his lost profits on his lost sales, and then, on top of that, a "reasonable" royalty on the infringer's sales in excess of the patentee's lost sales.<sup>18</sup> Such an award obviously exceeds "the pecuniary loss the patentee suffered from the infringement." More often than not, it is more than "a reasonable royalty for the use made of the invention by the infringer" (i.e., "the normal, routine royalty non-infringers might have paid"), and places the patentee in a pecuniary condition that is superior to the "pecuniary condition [he] would have been [in] if the infringement had not occurred."

The statute also provides that the claimant may recover "interest and costs as fixed by the court." Devex tells us that the purpose in awarding prejudgment interest is to compensate the patentee for "the foregone use of the money between the time of infringement and the date of the judgment."<sup>19</sup>

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<sup>18</sup> For example, see State Industries v. Mor-Flo Industries, 883 F.2d 1573 (Fed. Cir. 1989).

In calculating patent damages, it is customary in our courts today to determine damages awards (including "lost profits," "reasonable royalty," and prejudgment interest) based on pretax income, and without any allowance for taxes on the income or interest, no matter whether the damages award is based on "pecuniary loss," "reasonable royalty," or a combination of the two. District Courts which have done otherwise have been reversed.<sup>20</sup>

Any economist or accountant worth his salt will tell you that this is wrong, that income taxes are a readily ascertainable business expense which would have been incurred by the patentee on his additional income, and that they should be taken into account in determining a damages award. The economists and accountants will also tell you that the only "money" the use of which the patentee has "foregone" is the cash that would have remained after the patentee had paid his taxes. Since such after-tax cash is the only "money" which can be invested to earn interest, the calculation of the award should therefore be done on an "after-tax, cash flow" basis, with a "gross-up" at the tax rate in effect at the time of the judgment to allow for current taxes.<sup>21</sup>

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<sup>19</sup> Devex, 461 U.S., at 656.

<sup>20</sup> For example, see Kalman v. Berlyn, 914 F2d 1473 (Fed. Cir. 1990).

<sup>21</sup> See Jarosz, "Considering Taxes in the Computation of Lost Business Profits," 25 Creighton Law Review 41 (1991); Jarosz, "Pretax Versus After-Tax Patent Damages: Do the Courts Have It Right?," Journal of the Patent & Trademark Office Society, forthcoming, 1992; Quillen, "Income, Cash, and Lost Profits Damages Awards in Patent Infringement Cases," 2 Fed. Cir. Bar Journal 201 (1992); and the references cited in each of the foregoing articles.

As I indicated, the damages award in Polaroid v. Kodak<sup>22</sup> is typical of the extent to which patent damages awards today are excessive. The opinion in the case is perhaps atypical in that Judge Mazzone's findings of fact are so thorough and complete as to make it possible to calculate the amount of the excess.

Polaroid's claim was for \$12B, and the judgment was for \$873M. The judgment was determined by awarding Polaroid lost profits on the sales it lost to Kodak which would have been more profitable than the 10% "reasonable royalty" found by the Judge, and a 10% "reasonable royalty" on the remainder of Kodak's sales (i.e., on the Kodak sales Polaroid did not have the capability to make, and on those Polaroid could have made but which would have been less profitable than the 10% "reasonable royalty"). The \$873M judgment included \$233M lost profits, \$204M "reasonable royalty," and \$436M interest.

Polaroid's actual lost profits income on all of its lost sales, based on the facts as found by the Judge, would have been \$171M, pretax. A royalty on all of Kodak's sales at the 10% "reasonable royalty" found by the Judge would have amounted to \$317M, pretax.

Had the Court followed the literal interpretation of the statute to the extent that it regarded damages based on "pecuniary loss" and "reasonable royalty" as being mutually exclusive, and awarded damages and interest on the greater of Polaroid's lost profits on all of its lost sales, or a 10% "reasonable royalty" on all of Kodak's sales, but not a combination of the two, the award would have been based on the 10% royalty, since it was the larger of the two.

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<sup>22</sup> Polaroid v. Eastman Kodak, supra.

The judgment, including interest, but not taking taxes into account, would have been for \$663M at the 10% "reasonable royalty" found by the Judge (\$317M royalty and \$346M interest), rather than the \$873M.

Had the Court gone even further and taken into account the additional Federal income taxes Polaroid would have paid on its additional royalty income and interest income, then the judgment (again based on the 10% royalty and "grossed-up" to allow for current taxes) would have been \$394M, \$479M less than was awarded.

And if the Court had followed fully the literal interpretation of the statute, and based the award on "the normal, routine royalty non-infringers might have paid" (i.e., the 5% royalty that the Court said "would have been acceptable to Polaroid"<sup>23</sup>), and then calculated the award on an after-tax cash flow basis with a "gross-up" to allow for current taxes, the judgment would have been for \$197M, not \$873M. The difference, the excessive amount of the award, \$676M, is a whopping amount of money.

I have previously mentioned that Polaroid's actual lost profits, their lost income from all of their lost sales, given the facts as found by the Judge, was \$171M, pretax. A damages award based on this lost income, including interest and deducting the Federal income taxes that would have been paid, and including a "gross-up" to provide for current taxes, would have been \$195M.<sup>24</sup>

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<sup>23</sup> Polaroid, 16 USPQ 2d, at 1534.

The judgment however was for \$873M, more than four times the amount necessary to have placed Polaroid in the "[pecuniary] condition [it] would have been [in] if the infringement had not occurred," i.e., an award of \$195M based on Polaroid's lost profits, or an award of \$197M based on the "the normal, routine royalty non-infringers might have paid" (i.e., the 5% royalty that "would have been acceptable to Polaroid"). This hardly seems consistent with Aro which tells us that the patentee is to be compensated only once for his injury.

I do commend the Polaroid opinion to your study. You should certainly conclude that Judge Mazzone did a masterful job with a complicated set of economic, accounting and business facts. You may also conclude that the award is typical of the excess of damages awards in patent cases today, and that the excess is the consequence of appellate decisions which have transformed bad economics into legal precedents Judge Mazzone and other District Court judges are obliged to follow.

I should sum up this portion of my comments by noting that it is entirely fair that patent infringers should compensate patentees fully for losses the patentees suffer as a consequence of infringements, or pay a reasonable price for the use the infringers make of patented inventions, whichever is the greater. But patent infringers are innovators too, and they should not be required to do more than that. Simply put, excessive damages awards impose another additional cost -- a major additional cost -- on innovation.

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<sup>24</sup> Even this overstates Polaroid's losses because it includes the lost profits of Polaroid's foreign subsidiaries and is based on after-tax accrual income rather than after-tax cash flow.

## **RISK, UNCERTAINTY AND THE COST OF CAPITAL**

My third and final point has to do with risk and uncertainty, and may require that you indulge some statements an economist would regard as trite, but which I find are often new to many lawyers.

There are many risks and uncertainties for the innovator. There are technical risks. The product or process may not work as hoped. There are commercial risks. The customers may not like the product, or some competitor may show up with an even better mousetrap.

There are also patent risks and uncertainties. The innovator (or his attorney) may not have found all of the relevant patents in an infringement study. The evaluation of the patents by the innovator or his attorney may differ from that of the patent owner. A patent may issue after the new product or process is commercialized. The innovator may get sued. He may suffer a preliminary injunction and have his investment rendered worthless even before he gets to test his attorney's reasoning. Or he may lose at trial and suffer a final injunction and consequent loss of investment even before the appellate court considers his case. And, at the end of the day, even if he escapes the uncertainties I have mentioned, he may lose, and be required to pay excessive (and possibly crippling) damages.

An illustration of patent risk and uncertainty can be found in the Polaroid v. Kodak case. The District Court characterized Kodak's patent clearance process as

"a model for what the law requires."<sup>25</sup> Yet, at the end of the day, Kodak lost on 7 of the 12 patents in suit. It is truly uncertainty when the batting average for a "model process" is only 0.417. That would make you a star in baseball, but is nowhere near good enough to support a decision to risk hundreds of millions of shareholder dollars on an investment for a new product or a patent infringement claim for \$12B.

The financial markets and sophisticated business analysts have their own way of dealing with risk and uncertainty. That is through the cost of capital.

Capital costs are higher for risky projects than for less risky projects. And for some projects the risk is so great that the cost of capital exceeds the expected rewards -- and the project does not get done.

A concrete illustration of the effect of risk and uncertainty on the cost of capital can be found in the acquisition and leveraged buy-out adventures of the 1980s. These highly leveraged transactions were regarded by the capital markets as very risky ventures with uncertain outcomes. As a consequence, the cost of capital for these ventures (i.e., the interest rates that had to be paid on the "junk" bonds that financed them) was extraordinarily high -- because the projects were risky and uncertain of success. And some of them were judged by the market to be so risky that they couldn't be financed at all. A count of those which have undergone financial reorganization or defaulted on their debt and entered bankruptcy in the '90s certainly vindicates the judgment of the capital markets in the '80s.

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<sup>25</sup> Polaroid, 16 USPQ 2d, at 1538.



The practical effect for innovators today is that through our patent system we have increased the risks and uncertainties -- and consequently the cost of capital -- for introducing new products and new processes. The result is that we will have fewer new products and new processes -- which is not what I had understood our patent system is supposed to accomplish.

### **CONCLUSION - THE EFFECT OF INCREASED COSTS**

Now, having spoken of risk and uncertainty, I am going to take a risk of my own and show you a couple of charts that my economist friends might suggest oversimplify a fairly complex topic.

If the law of supply and demand applies to innovation -- and I suspect that it does -- this chart (Chart 3) perhaps illustrates how the equilibrium quantity of innovation in any economy might be determined. This is a conventional supply-demand chart and the intersection of the demand curve and the marginal cost (supply) curve determines the equilibrium quantity (and cost/price) of innovation.

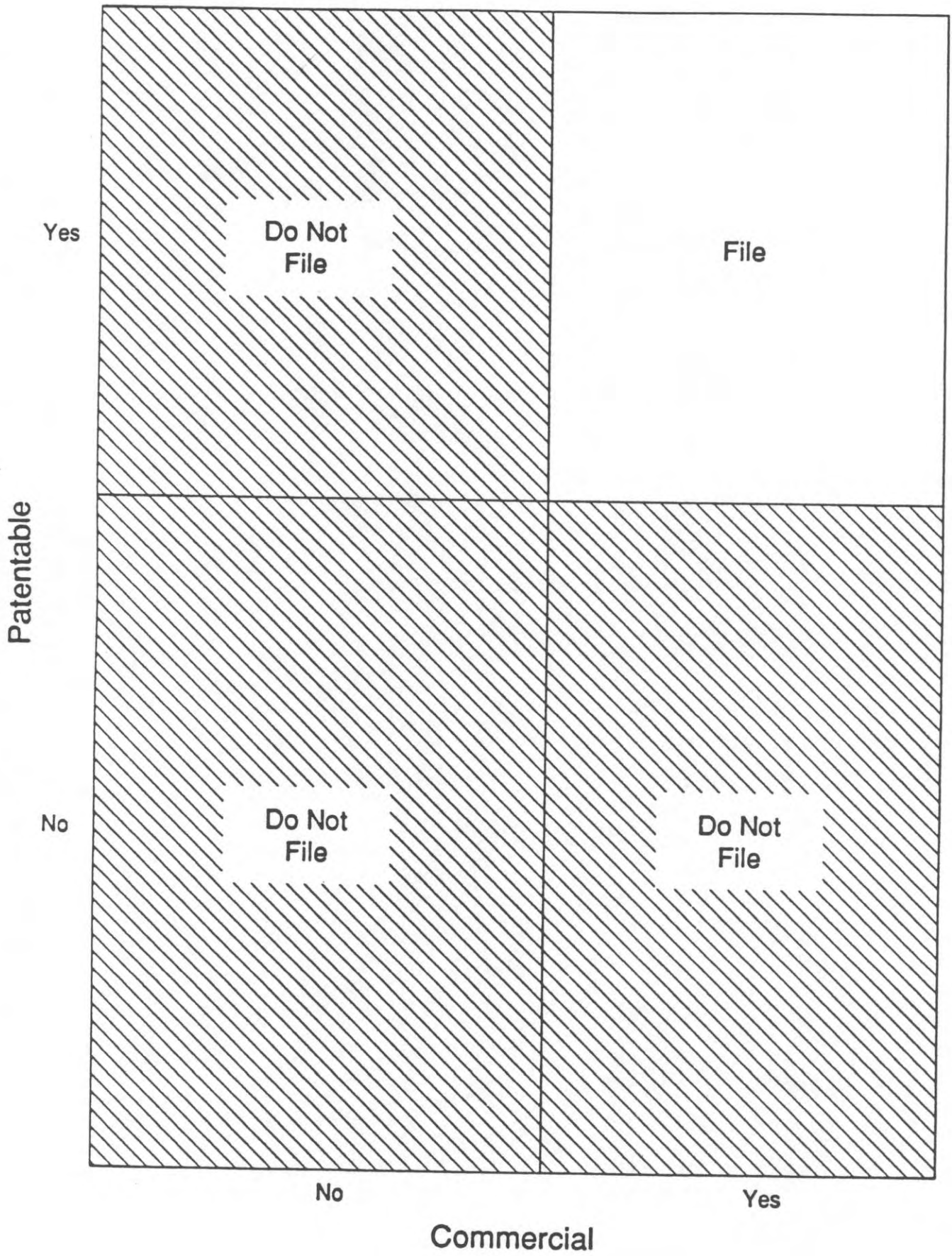
And if -- as I have suggested -- through our patent system we have drastically increased the cost of innovation in this country, then this second chart (Chart 4) illustrates the inevitable result. We get less innovation, and it costs us more.

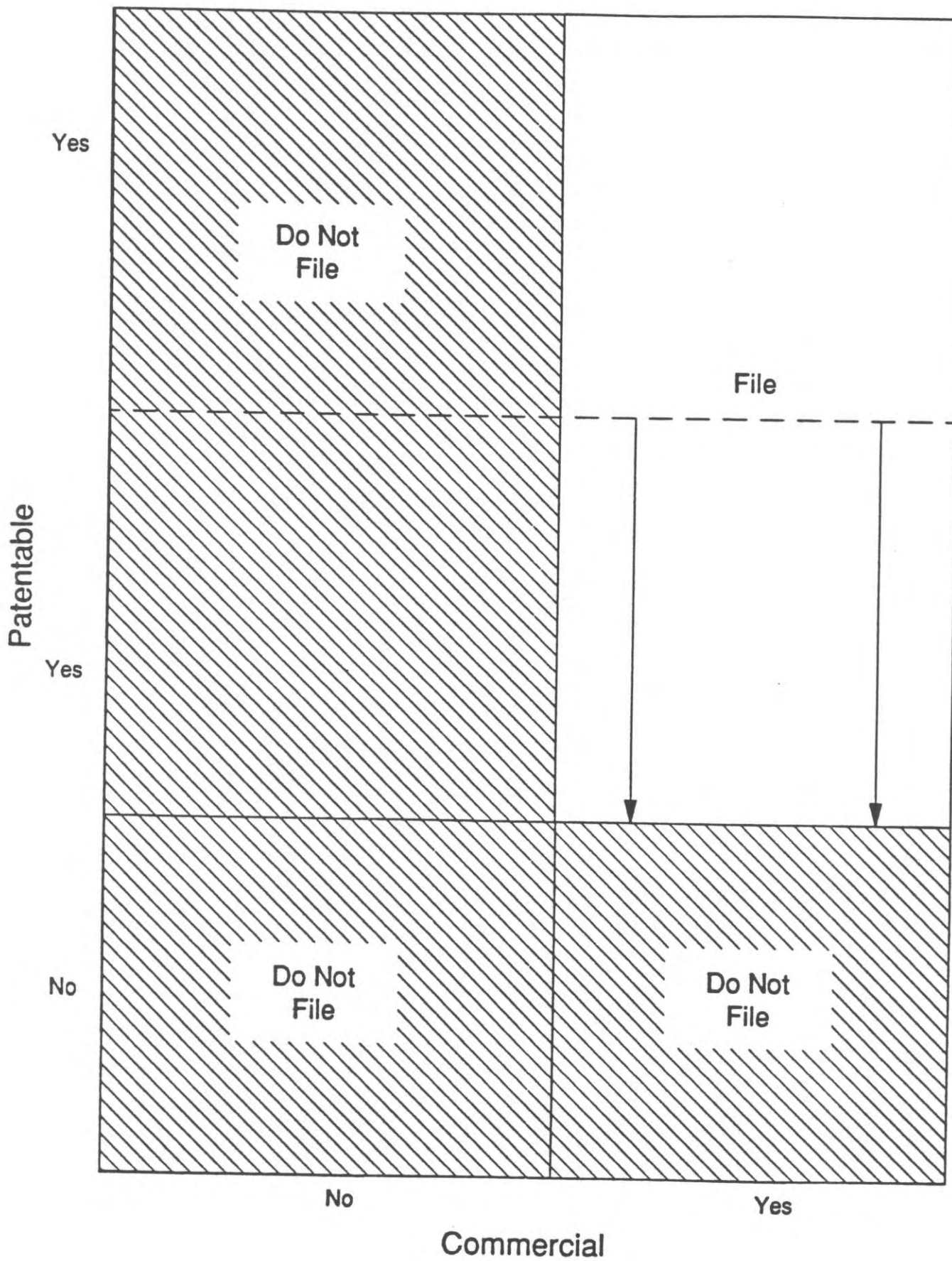
I have no doubt that a healthy patent system is a spur to invention and innovation. I am equally convinced that a patent system which imposes excessive

costs on innovators is an unhealthy system and a deterrent to innovation. I hope I have raised for you a serious question as to the current state of health of the U.S. patent system.

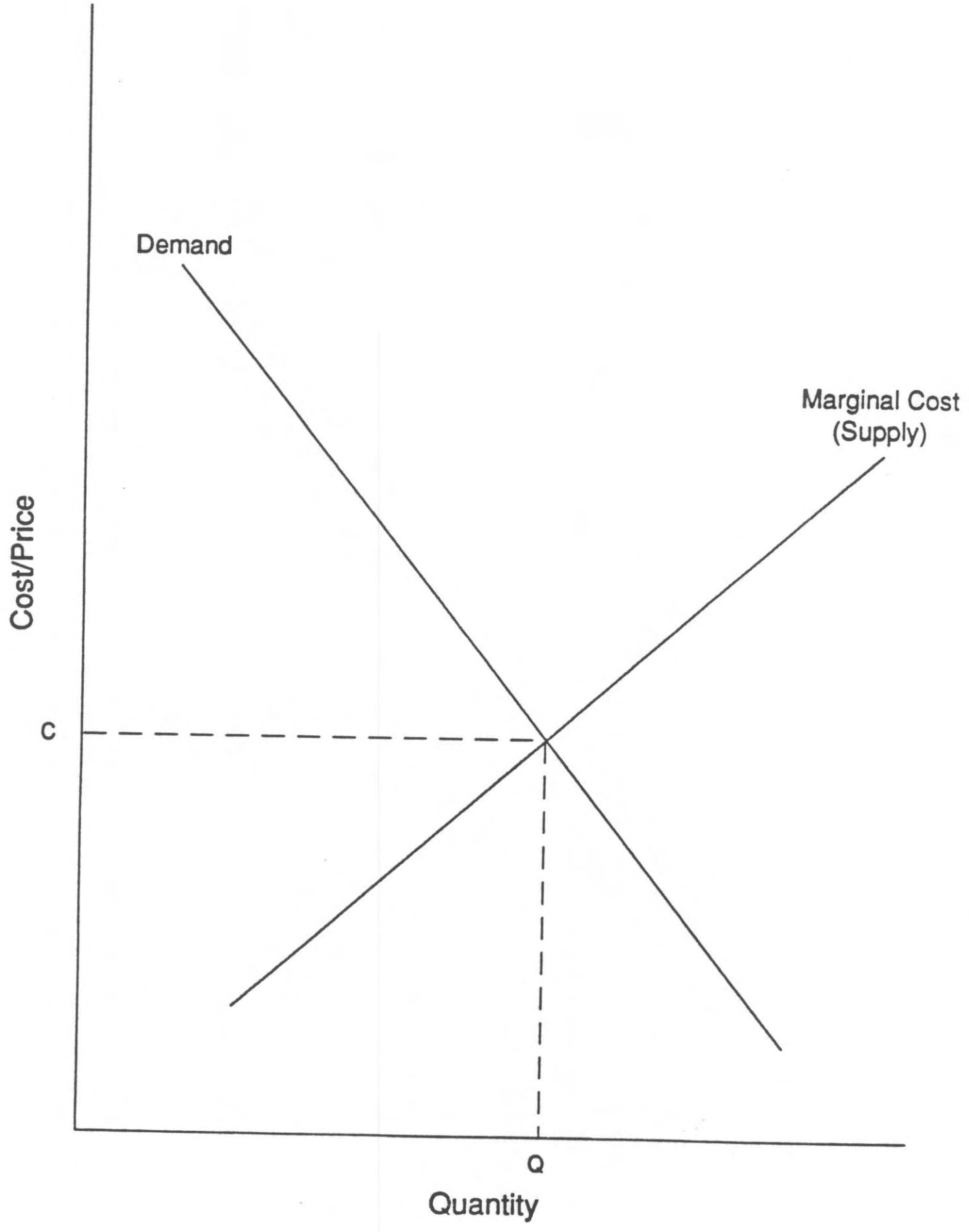
Thank you. Within the limits of the time available, I will be more than happy to take any questions you might have.

Chart 1





# Innovation



# Innovation

Chart 4

