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PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK, by **James Bessen & Michael J. Meurer**. Princeton University Press, 2008. 331 pp. Paperback \$22.95.

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For at least the past decade, the question of how well the patent system has been promoting innovation has been a question of intense judicial, legislative, scholarly, and popular debate. But all too often, that debate has foundered in a morass of rhetoric and anecdote about heroic small inventors, unscrupulous copyists, parasitic “patent trolls,” and other colorful characters. With **PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK**, James Bessen and Michael Meurer’s aim is to cut through the rhetoric, and provide a comprehensive, empirical evaluation of the patent system to inform the debate about patent reform. To do so, they draw not only on their own econometric studies, but also on dozens of other legal, historical, and economic studies from other researchers. From their analysis emerge two central, and radical, claims about the performance of the patent system. First, although some industries fare better than others, the costs imposed on defendants by patent litigation now exceed the value of patents to their owners. Thus, rather than stimulating innovation, patents on the whole operate as a net tax on innovation. Second, this imbalance emerged largely in the 1990s as the result of legal changes – particularly with respect to software patents – that have eroded the ability of firms to ascertain whether they will be sued for patent infringement. So long as patents fail to provide clear notice of their boundaries, they cannot deliver the benefits we expect from a well-functioning patent system.

Bessen and Meurer’s critique stands out from the ongoing clamor about the patent system on two grounds. The first is its reliance on hard empirical

data. Traditionally, discussions of patent policy have taken place in an economic vacuum. When asked by Congress in 1958 to evaluate the economics of the patent system, economist Fritz Machlup famously confessed to economists' ignorance of the costs and benefits of a patent system: "If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it".¹ Though there is no necessary correlation between social cost and social benefit for any one patent, few critics have questioned the underlying intuition that countries benefit from patent systems. But Bessen and Meurer believe that such hopeful ignorance is no longer necessary or tenable. In recent years economists and other researchers have been studying the contribution of patents to both patent-holding firms and national economies, and Bessen and Meurer collect and synthesize that data to provide a state of the art econometric evaluation of the patent system.

The other distinctive feature of Bessen and Meurer's analysis is its emphasis on the notice function of the patent system. The particular problems with patent notice that Bessen and Meurer highlight will be familiar to most patent lawyers, but failure of patent notice has generally not been emphasized in most critiques of the patent system. Both popular and scholarly criticisms of the patent system have focused primarily on the issue of patent "quality". These critiques have charged that, hampered by a lack of resources and restrictive court decisions, the Patent and Trademark Office (PTO) has been issuing too many patents which are not novel and non-obvious over the prior art. And popular critiques in particular have vilified non-practicing entities – the so-called "patent trolls" – who exact exorbitant settlements or damage awards from companies sued for patent infringement. Bessen and Meurer acknowledge these concerns, but regard them as secondary and, in some cases, related to the more central problem of patent notice.

Bessen and Meurer's starting point to evaluate the patent system is the theory of property itself: if we can understand the circumstances where property rights succeed and where they fail, we may be able to understand the circumstances under which patents will succeed or fail in promoting innovation. Bessen and Meurer survey the theoretical and empirical literature on property rights, showing that "property" is not a magical incantation that brings prosperity in its wake (pp.38-45). Rather, the ways in which property rights have been implemented have been critical to their

success or failure. Property rights can fail where multiple claims overlap, or where proliferating property rights make clearance prohibitive, or where the legal regime makes it costly to secure, ascertain, or transfer rights.

Do patent rights behave like successful property rights? In Bessen and Meurer's view, the answer is more and more frequently no. In their words, "If you can't tell the boundaries, then it ain't property" (p.46). Unlike real or personal property, patents often do not provide clear notice of their scope until it is too late. Innovators are frequently unaware of patents until well after their technology has been deployed and their businesses established; in other instances, even expert advice on how to avoid known patents can turn out to be wrong.

What leads to the failure of patent notice? Bessen and Meurer identify several aspects of the modern patent system that contribute to the failure of patent notice. Claim construction, the use of continuation applications, patent law's disclosure doctrines, and the sheer volume of patents, especially on software-related inventions, all make it prohibitively expensive to perform clearance review (pp.53-71).

Bessen and Meurer's analysis then turns empirical. They first survey the existing literature examining the role of patent rights in economic growth. Studies of national economic performance have shown good correlations between economic growth and legal systems that provide strong property rights and facilitate their alienability. But comparisons of national economic performance have generally failed to demonstrate a strong or consistent correlation between intellectual property rights and economic growth. Comparisons across countries are of course fraught with difficulties, especially the challenge of quantifying the strength of intellectual property protections provided by a particular legal regime. But in Bessen and Meurer's view, if multiple studies have failed to consistently correlate intellectual property rights with economic growth – where studies of other kinds of property rights have shown such correlations – we can at least be confident that "patents *do not* deliver the same kind of economic payoff as do property rights" (p.92).

The core of Bessen and Meurer's work, and the aspect of the book that will generate the most controversy, is their attempt to measure the costs and benefits of the U.S. patent system. More specifically, Bessen and Meurer attempt to measure the value of U.S. patents to their owners, and the costs imposed by patent litigation. They estimate the value of patents to their owners by patent renewal data (pp.99-104). This method relies on the

requirement that patentees must pay renewal fees to keep their patents in force.² Collecting data from all patents owned by U.S. public manufacturing firms, Bessen and Meurer deduce a mean value of about \$113,000³ per U.S. patent issued from 1985 to 1991⁴ (p.102).

Not all industries value patents similarly, however. Bessen and Meurer show by renewal estimates that the mean value of patents that claim molecules or chemical compositions – i.e., most patents in the pharmaceutical industry – is almost three times greater than the average patent (p.108). Conversely, patents on “complex technologies”⁵ tend to be less than half as valuable as the average patent (p.108). Nor is the wealth equally shared among large and small companies. Perhaps contrary to rhetoric about the value of patents to small inventors and firms, Bessen and Meurer find that patents held by large entities are about 50% more valuable than those held by small entities (p.108).

With these values in hand, Bessen and Meurer are in a position for the first time to estimate the value patents return to their owners. Bessen and Meurer estimate that patents granted in 1991 are worth about \$4.4 billion – well in excess of the approximately \$1 billion spent to prosecute them (p.112). And patents certainly provide favorable returns to their owners: Bessen and Meurer estimate that in 1999 firms in the chemical and pharmaceutical industries earned patent rents of about \$15.2 billion, while other firms earned rents of about \$3.2 billion. Patent attorneys will be cheered by Bessen and Meurer’s conclusion: “On average, patents deliver real value and inventors get their money’s worth for the money they pay their patent lawyers” (p.112).

But of course, the value of patents only tells half the story. Bessen and Meurer’s unprecedented contribution to the field is their effort to estimate the costs of the patent system as well. For defendants, costs of the patent system include not only legal fees and damages assessed against them, but the costs associated with having to abandon the patented technology if the patentee prevails and secures an injunction. Even defendants who ultimately win suffer losses from customer uncertainty in the interim and employee time and company resources dedicated to litigation. Bessen and Meurer estimate these costs by examining how firm’s stock prices respond to the filing of an infringement lawsuit. Bessen and Meurer find that, on average, publicly traded firms lose almost \$29 million upon being sued for patent infringement (p.137). Generally speaking, these losses are not offset by corresponding gains to the patentee; the filing of an infringement suit also depresses the value of patentee firms, though not to the same extent.

When Bessen and Meurer compare the profits firms realize from patents⁶ to the aggregate costs of patent litigation, a startling discrepancy emerges. For the chemical and pharmaceutical industries, profits from patents comfortably exceed aggregate litigation costs (p.139). However, for firms in other industries, patent profits have never significantly exceeded litigation costs (p.139). Moreover, by the mid 1990s soaring litigation costs began to substantially exceed patent profits, a trend that continued through the end of the century (p.139). Bessen and Meurer therefore conclude that, by the late 1990s, “patents likely provided a net *disincentive* for the firms who fund the lion’s share of industrial R&D; that is, patents tax R&D” (p.144).

Why did patent litigation costs begin to exceed patent profits in the mid 1990s? Bessen and Meurer believe the answer is the failure of patent notice. It was during this era that the Court of Appeals for the Federal Circuit made trial court claim constructions a question of law subject to *de novo* review, and permitted patentees to claim inventions such as software and business methods without being tied to physical embodiments.⁷ Coupled with an increasing volume of patent applications and increasing continuation applications, Bessen and Meurer argue that these changes substantially eroded the patent system’s notice functions (pp.150 – 151). Particularly for software inventions, Bessen and Meurer believe that abstractness is to blame for much of the current notice problem (pp.198–212).

Bessen and Meurer lay much of the blame for the failure of patent notice on the Federal Circuit, which in their view has not provided a predictable jurisprudence of claim construction that would provide clear notice of patent boundaries. As do many other commentators, they suggest that the appellate court should accord more deference to trial courts and the PTO when construing claims, rather than its current practice of reviewing claim construction *de novo* (p. 238). Somewhat more radically, they suggest that the current standard of claim indefiniteness – which upholds the validity of claims so long as they are not “insolubly ambiguous” – be strengthened, such that any claim with more than one plausible interpretation ought to be held invalid (p.239).

Other reforms suggested by Bessen and Meurer include an increased role for the PTO in determining patent boundaries: the PTO ought to issue (upon request) infringement opinion letters setting forth the Office’s opinion about whether a particular technology infringes or not, and that

such letters be accorded deference by the courts. Bessen and Meurer admit they do not have a general solution to the problem of abstract patents. But as a first step they suggest that software patents be treated to a heightened standard of enablement, similar to the one applied to many biotechnological inventions, in which the inventor's claims are limited more closely to the technology actually disclosed in the patent (p.245).

Without question, Bessen and Meurer's work provides an invaluable synthesis of leading economic research on patents, and succeeds in moving the debate about the patent system beyond the anecdotal. The scope and ambition of Bessen and Meurer's book, and its provocative conclusions, will unquestionably guarantee it a central role in future debates about the patent system. In that spirit, I will focus on a few aspects of their analysis that are likely to prove controversial and spur further research and debate.

The empirical core of Bessen and Meurer's work is their estimation of the value and costs of the patent system. Bessen and Meurer acknowledge that their measurements of patent value are subject to a number of uncertainties.⁸ But the more serious question lies in their use of event study data to measure the costs that patent litigation imposes on publicly traded firms. Bessen and Meurer base their measurement of lost value on the price of the defendant's stock within 24 days of the filing of a lawsuit. Naive observers might wonder whether subsequent events – for example, the defendant ultimately prevailing in the suit – might later reverse some of these losses. It is one thing to conclude that such changes accurately represent the short-term losses to a firm's shareholders; it is quite another to say that they accurately represent the long-term aggregate costs of patent litigation. To do so requires a great deal of faith in the Efficient Market Hypothesis: namely, that investors' short-term reaction to an infringement lawsuit accurately measures the lawsuit's ultimate effect on firm profitability. That assumption has not, to my knowledge, been empirically validated. To the contrary, according to some critics, the stock market's short-term reaction to patent judgments may exceed by an order of magnitude the losses measured by any reasonable estimate of future returns.⁹ Moreover, Bessen and Meurer's observation that the loss in defendant's market value is not offset by a corresponding gain in the plaintiff's market value does not necessarily demonstrate that “the combined wealth of the two sides to the lawsuit decreases”¹⁰ (p.137).

These criticisms do not undermine many of Bessen and Meurer's important findings: that the balance of patent value and costs is far more favorable in the chemical and pharmaceutical fields than in other industries, or that the

perceived costs of litigation for firms outside those industries has soared since the mid-1990s. But without knowing whether short-term market reaction accurately measures the real costs of patent litigation, Bessen and Meurer's most ambitious and sensational conclusion – that the current patent system operates as a net tax on innovation outside the pharmaceutical industry – remains unproven.

Whether or not the absolute costs of the patent system outweigh its benefits, Bessen and Meurer make a compelling case that uncertainty plays a major part in its escalating costs, and other difficulties as well. The question is what to do about it. As do many other commentators, Bessen and Meurer view claim construction as a question at least partly based in fact, on which the Federal Circuit ought to defer to the district court's determination of claim boundaries. Of course if we take seriously Bessen and Meurer's argument that patents need to work more like real property, we might note that interpreting deeds, grants, and other documents defining real property boundaries is generally considered a question of law and subject to *de novo* review¹¹ – as it is in the current claim construction regime. More importantly, as Bessen and Meurer acknowledge,¹² district courts would not necessarily set more predictable claim boundaries than the appellate court does. If patents are to work as property, boundaries must be predictable before litigation. For the defendant who discovers only at trial that he is within the boundaries of the claims, it would be little consolation to know that the verdict against him will likely be upheld on appeal. A district court's claim construction, shaped by the idiosyncratic process of a particular trial, might well be less predictable *ex ante* than the Federal Circuit's, in which case we should not be too concerned about preserving the district court's decision – which is, after all, only the penultimate step in a long process of patent litigation.¹³

Bessen and Meurer also propose that the PTO reject as indefinite any ambiguous claim. But even assuming we wish to devote that much effort to the vast majority of patents that will never be litigated, the problem with patent claims is that they are vague rather than an ambiguous.¹⁴ Just as most contracts will prove incomplete when some contingency not anticipated by the parties arises, nearly every patent claim will prove vague when put to the test.¹⁵

These criticisms aside, Bessen and Meurer have produced a landmark work that will prove useful and thought-provoking for legal scholars and other academics, but will also find a place on the shelf of non-specialists who

care about the future of the patent system and its role in fostering (or hindering, if Bessen and Meurer are to be believed) the process of innovation.

ENDNOTES

¹ Fritz Machlup, Study of the Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary, 85th Cong., An Economic Review of the Patent System 80 (Comm. Print 1958)

² If a patent owner declines to pay the renewal fee, we know that the owner values the patent less than the cost of renewal.

³ All of Bessen and Meurer's valuations are expressed in constant 1992 dollars.

⁴ This estimate is roughly in line with parallel measurements Bessen and Meurer derive using another technique based on the market value of patent-holding firms. In these studies, complex regression techniques estimate the contribution of patents to a firm's market value, attempting to separate out the contributions patents make from other contributors to firm value such as physical assets and unpatented research and development. Bessen and Meurer estimate that from 1979 to 1997, public firms that conduct research and development derived about \$370,000 in market value per U.S. patent owned (p.105). Because the market regressions do not discriminate between the contributions of domestic and foreign patents to firm value, the estimate of \$113,000 per patent seems reasonable if we assume that the worldwide patent portfolios of U.S. firms are 2 to 3 times more valuable than their U.S. patents alone. The market regression technique estimates the total value of patent assets, which are detected by their ability to yield supra-competitive profits, as compared to other assets which yield competitive returns. By expressing this value in terms of the value per U.S. patent, Bessen and Meurer seem to assume that the return on foreign patent assets is proportional to the number of U.S. patents held by the firm.

⁵ Defined as those in which a single infringement case invokes patents from multiple technology groups.

⁶ Bessen and Meurer estimate patent profits by first calculating the value of worldwide patent assets using the firm market value method, and then assuming a 15% rate of return on those assets (p.114).

⁷ Of course the Federal Circuit's recent *Bilksi* decision reversed the court's willingness to permit patents on intangible processes.

⁸ The major complication in estimating patent values by renewal data is that the value of the most important patents – the 40% that are renewed through their full term – cannot be observed; all we know is that their owners value them more than the cost of renewal. The solution is to assume that the unobserved patents follow the same distribution of the observed patents (p.115). While it is not clear this assumption is justified, Bessen and Meurer use the more generous firm market value method in their comparison of value and cost (p.140).

⁹ See Glynn S. Lunney, On the Continuing Misuse of Event Studies: The Example of Bessen and Meurer, 16 J. Intell. Prop. 35, 48-50 (2008).

¹⁰ Studies examining other forms of litigation have also found that market value losses to defendants greatly exceed gains to plaintiffs. See *id.* at 41 (reviewing event studies). Bessen and Meurer assume this discrepancy measures deadweight losses in patent litigation, such as legal costs and diversion of managerial resources, as well as possible transfers of wealth from the involved firms to rivals and consumers. But a simple thought experiment suggests that the same reaction would be expected even if litigation efficiently transferred wealth from defendants to plaintiffs. Suppose Firm A sues Firm B, and investors perceive a certain probability that Firm A will pay Firm B a certain amount. Behavioral experiments have long shown that people disvalue probabilistic losses more than they value probabilistic gains. Investors will therefore disvalue possible losses in B's stock more than they will value possible gains in A's stock, even if they perceive the potential transfer of wealth from B to A to be costless. Hence, losses in B's value will exceed gains in A's value regardless of deadweight loss. One can of course dismiss such criticisms by assuming that investors are immune from cognitive bias, but then once again the validity of Bessen and Meurer's conclusions depend strongly on assumptions of market efficiency.

¹¹ See C.J.S. Boundaries § 222; Am Jur 2d. Boundaries § 112.

¹² Bessen and Meurer pp.237-38.

¹³ See generally Jeffrey A. Lefstin, Claim Construction, Appeal, and the Predictability of Interpretive Regimes, 61 U. Miami. L. Rev. 1033 (2007). At the least, it would seem more feasible to predict the actions of the dozen or so Federal Circuit judges, as compared to the difficulty of forecasting the actions of the hundreds of district court judges who might potentially preside over a case. The problem of predicting the actions of the appellate court would presumably worsen if jurisdiction over patent appeals was divided among multiple appellate courts, as Bessen and Meurer suggest (pp.230-31). Bessen and Meurer seem to believe that multiple appellate courts would produce a better jurisprudence of claim construction, which would outweigh the unpredictability associated with multiple courts (p.231). It is not immediately apparent, however, why multiple courts would evolve more a *predictable* jurisprudence of claim construction than the Federal Circuit has. The only other court that has wrestled with patent issues since the creation of the Federal Circuit – the United States Supreme Court – has consistently favored looser, standards-based approaches over the Federal Circuit’s bright line rules.

¹⁴ For example, in the Federal Circuit’s pivotal *Phillips* case on claim construction, the underlying dispute before the *en banc* court was not over some esoteric scientific term, but whether wall partitions described as “baffles” had to be angled with respect to the wall, or whether the term could encompass perpendicular partitions as well. See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1309-11 (Fed. Cir. 2005) (*en banc*). This is a question of vagueness rather than ambiguity, and very likely neither the patentee nor the examiner was conscious of this vagueness during prosecution. And if they were, a host of other questions could have arisen: could very thin or very thick partitions be “baffles”? Could they have holes in them rather than be solid? Need they extend the full height of the wall?

¹⁵ Bessen and Meurer also suggest that software claims might be reined in by treating them as an “unpredictable” technology, thereby subjecting them to a heightened enablement requirement (p.245). But if we are seeking to “limit[] claims more closely to the technology that the patent actually discloses” (p.245), then the question is not enablement – whether one of ordinary skill in the art could make and use the subject matter defined by the claims – but rather written description: whether the patentee has described in the disclosure the subject matter delineated in the claims. It is somewhat peculiar that throughout PATENT FAILURE Bessen and Meurer highlight the problem of confining the patentee to what he invented or

“possessed,” but refer exclusively to enablement when discussing patent disclosure. It may be that Bessen and Meurer did not wish to become embroiled in the controversy over whether § 112 contained a written description requirement separate from enablement. The *en banc* Federal Circuit recently confirmed the existence of an independent written description requirement in *Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.*, 598 F.3d 1336 (Fed. Cir. 2010) (*en banc*).

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