Process as Purpose: Administrative Procedure, Costly Screens and Examination at the Patent Office

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PROCESS AS PURPOSE: ADMINISTRATIVE PROCEDURE, COSTLY SCREENS, AND EXAMINATION AT THE PATENT OFFICE

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Abstract. The United States Patent and Trademark Office has, by this point, acquired a well-deserved reputation for ineptitude and inefficiency. Patent examiners do a remarkably poor job of screening out invalid applications, and yet the patent examination process remains surprisingly expensive. Proposals for reforming the patent office—of which there are many—have thus focused on improving the quality of patent review while decreasing the attendant costs. In so doing, scholars have entirely overlooked the valuable function performed by the high costs associated with obtaining a patent. These process costs force applicants to disclose private information regarding the value of their intellectual property and serve as a costly screen against a particularly insidious class of low-value patents: those that are useful only as a means of extracting nuisance settlements from commercial firms. The patent system’s continuing viability therefore rests in significant part upon the barrier imposed by administrative cost. And though the patent office is the most prominent forum in which this type of passive screening operates, it is far from the only one. Administrative procedures function as costly screens in areas as diverse as landlord-tenant and employment law, environmental permitting, and immigration law. In each case, the private costs of the navigating the process may pose a more effective barrier to entry than the process itself.

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INTRODUCTION

Articles about the United States Patent and Trademark Office (the “PTO”) typically begin with a recitation of examples of the terrible patent grants for which the PTO has become notorious. Patents on well-known, pre-existing inventions, patents on ideas or concepts that should not qualify as inventions, patents that are employed only to extract ransom payments from genuinely innovative commercial firms—this is the parade of horribles usually presented as evidence of the PTO’s ineptitude. By this point it should come as little surprise that such patents—and so many of them—have managed to slip through the cracks. Examiners spend on average only eighteen hours reviewing each patent, and their incentives are structured so as to bias them heavily in favor of granting patent applications. At the same time, what the PTO lacks in efficacy it has managed to make up for in expense: an inventor will spend between $10,000 and $30,000 prosecuting a patent through issuance.

Accordingly, arguments regarding the patent office have traditionally centered around whether patent examinations are worth the (considerable) cost—whether the patent office should spend more money pursuing more rigorous examinations, or whether it should forego these efforts entirely and scrutinize patents only after they’ve been granted and asserted against alleged infringers. In one respect, however, these discussions have been entirely consistent: in all cases, they have weighed the costs of engaging in patent review against the benefits of that review measured by the number of “bad” patents caught and rejected. By this view, the administrative costs of prosecuting a patent are simply the purchase price of the active scrutiny conducted by the PTO.

But this is not the only function performed by the patent system’s process costs. Scholars on both sides of the debate have overlooked the fact that the high costs of prosecuting a patent force inventors to determine ex

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1 See infra notes 18–29.

2 See id.

3 See Part I.C., infra.
ante whether the property rights they might acquire are genuinely worth the expense. This ex ante private cost creates what is, from the perspective of the patent applicant, a type of costly screen—a private examination of the patent to determine whether its expected benefits, discounted to present value, exceed the cost required to obtain it. This costly barrier to obtaining patents forces potential applicants to disclose private information about the value of their inventions, information that the patent office is otherwise unable to obtain.

This paper applies, for the first time, a costly screening model to the procedural operations of the Patent and Trademark Office. According to this model, prospective patent applicants first decide at time $t_1$ whether to file applications with the PTO. To savvy applicants, the PTO’s behavior when confronting the application at time $t_2$ is a known quantity. The PTO can eventually be made to grant essentially any patent application, though at a significant cost to the applicant (measured in the tens of thousands of dollars). Those costs will, to some extent, scale inversely with respect to the social value of the patent. Moreover, the patents of least (often negative) social value are also those of least private value (though the relationship is hardly linear). The up-front costs of obtaining a patent thus will select against those patents that are most likely to be welfare-diminishing, or so this paper will argue.

The process costs of obtaining a patent will not dissuade an applicant possessing a genuinely valuable invention; the administrative cost of obtaining a patent is a rounding error when compared with an invention that may be worth millions or hundreds of millions of dollars. This barrier to entry will discourage only prospective patentees who place a value on their intellectual property in the range of only tens of thousands of dollars.


5 See infra notes 17–30.

6 See id.
In all probability, there is very little to be lost and much to be gained from deterring applicants who might pursue this category of patents. Patents that are worth only a few tens of thousands of dollars are not likely to form the basis for a sustainable business; nor are they likely to subsume significant pieces of valuable, commercialized inventions, and thus hold substantial worth through litigation and licensing. Much more likely, patents at the very low end of the spectrum will one of two types. Either they will be discarded, unenforced patents that serve only to increase the search costs imposed on firms attempting to ascertain the boundaries of pre-existing property rights—the brambles that make up the “patent thicket,” in popular parlance. Or they will be valuable only for the nuisance settlements they can be used to extract. Patent-holding firms might acquire such patents with the intention of filing multiple small lawsuits against productive companies, hoping to settle those lawsuits for nuisance value and repeatedly extract small rents. These are the types of lawsuits—and thus the types of patents—most likely to inhibit innovation and market entry while contributing least to productivity and innovation.

What makes the PTO’s costly screen so important is the inefficacy of the active examination that the costs themselves are used to purchase. Traditional patent examination, standing alone, can no longer be counted on to perform an adequate check against invalid patents that will necessarily serve as little more than a source of social costs. By rendering these patents prohibitively expensive to obtain, the patent office’s administrative processes inadvertently protect inventors and firms from some of the worst abuses that the flawed examination process might otherwise allow. Even with such a screen, the patent system is hardly a model of accuracy or efficiency. But the system’s continued functionality, and the fact that incentives to innovate have not be overwhelmed by the threat of nuisance lawsuits, are due at least in part to the barrier imposed by meaningful patent application costs.

Proposals for reforming the patent office are hardly new to the literature, having become by this point something of a cottage industry. Nonetheless, no analysis of PTO procedures has yet recognized the screening

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8 See Part II.C., infra.

9 See Part I.C., infra.
function that patent process costs perform or the social value of imposing these ex ante deadweight losses. This costly screening approach thus holds significant implications for the many proposals for reforming or reconfiguring the Patent and Trademark Office and calls into question the assumptions that have underlain prior cost-benefit analyses of patent procedures.

More generally, the application of costly screening models to administrative procedure may reveal a wide variety of contexts in which ostensibly ineffective administrative processes actually serve as powerful costly screens. In legal settings ranging from environmental permitting, to immigration law, to landlord-tenant regulation, the private costs of navigating an administrative process may serve to eliminate many of the unworthy candidates that administrators themselves are unable to expose. Absent an understanding of the function and importance of costly screens, it is possible that scholars and courts have systematically understated the value of administrative process.

Part I of this paper summarizes the operation of the Patent and Trademark Office, the pathologies surrounding patent examination, and the harmful social consequences produced by nuisance patents. Part II describes and analyzes how patent office procedures effectively impose a costly screening against low-value patents, despite the inadequacy of examination procedures themselves. Part III abstracts away from the particular context of the patent office and describes the operation of costly screens more generally and their function within three other important areas of administrative law.

I. THE PATENT OFFICE: HISTORIC PROBLEMS AND CONVENTIONAL REMEDIES

For decades, the United States Patent and Trademark Office has come in for trenchant criticism about the manner in which it reviews patent applications, the costs it imposes upon applicants, and the general impotence of its review. Due in large part to the incentives it places upon its own employees, patent office review has acquired a reputation as an extremely poor
screening mechanism against non-novel or otherwise invalid patents. Examiners have little personal reason to resist the granting of invalid patents and significant private incentives to allow those patents to go forward. Examiners also spend very little time scrutinizing each patent. Consequently, patent attorneys have come to believe that they can effectively “wear down” even recalcitrant patent examiners with continuous appeals and re-filings. These improperly granted patents can enact a social cost, dissuading firms from entering into markets or commercializing inventions and clogging the processes of innovation.

Suggested reforms to this system fall into two camps. Some scholars advocate investing greater amounts of money in more robust patent office review and realigning examiners’ incentives to neither favor nor disfavor patent grants. Others, pointing to the high costs associated with patent examinations and the large percentage of patents that hold little or no commercial value, suggest scaling back (or even eliminating) the PTO examination process and moving towards a system of patent registration and strong ex post review in the courts or a redesigned administrative agency. Both groups, however, treat the expenses that the PTO and private parties must bear in prosecuting a patent solely as the cost of the active examination that takes place, to be avoided or minimized wherever possible. And it is impossible to know whether the PTO’s examination procedures are even remotely cost-benefit justified on those grounds.

A. Rational Examiners and Misguided Incentives

Stories of ridiculous, invalid, and obvious patents are by this point legion. In recent years the PTO has allowed patents on a peanut butter and jelly sandwich, a stick, and a method for swinging on a swing, to name just a few examples. Far more importantly, however, the PTO has almost surely granted invalid patents on thousands, if not tens of thousands, of software, biotechnology, or integrated circuitry inventions. These patents, on inventions that would have been obvious to scientists in the field or were anticipated by prior work, carry with them the potential to stifle innovation, to discourage firms from entering into useful markets, and generally to impede

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the optimal functioning of the American economy. Even if they are never litigated—indeed, especially if they are never litigated, and never see the inside of a court of law—these “bad” patents impose significant deadweight losses and delays in precisely those industries in which rapid progression and the growth of small-scale market participants are most important.

These patents exist first and foremost, of course, because of the rents that they permit their owners to charge. But they are allowed to exist also because of the inadequacies and pathologies of the procedures employed by the patent office to screen them out. The notion that one can, by this point, “patent anything” is not idle hyperbole meant to describe a system of lax enforcement. It is, in fact, more than anything else an accurate description of the goals of the patent office (as exemplified in its internal procedures) and its outcomes. The patent office describes itself as existing to provide a service to patent applicants, who are its “customers,” and states quite plainly that its mission is “to help our customers get patents” and “to ensure strong intellectual property for all Americans”—hardly a celebration of the office’s role as examiner. In any other federal agency this might be mere rhetoric, a paean to the idea of a friendly, facilitative government bureaucracy. At the patent office it is an outlook on institutional role exemplified in the procedures that the office has created to process applications and the incentives placed upon the key actors within the system, the patent examiners.

Each patent application filed with the PTO is referred to a single patent examiner who holds plenary authority over the application for nearly all of its life. After she has examined the patent, the examiner must choose whether to grant the patent application or reject the patent application. As an initial matter, rejecting a patent application is more difficult and time-consuming for the examiner than granting one. If the examiner grants the application, little further procedure is necessary—the examiner simply announces that she is allowing the application to mature into a patent. If the

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17 For a useful summary of the patenting process, see ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 48–54 (2007).
examiner rejects the patent, however, she must provide a statement of the reasons for her rejection, identify the relevant prior art and the section of the Patent Act that has caused her to reject the application, and generally explain the rationale behind her actions.  

Perhaps not surprisingly, patent examiners receive salary bonuses based on the number of patent applications that they are able to process. This fact, by itself, might skew the examiner’s incentives, inclining him towards acceptance rather than rejection based upon the differing workloads and time expenditures required. But the problem is in fact far worse and lies with how the PTO understands what it means to fully process an application.

Unlike a patent grant, an examiner’s decision to reject a patent application does not end the matter. First and foremost, the patent examiner cannot issue a “final” rejection on the first go-around. If the examiner initially rejects the patent, the applicant is entitled to request a re-examination in front of the same examiner. These preliminary rejections are known as “office actions,” and they consist in principal of a correspondence from the examiner to the applicant comprising the information described above—which claims cannot be granted, which prior art renders the invention unpatentable, and so forth. At this point, the patent applicant may choose to abandon the application, though in practice few do. Instead, most applicants elect to respond to the patent examiner’s concerns, revise the application (often editing or redacting certain claims), and request that the examiner re-examine the application. The patent examiner is then again faced with the choice of whether to accept the application or reject it.

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18 37 CFR § 1.104(a)(2) (2007) (“The reasons for any adverse action or any objection or requirement will be stated in an Office action . . . .”).

19 JAFFE & LERNER, supra note 13, at 116.

20 Cf. John Bronsteen, Against Summary Judgment, Geo. Wash. L. Rev. (2007) (noting that judges’ preferences for leisure time will incline them to grant more motions for summary judgment than would otherwise be appropriate).


24 “Request” is a bit of a misnomer; the examiner has no choice but to consider the application a second time.
After this second examination, the examiner may choose to issue a “final” rejection of the application, though she need not do so.25 In theory, the examiner and the applicant could engage in an infinitely iterated series of preliminary rejections and re-examinations; and indeed many patents are the subject of three or four office actions before they are finally accepted or rejected.26 Yet even if the examiner issues a final rejection of an application, the matter is far from over. If the applicant does not wish to abandon the invention, she may select between two possible courses of action. First, the applicant may appeal the decision to the Board of Patent Appeals and Interferences (“BPAI”), which can overturn the examiner’s decision and send the patent back to the examiner for further consideration.27 If the applicant loses before the BPAI, she then holds the right to appeal the decision to the Federal Circuit.28 Alternatively, the applicant may elect to file a continuation application, which is little more than a request for re-examination (presumably involving edited claims or new arguments) attached to an additional filing fee.29 The patent application remains before the same examiner as if the “final rejection” had not been genuinely effective.

Meanwhile, as these various appeals are taking place, the application resides in the examiner’s file as an open matter, rather than a processed one, and the examiner does not accrue credit towards her next bonus.30 Worse, if her decision is overturned she faces the prospect of expending even more time on an application that has not provided her with any meaningful return. The rational, self-interested examiner thus has a tremendous incentive to simply grant the vast majority of patent applications—a self-interest that is only

25 37 CFR § 1.113(a) (2007) (“On the second or any subsequent examination or consideration by the examiner the rejection or other action may be made final . . . .”) (emphasis added).

26 This estimate is based upon conversations with patent prosecutors at a number of law firms, principally Kirkland & Ellis LLP and Schiff Harden LLP. Notes on file with author.


28 35 U.S.C. § 141 (2007). The applicant may also bring a civil action in federal district court against the director of the patent office, seeking essentially the same relief, but few choose this route. Id. § 145.


30 JAFFE & LERNER, supra note 13, at 136.
buttressed by the organizational tenets of the patent office itself.\textsuperscript{31} Scholars thus estimate that patent examiners spend, on average, only eighteen hours scrutinizing each application.\textsuperscript{32}

Consequently, while it may not be the case that every patent will be granted every time (especially on the first attempt), a determined patent applicant can eventually overwhelm the patent office through repeated efforts. This appears to be exactly what takes place. In any given year, approximately 25\% of patent applications are actually \textit{continuation} patents—refilings of applications that had already once been denied.\textsuperscript{33} Reported rates of patent rejections are thus greatly overstated; those patents almost inevitably return as continuations. In fact, between 1963 and 2005 (the last year for which the USPTO currently provides data), the patent office received 4,016,707 \textit{new} utility patent applications and issued 3,891,905 patents,\textsuperscript{34} an astounding success rate for applicants of 96.8\%.\textsuperscript{35} To a great extent, then, the decision regarding whether to grant a patent lies in the hands of the applicant.\textsuperscript{36} If the patent is

\textsuperscript{31} This is in contrast to other administrative organizations, such as prosecutors’ offices, that structure internal cultures and incentives so as to mitigate the effect of rational self-interest. Prosecutors themselves have an incentive to dismiss cases or settle them quickly, for short sentences, in order to dispose of their workload and maximize leisure time. Prosecutors’ offices counter this incentive by creating cultures that value longer sentences and higher conviction rates and evaluating line prosecutors on those grounds. \textit{See generally} Stephanos Bibas, \textit{Plea Bargaining Outside the Shadow of Trial}, 17 HARV. L. REV. 2463 (2004).


\textsuperscript{33} \textit{Jaffe & Lerner, supra} note 13, at n. 162.


\textsuperscript{35} \textit{See also} Lemley, \textit{supra} note 32, at 1528 (arriving at the same 97\% figure). This 96.8\% rate may even underestimate the overall rate of patent grants. Patent grants or rejections will typically lag applications by 18 to 36 months, the amount of time consumed by the examination. Patents filed in 2005 will not likely be granted or denied until 2006 or 2007, while patents granted in 1963 were likely filed in 1962 or 1961. The rate of patent filings and grants has increased significantly over the past four decades; inventors filed 66,715 utility applications in 1963 and 207,867 applications in 2005. Consequently, by over-counting grants in 1963 and under-counting them in 2005, the overall statistic likely underestimates the percentage of patent applications that eventually result in issued patents.

\textsuperscript{36} In a world of perfect incentives and perfect information, the patent grant rate would be 100\%. Inventors would never file for patents that they knew would not be granted, and examiners would never make errors when evaluating the patents before them. This world is,
worth pursuing, the inventor possesses the leverage necessary almost to
guarantee that it will issue.

B. The Costs of “Bad” Patents

Patents are injurious to competition. This is, of course, precisely the
reason that patents exist—they provide inventors with limited monopoly
benefits in order to encourage innovation. This tradeoff is accepted with
respect to valid patents on novel inventions, but even invalid, improperly
granted patents on pre-existing technologies have the power to dissuade
potential competitors from entering a market and stunt investment in further
research. This is the case regardless of whether or not the invalid patents are
ever asserted; the threat posed by the existence of those patents is enough to
raise barriers to market entry.

Any prospective market participant must determine ex ante the costs
and risks involved in operating. Even invalid patents augment these costs in
three ways. First, a market entrant must investigate the intellectual property
that exists in the field and make some preliminary inquiry as to those patents’
validity. This investigation, even if cursory, can be quite expensive.

of course, entirely hypothetical, and a combination of poor information, optimism bias on the
part of inventors, and even random errors (on both sides) should combine to drive the rate of
grants well below 100%. The fact that that figure sits at 97% is thus powerful evidence of bias
within the system.

37 See DONALD S. CHISUM ET AL., PRINCIPLES OF PATENT LAW 6 (1998); MERGES & DUFFY,
supra note 17, at 253–256 (describing the incentive systems meant to drive the patent law).

38 See Ian Ayres & Paul Klempere, Limiting Patentees’ Market Power Without Reducing Innovation
Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies, 97 Mich. L. Rev. 985,

39 Christopher R. Leslie, The Anticompetitive Effects of Unenforced Invalid Patents, Minn. L. Rev.
(2007).

40 See Rochelle Cooper Dreyfuss, Are Business Method Patents Bad for Business?, 16 Santa Clara
Computer & High Tech L.J. 263, 270 (2000) (“[P]atents have in terrorem effects: no one wants
to invest in a business that cannot succeed without first winning a lawsuit.”).

41 See generally Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp., 383 F.3d
1337, 1344–47 (Fed. Cir. 2004).

42 See Part II.C.2., infra.
Second, invalid patents can hamper a firm’s ability to raise capital or write contracts with potential customers. Financial markets will be wary of firms that may not be sustainable because they traffic in infringing products. Customers will hesitate before forming business relationships that may expose them to suits for contributory infringement and resist relying upon suppliers who may be shut down or driven out of the market by a suit for infringement. Finally, risk-averse, uncertainty-averse firms will have reason to fear the cost of defending a lawsuit for patent infringement, not to mention the threat of having to pay licensing fees or royalty damages. Patent lawsuits of any length impose asymmetric costs upon the participants. It is easier and less costly for patent holders to prove infringement than it is for alleged infringers to prove invalidity, largely because patents arrive in court accompanied by a presumption of validity. Litigation, even relatively non-meritorious litigation, thus presents a substantial threat.

A single, significant patent of plausible validity can certainly cause these types of problems for a nascent competitor. Importantly, though, a large quantity of frivolous, obviously invalid patents within the field can create the same sorts of barriers to entry. As an initial matter, search and information costs for the entering firm will be higher regardless of whether these patents are ever enforced, as the market entrant is forced to comb through a dense “patent thicket” in order to ascertain the boundaries of existing property


44 Leslie, supra note 39, at 125–27.

45 See Joseph Borkin, The Patent Infringement Suit—Ordeal by Trial, 17 U. Chi. L. Rev. 634, 641 (1950) (“Contributory infringement . . . can serve as an effective side-attack to cut off the economic support of a small producer.”).

46 See Jaffe & Lerner, supra note 13, at 152.


It may be also difficult for new firms to credibly signal necessary third parties such as banks, investors, and customers—particularly when those third parties do not possess a level of sophistication in the relevant technologies—that a set of threatening patents are invalid.

Most significantly, nascent market participants might face higher up-front costs if litigation uncertainties and information asymmetries force the firm to pay small licensing or settlement bribes to a series of patent-holders who choose to file nuisance lawsuits. Firms that face the prospect of being nickel-and-dimed by the owners of multitudinous dubious patents may well choose to refrain from investing in the development of new technologies in the first instance. In addition, the nuisance lawsuits themselves can produce significant deadweight losses; litigants expend thousands of dollars in transaction costs to prosecute and settle nuisance lawsuits worth $20,000 or less.

Through sheer force of numbers, substantial quantities of plainly invalid patents can impose significant social costs.

C. Classic Reforms

In response to the inadequacies of the patent office and the costs of bad patents, scholars have advanced a number of proposals designed to shore up that failing agency and provide a more effective screen against non-novel and potentially harmful patents. These suggested reforms have assumed a variety of shapes: increases in PTO funding that would allow the office to hire more examiners (thus permitting each examiner to spend a greater amount of

49 See id.; MERGES & DUFFY, supra note 17, at 615–616 (describing the economics of search costs).

50 See Leslie, supra note 39, at 133; Part II.C., infra.

51 See Michael J. Meurer, Controlling Opportunistic and Anticompetitive Intellectual Property Litigation, 44 B.C. L. Rev. 509, 515 (2003); Bresnick v. U.S. Vitamin Corp., 139 F.2d 239, 242 (2d Cir. 1943) (Hand, J.) (describing a patent as a “scarecrow” that can deter competition by its very existence); But see Brunswick Corp. v. Riegel Textile Corp., 752 F.2d 261, 265 (Posner, J.) ("[A] patent known to the trade to be invalid will not discourage competitors from making the patented product or using the patented process, and so will not confer monopoly power . . . ”). Judge Posner may be correct that a patent must be of at least “colorable” validity in order for it to be used as a means of exerting monopoly power, but see Leslie, supra note 39, at 133, but his analysis does not speak to the possibility that the asymmetric transactions costs involved in patent litigation will enable the holder of a plainly invalid patent to extract small payouts from market entrants.

52 See Part II.C., infra (describing the economics of nuisance-value patent lawsuits).
time on each patent), improved training for patent examiners and more careful matching of examiners’ subject-matter expertise and the applications they are meant to review, and alterations to the internal incentives of the patent office that would credit examiners as much for rejecting an application as for granting one.53

These innovations undoubtedly hold the potential to improve the patent office’s performance and contribute a substantial public good by ridding the marketplace of invalid patents. What is more doubtful, however, is whether the benefits that improved performance at the patent office might confer are worth the costs that such improvements would entail. The patent office grants approximately 1.5 million patents per year, the vast majority of which are commercially irrelevant and will never be the subject of a lawsuit, a license, a royalty payment, or even an attempt to extract value; nor will they ever interfere with a company’s efforts to innovate. In an important 2001 article, Mark Lemley observed that the patent office has no way of knowing ex ante which patents will be valuable or significant in the long run and which will not, and thus is essentially forced to scrutinize all of them if it wishes to scrutinize any of them.54 The value of these patent applications is classic private information held principally by the patent applicants—and possibly shared by their competitors—and is extremely costly for the patent office to access. As a result, any increases in patent examination rigor will compel the PTO to spend billions of additional dollars examining patents that will play no substantial role in the economy in order to ensure that it has inspected the comparatively few that will.55

Lemley performed a back-of-the-envelope calculation and concluded that increased patent office scrutiny of would not be cost-benefit justified; he prefers that the patent office maintain the status quo.56 Others have taken


54 Lemley, supra note 32 (addressing the liabilities forced upon the patent office by its mandate to treat all patents identically).

55 The PTO currently spends approximately $1 billion per annum examining patents. Jaffe & Lerner, supra note 13, at 172. Patent applicants spend several times that amount prosecuting patents. Id.; see also Part II.A., supra.

56 Lemley, supra note 32, at 1508–11 (arguing that further investment in patent scrutiny, because it must be spread across hundreds of thousands of patents per year, would result in little gain in the quality of issued patents).
issue with Lemley’s rough calculations and argued that further scrutiny would be worth the investment.\(^{57}\) And another, smaller cadre has asserted that patent examinations should be eliminated altogether, with the patent system reverting to a simple system of registration, akin to the copyright regime.\(^{58}\) Many of these proposals are coupled with suggestions for meaningful inter partes post-grant administrative review, mechanisms by which potential infringers can challenge a patent’s validity without undertaking expensive litigation in federal courts.\(^{59}\) Some even recommend a multi-tiered system of patent review in which applicants can opt for one of several levels of PTO scrutiny with correspondingly strong ex post presumptions of validity.\(^{60}\)

But for all the ink that has been spilled on this topic, the answer to the question of whether greater investment in patent examinations would be worthwhile—or even whether current investments are justifiable on these terms—remains entirely unknown, and potentially unknowable. It is worth noting that the problem extends beyond the fact that the absolute dollar benefit for each dollar invested in the PTO is unclear. The proportional marginal benefit of each additional dollar—when compared with the dollar that came before or after it—is also difficult to decipher. Regardless of their eventual conclusions regarding the patent office, scholars have all assumed that investments in patent examinations follow typical laws of diminishing marginal returns: each dollar spent, or each additional minute invested in reviewing a patent application, is less valuable and will generate a less substantial return than the dollar or minute that preceded it. In more concrete terms, the

\(^{57}\) See, e.g., Shubha Ghosh & Jay Kesan, What do Patents Purchase? In Search of Optimal Ignorance in the Patent Office, 40 HOUS. L. REV. 1219 (2004); Jaffe & Lerner, supra note 13 (proposing that the patent office expend greater funds on more rigorous examination).


assumption is that if the patent office had sufficient funds such that examiners spent 36 hours reviewing each patent, rather than 18 hours, the examiners would successfully screen more invalid patents, but fewer than twice as many invalid patents.

While these sorts of relationships hold in many economic contexts, there is no reason to believe that they exist here. Consider the process of reading a patent. The average patent is on the order of twenty pages long, and contains a written description of the invention, often a series of figures or diagrams used to illustrate the invention, and finally a series of claims that define the boundaries of the property right. If an examiner is to grasp what exactly a patent application entails, she must read both the specifications—to understand the invention—and the claims—to grasp what the inventor seeks to protect. This entire process might take one hour—forty-five minutes for the specifications, and fifteen minutes for the claims—but the first forty-five minutes of effort are worthless without the last fifteen. The marginal rate of return on time invested increases at the forty-five minute mark.

Now consider a search for prior art. On some occasions, an invention will be unpatentable because it was anticipated by a single piece of prior art, and in those instances the patent examiner’s search for prior art may become less valuable as time goes on and the marginal increase in the odds of finding that single patent decreases. But much of the time an invention is not patentable because its novelty has been subsumed by several pieces of prior art in combination, and only when the examiner finds these multiple prior art references will she understand that the invention is not novel. Again, the first search—and the reading of the first several examples of prior art—may be worthless without the ones that follow it. Assume for a moment that it takes an examiner approximately an hour to locate, read, and analyze each piece of prior art against the patent application. The examiner may get nothing more out of two hours of work than she does out of one hour, but might reap more than double the benefits from four hours of work than she does from two.

For some fields, such as software and business methods, the majority of prior art might be located in non-patent sources—old products, past

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practices, academic textbooks, and the like—and thus examiners might be forced to invest substantially larger amounts of time before their efforts at searching for prior art become worthwhile. This analysis may differ from patent to patent, and from technological field to technological field; the principal point is that it is impossible to ascertain ex ante how much time an examiner will require to scrutinize a patent adequately, or at what point the examiner’s extra efforts cease to be worthwhile. It is thus essentially impossible to gauge the appropriate amount of money to invest in patent examinations, so long as those examinations are viewed strictly as tradeoffs between cost and intensity of scrutiny. Up until now, that is precisely how they have been viewed, and it is the primary goal of this article to unseat that assumption.

II. Patent Procedures as Costly Screens

The inefficacy of examination procedures raises the question of why they have continued to exist in their current condition in the face of so many calls for reform and such uncertainty as to their value. Entrenched private interests have blocked some types of reforms, and efforts to wholly remake the patent office would undoubtedly meet with stiff resistance. It is also possible that the current PTO procedures represent parties’ best intuition as to what level of patent scrutiny will produce more benefits than costs, though no actor has any reliable data on the subject. But even on these accounts, the persistence of a regime of administrative procedure so rife with doubts as to its value is more than a little puzzling.

The answer to this puzzle lies, counter-intuitively, in the high costs associated with a patent examination—particularly the costs imposed upon patent applicants. Scholars have treated these costs as deadweight losses within the patent system—expenses to be avoided or minimized wherever possible. But these substantial costs—even purely transactional expenses such as drafting a patent application and paying one’s patent attorneys—force applicants to gauge the value of their own patents and forego applications for inventions that will not likely generate significant returns. In particular, the high cost of obtaining a patent screens against patents that are useful only for their nuisance value and as a means of harassing commercial firms to obtain small settlements, and in favor of patents on inventions that are likely to hold

63 See, e.g., Lemley, supra note 32, at 1496 (“Conducting a more thorough examination of patent applications requires society to spend more time and more money. Whether these resources would be spent wisely depends on the return we would get for that money.”).
genuine commercial value. The costs of complying with PTO procedures thus effectively compel patent applicants engage in a type of ex ante sorting, based on private information. At the Patent and Trademark Office, procedural costs are not an impediment to accurate decision-making; within some domains, they are the best functioning mechanism for compelling that type of decision-making in the first place.

A. Costs

The costs to a patent applicant from prosecuting a patent derive from a variety of sources: PTO fees, legal fees, and internal firm costs (principally in the form of the inventor’s time and energy). The distribution of costs among these various sources is important, and so what follows is a brief decomposition of the costs involved in prosecuting a typical patent, United States Patent No. 6,062,350 (“the ‘350 patent”). U.S. Patent 6,062,350 is a patent on a “braking system for an amusement device” (essentially a roller coaster), and was the subject of an infringement action filed by its owners, Saiko et al., in April 2004. That suit was dismissed on summary judgment by a district court in California, and the judgment was affirmed by the Federal Circuit in April 2007.

1. PTO Fees

The Patent Act provides a schedule of fees for various stages of the patent application process, some of which apply to all patents and others of which are graduated based on the length or complexity of the patent. The

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64 Brief for Plaintiff-Appellant, Intamin, Ltd., 2005 WL 3517968, at 6.

65 Suit was brought in the U.S. District Court for the Central District of California, but that court issued no published opinions.

66 Intamin Ltd. v. Magnetar Technologies, Corp., 483 F.3d 1328 (Fed. Cir. 2007). The patent is of approximately median length and complexity, and was chosen due to the fact that it was the subject of the most recent infringement decision by the Federal Circuit when this analysis commenced.


68 The application that eventually matured into the ‘350 patent was filed on October 10, 1997, at which point the fees charged by the patent office were not quite as high as they are in 2007. In the interest of clarity, I will endeavor to estimate all costs in 2007 dollars, including using the 2007 schedule of patent filing fees.
initial application requires a series of fees totaling $1,000, and the applicant must pay an additional $1,400 when the patent issues. Applicants are allowed three “free” independent claims (additional independent claims incur fees of $78 apiece) and twenty total “free” claims (additional claims are $18 each); the ‘350 patent includes only one independent claim and seventeen total claims, and thus these fees do not apply. The PTO also charges applicants $360 for any application that contains a multiple dependent claim, which the ‘350 application does. There are a variety of other minor fees and expenses which either do not apply or would likely be extremely small. In sum, then, the owners of the ‘350 patent likely would have paid the patent office approximately $2,760 in fees to have the patent granted.

In addition, the PTO charges regular—though small—maintenance fees with the intention of forcing patent holders to regularly evaluate whether their patents remain valuable and are worth preserving as property rights. A patent will expire and cease to be enforceable if its owner fails to pay the necessary fees in a timely manner. These fees are assessed three and a half years, seven and a half years, and eleven and a half years after the patent has been granted. The patent office issued the ‘350 patent on May 16, 2000, and so by the summer of 2007 the patent holders had paid the $830 fee that comes

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69 37 C.F.R. § 1.16(a)(1), (k), (o) (2007).
71 35 U.S.C. § 41(a)(1)(B); 35 C.F.R. § 1.16(h), (i).
72 37 C.F.R. § 1.16(j).
73 For instance, there is a $0.25 fee for each photocopy made by the patent office, id. § 41(d)(1), and a $3 fee for each copy of a patent furnished to an applicant. Id. § 41(d)(2).
74 Id. § 41(b). The rules are not actually as onerous as this description might imply. Patent owners have a six month “grace period” within which they can make late payments, id.; Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc., 381 F.3d 1371, 1386 (Fed. Cir. 2004), and the patent commissioner can expand that grace period an additional 24 months if the failure to pay was “unintentional,” 35 U.S.C. § 41(e)(1); Ray v. Lehman, 55 F.3d 606, 608 n. 1 (Fed. Cir. 1995), and indefinitely if the lapse was “unavoidable.” 35 U.S.C. § 41(e)(1); Lehman, 55 F.3d at 608.
due at the three and a half year mark\textsuperscript{76} and would soon have to pay the $1900 fee that accrues after seven and a half years.\textsuperscript{77}

Thus, by the April 2007 (and the completion of the action for infringement), Saito et al., the owners of the ‘350 patent, had likely paid approximately $3,590 in fees to the patent office in total.

2. \textit{Attorneys’ Fees and Prosecution Expenses}

Patent office fees on the order of $3,600 per patent are not insignificant, particularly to a small corporation or solo inventor.\textsuperscript{78} But they are dwarfed by the amount that applicants will have to pay the patent attorneys and patent agents who draft the patent application and shepherd it through the PTO’s process. Data on these points are a bit fuzzy, and no current national survey of patent application prices exists. In addition, of course, many law firms bill clients by the hour, and patent applications can vary greatly in complexity and thus in the time needed to complete them. Nonetheless, estimates from a variety of sources have coalesced around a reasonably narrow range of figures.

An initial patent application on a relatively complex technology—a semiconductor or biotechnology patent, for instance—when prepared by a reputable law firm, will typically cost between $6,000 and $10,000.\textsuperscript{79} But this is just the entry expenditure, the amount necessary to get the applicant through the patent office door with an application that has a realistic chance of being granted. Few technically sophisticated patents are granted on the first try;\textsuperscript{80} far more frequently, the patent examiner will issue a preliminary denial of the

\textsuperscript{76} Id. § 41(b)(1).

\textsuperscript{77} Id. § 41(b)(2). After eleven and a half years, the patent holder must pay a fee of $2,910. Id. § 41(b)(3).

\textsuperscript{78} The Patent Act reduces the maintenance fees that small businesses, independent inventors, and non-profit organizations must pay by 50\%, id. § 41(b)(1), but all other filing and application fees remain the same.

\textsuperscript{79} This estimate is based upon conversations with attorneys at a number of law firms, principally Kirkland & Ellis LLP and Schiff Harden LLP. Notes on file with author.

\textsuperscript{80} I do not mean to indicate that an initial grant is either easy or expeditious. On average, more than eighteen months elapse between the filing of a patent application and the first response (positive or negative) from the PTO. See Lemley, \textit{supra} note 32, at 1521 n. 93. If anything, this amount of time has only lengthened since Lemley compiled his figures in 2002.
patent, demanding that the applicant clarify some portion of the patent, respond to one or more pieces of prior art, or otherwise remedy some defect with the application.  

These office actions, which are generated with very little investment by the patent office (remember that the average patent receives only eighteen hours of attention from an examiner), can nonetheless be quite expensive for the applicant. The applicant’s attorney are forced to expend additional hours reading prior art, consulting experts, redrafting or rethinking the patent, and generally replying to the patent examiner’s complaints. Consequently, higher-profile law firms can charge anywhere between $1000 and $3000 per office action, and a typical patent is subject to between one and four office actions during its lifetime. In addition, each request for re-examination pursuant to an office action carries with it an additional fee, which ranges from $120 (if the applicant responds within the first month) to $2,160 (if the applicant requires more than four months to respond).

If the patent applicant is forced to file a continuation patent, the process restarts and the overall costs could be $5,000 or $10,000 greater. And if the applicant chooses to prosecute an appeal to the BPAI or the Federal Circuit, or becomes embroiled in an interference with a competing inventor, she faces the potential of costs that are greater by as much as an order of magnitude. Even a typical patentee, who is not forced to go to such lengths, will spend on the order of $6000 to placate the patent office’s

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83 These estimates are again based upon conversations with attorneys at a number of law firms, principally Kirkland & Ellis LLP and Schiff Harden LLP. Notes on file with author.
85 Id. § 1.17(a)(5).
86 Lemley, supra, at 1499.
concerns and push through a successful application. All told, then, an average patentee, such as the owner of the ‘350 patent, might spend approximately $18,000 to prosecute successfully a patent application; a mere $4,000 of which would derive from fees paid to the PTO, while the remaining $14,000 accrues in the form of attorneys’ fees.

3. **Internal Firm Costs**

Firms will also incur patent prosecution costs as inventing employees are forced to devote time and energy to aiding in the preparation of the patent application. These costs are derivative of the legal fees associated with patent applications—they stem from the need for technical expertise in preparing applications and responding to office actions. Nevertheless, internal firm costs are difficult to estimate and will vary widely by firm and technologies, and so I will treat them conservatively as zero here.

B. **Process Costs Reconsidered**

1. **The Conventional View**

   It is tempting to treat these private expenses—particularly the attorneys’ fees required to prosecute an application—as little more than the cost of doing business before the PTO. Indeed, this is the conventional understanding of the various procedures that comprise the patent examination system: the participation of the applicant is the lowest-cost method of providing for effective examination of patents. One could conceive of a patent system in which an applicant simply handed over lab notebooks and prototypes to patent examiners, who then studied the inventor’s work to determine if she had created some valuable intellectual property. This approach would undoubtedly minimize transactions costs to the applicant, but only by transferring those costs (and more) to the patent office. Overall costs would also rise—the applicant is better positioned than the examiner to scrutinize her own invention and determine whether there exists a protectable property right. The applicant is more familiar with the invention and the

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88 This number is based on the midpoints of the previous two ranges: 2.5 office actions at $2000 per office action, and a response time of just under two months, for which the fee is $450. *Id.* § 1.17(a)(2).

89 $8,000 (the average initial drafting cost) + $6,000 + $3,590 = $17,590, and there are likely to be other miscellaneous fees and expenses involved. In 2001, Lemley estimated the average cost at $10,000 to $30,000. Lemley, *supra* note 32, at 1498. If anything, then, the estimate here may be overly conservative.
relevant technology and can conduct such an inquiry more quickly and cheaply—thus, it is the inventor who prepares the application.

So too for the process of rejection and re-examination. The patent examiner could, in theory, simply conduct a thorough search of the prior art record and arrive at a final decision as to a patent’s validity without the need for iterative consultations with the applicant. But it is more efficient for the examiner to test the strength of her objections against the best rebuttals that the applicant can offer, rather than simply seeking to satisfy himself of the accuracy of her determinations without the benefit of outside counsel. 90 (In addition, it is presumably fairer to provide the applicant with an opportunity to have her views heard. 91)

On this theory, the costs imposed on both the applicant and the patent office are merely the necessary concomitant of patent office review. Patent process costs purchase accuracy in examination; the patent office expends resources (and demands that private parties do the same) in order to determine if patents are valid and worth granting, and to prevent “bad” patents from being issued. 92 The objective for the patent system is to minimize these transactions costs wherever possible. The examination process, then, is worthwhile only to the extent that the examination results themselves are cost-benefit justified—that patent examiners are able to provide a benefit to the economy by eliminating non-novel patents that exceeds the costs incurred through their examinations.

The problem, as noted above, is that it is impossible to know on this account whether the examination processes are cost-benefit justified. The optimal level of investment in patent examination may be zero, or it may exceed the current level, or the patent office may have miraculously selected the ideal level of examination. But given the incentives that examiners face to grant patents, and the near-consensus that applicants have it within their power to overwhelm examiners and force through patents if they are sufficiently persistent, there is reason to suspect that the patenting process is


92 See, e.g., Jaffe & Lerner, supra note 13, at 134–35.
not cost-benefit justified in its current form. Appropriately, then, every proposed restructuring of the patent office has focused on the tradeoffs between costs and accuracy and looked for methods of minimizing the former while improving the latter.93

2. Process as Purpose

If this conventional view completely encapsulated the costs and benefits of patent examination, the entire patent system might long ago have collapsed in upon itself as aggressive patentees forced an unending stream of bad patents upon reluctant and overwhelmed examiners. But the conventional view entirely overlooks the most valuable function of the patent examination process: irrespective of whether patent examiners are effective at weeding out invalid patents, the substantial costs of prosecuting a patent force applicants themselves to select which patents are genuinely worth pursuing.

Before an inventor ever files an application, she must assess whether the invention will likely be worth the cost of its prosecution.94 This requires the patentee to gauge a number of factors, principally 1) whether the patent is at least colorably valid, and how difficult it will be for the patentee to enforce it against third parties; and 2) whether the invention is commercially viable or covers a component of a device with commercial potential. If the patent is either useless as a property right (because it is self-evidently invalid or unenforceable), or if it concerns inventions and technologies for which there is no viable market, it will not likely be worth the expense of prosecution.

In essence, the cost of prosecuting a patent forces the applicant to conduct both the same screening that the PTO itself attempts to undertake (the validity inquiry), as well as an additional examination that the patent office quite deliberately does not attempt. Again, the patentee can obtain information regarding the patent’s validity at least as cheaply as the patent

93 See supra notes 49–57.

94 There will be slippage around this calculation. Individual decision-makers will suffer from optimism bias regarding the likely value of their (or their firms) patents. See generally Jon D. Hanson & Douglas A. Kysar, Taking Behavioralism Seriously: The Problem of Market Manipulation, 74 N.Y.U. L. Rev. 632, nn. 106–09 (1999). Particular individuals within firms may also have incentives to have patents granted even when those patents are valueless for the firm. For instance, some technology firms award bonuses to employees each time a patent is issued listing that employee as an inventor. Other individuals may simply seek patents because of the prestige they convey and the signal they send, irrespective of the patents’ commercial value.
examiner, if not significantly more cheaply. The transaction costs of obtaining a patent thus transfer quite effectively to the patentee the responsibility of ensuring that the patent will appear at least facially valid, and that attempts to assert it (even outside of court) are likely to succeed with some probability. 95

In addition, the commercial viability of an invention serves as an indication of whether the patent is sufficiently important that the patent office (and private parties) should expend resources determining its validity. This is not a question that the PTO attempts to answer directly; the Patent Act allows the PTO to inquire only into a patent’s validity, not into the invention’s commercial use or its effect on the economy.96 The PTO does not even engage in different types of scrutiny for inventions in different fields or of differing commercial values.97 Patents on semi-conductor devices98 and patents on peanut butter and jelly sandwiches99 officially undergo the same vigor of examination. Nor would the PTO be well-positioned to determine the value of examining a patent, even were it so inclined. On this question—even more than with respect to validity—there is a distinct informational asymmetry between the patent applicant and the PTO. The applicant likely does business in the field and understands the relevant markets, while the patent examiner may have relevant technical expertise but likely lacks a working knowledge of the state of the trade.100 The fact that applicants

95 This is not to say that the system functions perfectly, of course. Of the approximately 160,000 utility patents granted each year, see PTO, U.S. Patent Statistics, Calendar Years 1963-2004, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.pdf (Aug. 2005), the vast majority are economically worthless. See Kimberly A. Moore, Worthless Patents, 20 Berkeley Tech. L. J. 1521 (2005). This is undoubtedly due in part to inventors’ biases and misaligned incentives, see supra note 94, but it is not necessarily attributable entirely to the bounded rationality of participating individuals. Many firms may file patents with expected present values well in excess of the $18,000 process cost, only to see their gambles fail to pay off.


98 See, e.g., U.S. Patent No. 5,486,795

99 See, e.g., U.S. Patent No. 6,004,596.

100 A patent applicant might even hold an informational advantage over competitors within the same marketplace when it comes to determining the commercial value of an invention. That patent application might be valuable only when mixed with some number of trade secrets or commercial plans that the patentee has not yet revealed.
possess incentives to apply only for commercially significant inventions does not provide any information as to whether patent terms are efficient, but it avoids the expenditures of unnecessary process costs by the patent office on those patents that are most likely to become economically irrelevant.

This applicant-centered screening mechanism is driven predominantly by the private process costs of obtaining a patent, rather than the fees paid to the patent and trademark office. By the back-of-the-envelope calculation undertaken here, fees account for only $4,000 of the approximately $18,000 required to obtain a typical patent; the lion’s share is devoted to the fees paid to attorneys and technical experts to draft and prosecute the patent—classical transactions costs. In this sense it is very much the process of obtaining a patent—the construction of a colorable application, negotiations with the patent examiner, and so forth—that provides the incentive for applicants to conduct ex ante examinations of the value of their own inventions.

Viewed simply as a flat fee, the transaction cost of obtaining a patent represents a significant outlay for a solo inventor or very small firm, particularly given that modern inventors frequently file more than one patent at a time (even on closely related inventions). More importantly, though, these costs will scale based the technical complexity of the patent, the crowdedness of the technological field in which it resides (the more crowded the field, the more prior art for the patent examiner to draw upon), and the extent to which the patent borders on invalidity. Patents of suspect validity are more likely to garner repeated office actions from the PTO, as examiners seek to interrogate the novelty of the claims. So too for patents on inventions in technical areas already heavily congested with prior art, particularly prior art in the form of issued patents—the greater the quantify of extant prior art, the more likely that she will find art that calls one or more of the claims into question.

Responses to office actions are expensive for applicants—on average, more than $2,000 apiece—and represent a significant percentage of the total cost of pursuing a patent. If the patentee is forced to turn to the BPAI or the


102 Examiners have better access to patents than they do to prior art in any other form. They may not even know of the existence of other types of prior art, such as recent scholarly or trade publications. See Jaffe & Lerner, supra note 13, at 145–49 (enumerating the many limitations of the typical patent examiner).

103 See Part II.A., supra.
Federal Circuit, the costs could increase by an order of magnitude. Consequently, costs will be significantly higher for inventors who attempt to push through questionable patents, or who attempt to patent inventions in heavily commercialized fields in which those patents might do the most harm. Prospective applicants will be forced to adapt to these higher expected costs. In effect, then, the very administrative processes that allow patentees to “wear down” examiners serve to increase the barriers to entry for the least desirable patentees. If the patent system is crudely successful at screening for invalid or damaging patents, it is not necessarily (or primarily) because examiners are actually denying those patents. Rather, the procedural mechanisms that exist in the name of “customer service” compel applicants themselves to avoid filing applications on unpatentable inventions in the first instance.

C. Low Barriers and Nuisance Values

That the administrative procedures involved in patent prosecution impose a costly screen against low private-value patents is not normatively significant without some understanding of what sorts of patents this screen is likely to exclude. The section that follows will endeavor to describe with some particularity the classes of patent that such a screen will select against.

It is certainly not the case that all patents with high private value also hold high social value, and that all patents with low private value also involve low or negative social value. Nonetheless, the PTO’s process costs-based screen succeeds in exploiting an asymmetry within the economics of patent rights. Patents with high private value can be of high social value—significant discoveries, major breakthroughs, important inventions—or low to negative social value—minor or insignificant innovations that are useful only as blocking patents or a means of extracting rents. But patents of low private

104 See Part I.B., supra.

105 Proposals to create more robust ex post, inter partes screening mechanisms, see, e.g., Jaffe & Lerner, supra note 13, are consistent with this approach and would likely be beneficial to the system as a whole. By themselves, though, they would not necessarily succeed in deterring applications for nuisance-centered patents or the filing of essentially nuisance lawsuits. Inter partes screening mechanisms will involve the same information and cost asymmetries as does litigation defense, though the overall costs may be lower. Pressures to settle for nuisance value will remain.

value and high social value are effectively nonexistent. The monopoly rights conferred by patents ensure that any invention with high social value will also create significant private value for its inventor. Consequently, patents with low private value will necessarily be of low—or, more importantly negative—social value as well. It is this category of patents that the PTO’s costly screen will act to exclude.

1. Valuable Inventions

Before turning to the sub-categories of patents that will be effectively excluded by an $18,000 barrier to entry, it is worth briefly canvassing those classes of patents that will not. The question of whether a patent is privately valuable to the holder—and by “valuable” here I mean worth well in excess of the $18,000 required to obtain the patent—and the question of whether the availability of a patent has spurred socially productive research and innovation are not always coterminous. Patents may be valuable because they can be deployed offensively, with the intention of collecting awards for infringement or licensing fees; they may hold value as defensive mechanisms for protecting commercial products from competition or from suit for infringement; and they might be usefully employed as signals to dissuade potential market entrants or attract investors and other third parties. All valuable patents will, however, have two common characteristics: they will be at least plausibly valid, and they will claim inventions (or important components or subparts of inventions) that are commercially viable.

The converse is true as well. Any patent of at least colorable validity that claims all or part of marketable product will hold meaningful value (though of course the patent-holder may not always succeed in realizing that value). Eighteen thousand dollars is a fraction of the seed money necessary to

107 This is true at least to first approximation. See notes 115–19, infra, and accompanying text.
110 See, e.g., Long, supra note 10, at 651–53; Mark A. Lemley, Reconciling Patents in the Age of Venture Capital, 4 J. SMALL & EMERGING BUS. L. 137, 144 (2000).
start a small business; any property right that gives even a small-time commercial venture the right to exclude competitors will be worth far in excess of that amount. This relationship holds even if the patent covers only a small portion of a larger product—the braking system for a roller-coaster, for instance. The braking system may be worthless without the coaster, but the patent will possess significant commercial value as long as the invention it describes is superior to the publicly available alternative.

This is not to say, of course, that all welfare-enhancing innovation will lead to patentable inventions or valuable property rights. Research and development may generate unpatentable ideas or knowledge that do not, by themselves, constitute inventions. Or it may lead to developments whose commercial applications are not realized until well after the information has passed into the public domain. But the $18,000 cost of obtaining a patent will not discourage researchers who believe that their work will lead to marketable inventions. The only patents screened out by the costs of prosecution will be those that have no independent mercantile value—those that are worth obtaining only for the meager nuisance settlements they can be used to extract.

2. Opinion Letters and Nuisance Payments

Few patent lawsuits begin with the filing of court papers. The most common practice is for the patent-holder to send the alleged infringer a letter notifying the infringer of the patent’s existence and obliquely threatening legal action. The purposes are two-fold: to put the infringer on notice of the patent and lay the framework for an eventual claim of intentional infringement, and to open negotiations in the hope of a favorable settlement.

112 See United States Patent No. 6,062,350.

113 For that matter, few lawsuits of any type begin in this fashion.

114 Sophisticated potential plaintiffs issue only oblique threats in order to avoid creating “a substantial controversy, between parties having adverse legal interests, of sufficient immediacy and reality to warrant the issuance of a declaratory judgment.” MedImmune, Inc. v. Genentech, Inc., 127 S. Ct. 764 (2007) (quotation marks and citation omitted). Plaintiffs seek to avoid creating the conditions under which defendants could file for declaratory judgment, see 28 U.S.C. § 2201 (2007), in order to preserve the right to choose the forum in which the suit will be litigated.

Some of these incipient lawsuits involve two competitors within an industry, parties that have likely eyed one another warily for some time and kept close watch on each other’s patent portfolio. But a substantial percentage of these actions are initiated by a solo inventor or patent holding company with no commercial ventures beyond the exploitation of its intellectual property portfolio. (“Patent troll” is the less collegial term.116) At the inception of such an action, plaintiffs—particularly small, non-commercial plaintiffs—enjoy a substantial informational advantage over their targets. Plaintiffs know the content of their own patents, as well as other information relevant to the patents’ validity, such as prosecution histories. The defendant’s allegedly infringing device is an actual physical product that exists in the world whose relevant characteristics may be easily ascertained. By contrast, the infringer very likely knows nothing of the patent and its claims (much less its prosecution history), and may have little information regarding the relevant prior art that preceded the patent.

In order to cure this informational asymmetry, most targets of infringement letters will immediately commission an opinion letter from outside counsel as to whether the patent is valid and whether the firm’s device infringes it.117 The purpose of this letter, like the purpose of the patent-holder’s notice of infringement, is two-fold. The letter is meant both to inform the potential infringer of the strength of the patent-holder’s case and to guard the potential infringer against later claims of willful infringement118 by supplying the basis for a good-faith belief that the patent is not infringed.119

As with every other legal component to the patent system, these opinion letters can be quite expensive. Major law firms typically charge at least $8,000 to $12,000 to write opinion letters covering technologically


117 This is standard practice within the field, see Lemley, Rational Ignorance, supra note 32, a fact that I confirmed repeatedly in the course of interviews and conversations with patent attorneys at several firms.

118 The patent statute allows courts to assess treble damage penalties against willful infringers. 35 U.S.C. § 284 (2008) (“. . . the court may increase the damages up to three times the amount found or assessed.”); In re Seagate Tech., LLC, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (setting forth the modern standard for determining when infringement has been willful).

sophisticated patents and inventions, and those costs can reach $30,000 or more if the technologies involved are sufficiently complex or the patents and products sufficiently numerous. For potential defendants, then, every colorable assertion of infringement carries with it a nuisance value in the neighborhood of $10,000—this is the amount that the infringer will have to spend at the outset in order simply to understand the contours of the putative case against it. Even after surmounting this hurdle, accused infringers must confront the asymmetries that make patent lawsuits more expensive to defend than to bring. Patent defendants thus have every incentive to make lawsuits disappear as quickly and as painlessly as possible.

3. Price Barriers to the Nuisance Market

Were patents relatively inexpensive to obtain, firms could center entire businesses around obtaining facially plausible patents and filing substantial numbers of nuisance lawsuits. Alternatively, patent holders who believed that they owned valuable intellectual property and intended to garner substantial fees through licensing or litigation would be able to use nuisance lawsuits as a type of insurance, falling back upon small settlements when companies appeared resistant to larger demands. The informational imbalances that attend patent litigation would make viable a whole host of minor hold-up actions brought by small, non-commercial entities against larger firms doing business in the marketplace. These sorts of lawsuits represent intellectual property protections at their very worst, deterring firms from entering markets.

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120 These estimates are again based upon conversations with attorneys at a number of law firms, principally Kirkland & Ellis LLP and Schiff Harden LLP. Notes on file with author.

121 This is not to say that potential defendants would always pay $10,000 to make every patent lawsuit disappear. Targets for nuisance lawsuits have incentives to send credible signals to potential future accusers that they will not be easy marks by litigating claims aggressively rather than settling them. See, e.g., John C. Coffee, Jr., Understanding the Plaintiff’s Attorney: The Implications of Economic Theory for Private Enforcement of Law Through Class and Derivative Actions, 86 Colum. L. Rev. 669, 712–13 (1986); cf. James Fearon, Domestic Political Audiences and the Escalation of International Disputes, 88 Am. Poli. Sci. Rev. 577 (1994); Thomas C. Schelling, An Essay on Bargaining, 46 Am. Econ. Rev. 281, 283–84 (1956) (“Concession not only may be construed as capitalism, it may make a prior commitment as a fraud, and make the adversary skeptical of any new pretense at commitment.”). Wal-Mart is one company known for this strategy. See, e.g., Keeton v. Wal-Mart Stores, Inc., 21 F. Supp. 2d 653, 660 & n. 13 (E.D. Tex. 1998).

122 See Part I.B., supra.

or developing new products and consuming litigation resources while contributing essentially zero productive innovation. They are little more than carriers for welfare-diminishing transaction costs.

The cost of obtaining a patent—approximately twice the short-term nuisance value of a patent lawsuit—is the most powerful extant barrier to the exploitation of patent information asymmetries and the proliferation of nuisance lawsuits with negative social value. When patents cost more to obtain than they can be used to extract in one or two nuisance settlements, they become substantially less attractive as a business tool and less open to exploitation. This is not to say that nuisance lawsuits will never be profitable, or that firms will never pursue questionable patents with the intent only to extract such settlements. A firm may be able to garner more than one quick payout with each patent, though at the same time it will not necessarily be capable of coercing targets—especially repeat players—into paying even inexpensive blackmail. Because of the costs of obtaining a patent, a firm cannot count on being able to turn a profit, or even recoup its investment, by threatening some number of small, meritless suits; it must actually believe that it has an invention worth commercializing or a valid patent in a commercially useful field before a patent application becomes worth the cost of prosecution.

Table 1: Social and Private Values of Various Patent Classes

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<td>Commercial products; improvements; major components</td>
<td>Blocking patents; valid but not novel patents</td>
</tr>
<tr>
<td>None</td>
<td>Nuisance patents; minor inventions</td>
</tr>
</tbody>
</table>

Table 1 summarizes the relationships between private and social value for various patent categories. As the top row indicates, patents that carry high private value—and will be therefore worth obtaining despite the costly screen imposed by PTO procedures—can come in a variety of forms, only some of

124 See Part I.B., supra.
which are socially valuable. An expensive screen set in the tens of thousands of dollars will not select out socially deleterious patents on insignificant breakthroughs that nonetheless carry significant private worth. At the same time, however, a costly screen also will not bar patents of high social value and low private value; such patents do not exist. Any invention involving a serious technological breakthrough or the creation of a commercially viable product or process will necessarily grant its holder a valuable monopoly right. Only patents of low private value and low or negative social value—precisely those patents most likely to diminish social welfare—will be meaningfully affected by the cost of PTO procedures. Absent this costly screen, low-value nuisance patents would proliferate, imposing social costs both through their sheer numbers and through the nuisance suits to which they give rise.

It may well be possible to obtain a patent on nearly anything, and it may be within the power of applicants to wear down patent examiners and force through non-novel inventions. But it is costly to do so. Because these costs exceed the nuisance value of these patents when granted, and because they scale as the patent edges closer to invalidity or invades a more heavily trafficked (and thus potentially more profitable) field, inventors face severely diminished incentives to seek questionable patents and employ them in socially unproductive ways.

4. **Tradeoffs**

The administrative cost of patent prosecutions is the mechanism by which an applicant’s private information regarding her patent’s value and her own intentions is forced into the open. But of course these administrative procedures need not be the manner in which applicants are made to pay, and thus induced to self-screen. The PTO could instead require applicants to pay substantially heightened fees to have a patent examined and granted. Unlike the procedural costs of shepherding an application through the patent office,

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125 There is, of course, the possibility that a badly drafted patent application on a significant technology will result in a low-value property right being conferred upon the inventor. For instance, an inventor might develop a useful technology but draft his patent application in such a way that it is easily evaded by competitors. While these sorts of weak patents would undoubtedly hold only modest private value, a costly screen will not deter inventors from seeking them. At the time of filing, the inventor does not realize that his patent is weak and thus will believe that it carries greater social value than it actually does.

126 See generally Ayres & Parchomovsky, supra note 48, at 6–18 (discussing the problem of the “patent thicket”).

127 See Part I.B., supra.
patent fees are not deadweight losses; the PTO could simply bestow them upon future inventors in the form of research grants, as in a tax and transfer system designed to properly align parties’ incentives.

The idea of increasing patent office fees is by no means a new one. But the potential for increased fees has always been viewed as a means of purchasing greater scrutiny for patents, not as an alternative to such scrutiny. It is a curious feature of the current patent system that the preponderance of cost is levied upon applicants in the form of fees paid to third-party attorneys, particularly in light of the fact that it is essentially impossible to know whether the administrative procedures that necessitate these attorneys’ fees are efficacious or cost-benefit justified. It may well be that under the current patent regime, no level of patent examination will be worth its cost; it may be that it would be optimal for examiners to spend much more time scrutinizing patents than they currently do. But as legislators and administrators lever up or down the quantity of patent procedures in the course of one or another reform, they would be well advised to understand that they are simultaneously adjusting the costs imposed upon applicants and thus, crucially, the incentives those applicants face with respect to patents of questionable validity and value. Patent fees provide a useful mechanism for resetting these incentives at closer to optimal levels.

128 See, e.g., Lemley, Lichtman, & Sampat, supra note 53 (proposing an increase in PTO fees as a means of funding more extensive patent examination); Osenga, supra note 60 (same); Jaffe & Lerner, supra note 13 (same). Other commentators have suggested heightened ex post renewal fees as a means of thinning the patent thicket, see, e.g., Ayres & Parchomovsky, supra note 48, at 18–22, but these increased fees would impact only truly abandoned inventions and have no measurable effect on patents destined for use in nuisance lawsuits.

129 See, e.g., Lemley, Lichtman, & Sampat, supra note 53.

130 The explanation for this conceivably inefficient structure may lie in the political economy of the patent system. The patent bar is the largest cohesive political actor with a vested stake in the patent process, and the patent bar can be expected to oppose any change in PTO procedures that diminishes the role of patent attorneys. The problem is exacerbated by the specialization within the field: patent prosecutors, who represent applicants before the PTO, see http://en.wikipedia.org/wiki/Patent_prosecutor#United_States, do not typically represent clients in subsequent patent litigation. The patent bar will thus tend to oppose reforms that moderate the role of attorneys before the PTO even if it is traded off against increased post hoc litigation in federal court.
III. Administrative Costs as Information-Forcing Barriers

Process costs serve as especially salient barriers to entry in the patent context because the administrative procedures themselves are so ineffectual—patent examination is strongly biased towards granting even highly questionable patents. But the patent office is by no means the only setting in which process costs perform this function. The same essential dynamic operates in several other contexts: due process protections for employees subject only to “for-cause” termination and summary-process evictions; the obtaining of pollution permits; and numerous types of immigration visas, as well as citizenship status and even residence within the United States. These cases are not as severe; the administrative processes involved may well have substantial inherent value, or at least higher value than do patent procedures. But in all cases, the information-forcing costs of navigating the administrative system complement and augment the screening value of the procedures themselves.

Consider a simple model of an administrative procedures that imposes a cost $C$ upon any private actor who wishes to pursue a particular course of conduct. Now consider the range of private activities that will be affected (though not necessarily deterred) by this costly screen, activities with social values $s_1, s_2, s_3, \ldots$. Imagine that in the presence of the screen, the relevant actors forego $n$ activities and persist in undertaking $k$ activities. A costly screen imposes two types of social costs. First, it may succeed in deterring socially beneficial behavior, and second, it forces those private actors who proceed with the affected activities to pay upfront costs of $C$. At the same time, it may also block private actions that would otherwise create significant social costs. Costly screens will enhance social welfare whenever the aggregate social harm of the activities they bar is greater than the remaining procedural costs themselves: namely, when $s_1 + s_2 + \ldots + s_n > C \times k$. Costly screens thus rely on a type of multiplier effect: they are welfare-enhancing when they discourage a host of low-private-value activities that might nevertheless carry substantial negative externalities—the filing of nuisance-value patents, for instance.\footnote{See supra note \textbf{Error! Bookmark not defined.} and sources cited therein. I thank Matthew Stephenson for many productive conversations on this topic.} Moreover, they are of particular importance when “active” methods of examination are ineffective or overly costly. The sections that follow describe a variety of settings in which these conditions may be met.
A. Due Process and Summary Process

1. Employee Termination Hearings

Employees may possess the right not to be fired except “for good cause” either as a matter of contract or, in the case of some federal, state, and municipal employees, as a matter of law. Before an employer may discharge and employee subject to these protections, the employer must provide the employee with a hearing before a neutral arbiter and demonstrate that good cause for termination exists. (In some cases, the employer may also be barred from depriving the employee of a salary before the hearing has concluded.)

Such hearings are not necessarily walkovers for employers. An employee may obtain representation, muster effective witnesses and evidence, and present a strong case that her behavior and performance were within the firm’s acceptable boundaries. But employers have a set of systematic advantages stemming from their comparative size and the fact that they are repeat players within the system. Employers understand what level of proof is necessary for success in this type of case, having brought many such actions. Employers are familiar with the limited cast of arbiters who will make the decisions. And employers have the financial capacity to hire better attorneys, where necessary. As a result, employee due process hearings are likely to be biased to some extent in the employer’s favor.

With these advantages, however, come a number of asymmetric costs. In most cases, the employer must create and fund the hearing board—paying

132 See, e.g., 55 ILCS 5/3-7012 (2007) (“Except as is otherwise provided in this Division, no deputy sheriff in the County Police Department, no full-time deputy sheriff not employed as a county police officer or county corrections officer and no employee in the County Department of Corrections shall be removed, demoted or suspended except for cause, upon written charges filed with the Board by the Sheriff and a hearing before the Board thereon upon not less than 10 days' notice at a place to be designated by the chairman thereof.”).


the hearing officers’ salaries\textsuperscript{136} and providing all of the other accoutrements that attend what is, in essence, a full-blown courtroom hearing.\textsuperscript{137} Furthermore, in some limited cases the employer must pay the employee wages during the pendency of the hearing (or the suspension that precedes it).\textsuperscript{138} Under most contractual or legislative arrangements these wages are legally recoverable if the employer succeeds in terminating the employee, but in practice the employee may be judgment-proof.\textsuperscript{139} Finally, as the difficulty of a case increases, or as the employer’s position becomes less certain, the employer may have to opt for higher-skilled—and thus more expensive—attorneys.

Consequently, scholars have suggested that these expensive due process protections may not be worth the cost to the employer or the employee. The employee will undoubtedly have to bear some of the cost of her due process rights in the form of reduced wages or other benefits, and the hearings may not be as valuable as the employee might hope because of the employer’s inherent tactical advantages. Better, perhaps, for both parties to eliminate the procedural rights and split the savings between them.\textsuperscript{140}

This narrow focus on the results of the pre-termination process and its administrative cost ignores the costly screening function that those costs perform. Due process costs force an employer to assess whether the harm that the employee is causing to the enterprise exceeds the transactional expense of terminating her. Irrespective of what “good cause” actually means or what a hearing board may decide, the administrative process sets a misfeasance threshold for the employment contract: an organization will move to discharge an employee only when the employee’s actions threaten substantial harm to the organization, harm that well exceeds the administrative

\textsuperscript{136} See, e.g., 55 ILCS 5/3-7003 (2007) (stating that each Illinois county is responsible for paying the salary and expenses of the members of the boards established to conduct due process hearings county employees).

\textsuperscript{137} The hearings in these cases are not minor affairs. They are conducted on the record, involve paper filings and live testimony, and frequently result in written decisions.

\textsuperscript{138} See Gilbert, 520 U.S. at 931; Loudermill, 470 U.S. at 545.

\textsuperscript{139} Cf. Goldberg v. Kelly, 397 U.S. 254, 264 (1970) (“[T]ermination of aid pending resolution of a controversy over eligibility may deprive an eligible recipient of the very means by which to live while he waits.”).

\textsuperscript{140} See, e.g., Ellis v. Sheahan, 412 F.3d 754, 758 (7th Cir. 2005) (Posner, J.) (suggesting such an arrangement).
costs of termination. This is private information that only the organization—not the employee, and certainly not the hearing officer—possesses, and a costly process of removal forces the employer to disclose the information in the service of its own self-screening.\footnote{Just as some firms will litigate nuisance suits, despite the fact that litigation costs exceed settlement costs, in order to send signals of intransigence, it is certainly possible that some employers will pursue disciplinary actions against employees whose minor acts of misbehavior don’t cross this threshold in order to deter further such actions. But these punitive measures will likely be the exception, rather than the rule, given the other means of promoting productive behavior available to employers.}

Moreover, much like the need to prove “good cause” itself, this barrier is self-enforcing and essentially costless. When an employer decides not to take disciplinary action against an employee, it need not initiate an administrative proceeding, it need not hire an attorney, and it need not compensate the members of the administrative board that would hear the case.\footnote{Which is to say that the salaries paid to hearing officers will reflect this diminished workload.} Like the cost of filing for a patent, it is the latent threat of having to pay for a hearing that forces the private party to screen ex ante. This is not to say that these sorts of due process rights are necessarily cost-benefit justified, or that employers and employees would not do better to bargain them away or move entirely to a system of at-will employment.\footnote{Compare Richard Epstein, \textit{In Defense of the Contract at Will}, 51 U. Chi. L. Rev. 947 (1984) \textit{with} Clyde W. Summers, \textit{Individual Protection Against Unjust Dismissal: Time for a Statute}, 62 Va. L. Rev. 481 (1967).} I take no position on these larger questions. The point is merely that the procedural costs associated with a form of administration may function more effectively as a screening device—and thus constitute a more valuable protection for employees—than the administrative process itself. If the termination of an employee of long standing imposes costs on society that the employer is not forced to bear, this costly screen may be welfare-enhancing as well.

\textbf{2. Housing Evictions}

A similar dynamic operates in the context of housing evictions. Before evicting a tenant who has breached a lease, a landlord must summon the tenant into court and prevail before a neutral magistrate. The landlord may not simply cease performing her end of the housing contract by locking the tenant out.\footnote{See Jessie Dukeminier et al., \textit{Property} 382–408 (6th ed. 2006).} This process is meant to be “summary,”\footnote{Compare Richard Epstein, \textit{In Defense of the Contract at Will}, 51 U. Chi. L. Rev. 947 (1984) \textit{with} Clyde W. Summers, \textit{Individual Protection Against Unjust Dismissal: Time for a Statute}, 62 Va. L. Rev. 481 (1967).} and thus less costly.
for both landlords and tenants, but it is nevertheless characterized by many of
the asymmetries of employment due process hearings: it is generally more
costly for landlords than for tenants (though landlords are not asked to fund
the courts); and landlords, as repeat players, have systematic advantages when
cases are contested and heard.

Laws that force landlords into court have been criticized in recent
years, both as wealth transfers from law-abiding tenants to delinquent
tenants \(^{146}\) and as stigmatizing devices that permanently taint tenants who
acquire court records that future landlords can discover. \(^{147}\) These criticisms
are surely valid to some degree, and prohibitions on landlord self-help may do
more harm than good to tenants or to the public as a whole. \(^{148}\) But the value
of the administrative process to tenants likely lies as much in the costs it
imposes upon landlords as in the results that tenants are able to obtain in
court. Landlords must decide ex ante whether removing a troublesome tenant
is genuinely worth the expense. Tenants who do not reach this threshold—
and are thus selected out by the landlord’s costly screen—will neither have a
black mark placed upon their records nor create additional costs to be borne
by landlords or other tenants. Again, if evictions involve significant negative
externalities, such a screen may do significantly more good than harm.

B. Environmental Permits

Before a firm may construct a new source of pollution, such as a
factory, it must navigate a dizzying array of federal and state environmental
laws, install pollution-controlling technologies, and obtain a wide variety of
permits from state and, in some cases federal, regulators. In order to comply
with the mandates of the Clean Air Act, \(^{149}\) for instance, firms may be required
to install cutting-edge technology and certify compliance with the necessary

\(^{145}\) See, e.g., A and M Towing and Recovery, Inc. v. Guay, 282 Conn. 434 (2007); Lowell
Housing Authority v. Melendez, 449 Mass. 34 (2007); Hughes v. Sanders, 847 So. 2d 165 (La.

\(^{146}\) See Chicago Board of Realtors v. City of Chicago, 819 F.2d 732, 741 (7th Cir. 1987)
(Posner, J.).

\(^{147}\) See Lior Jacob Strahilevitz, Reputation Nation: Law in an Era of Ubiquitous Feedback, at 17–19
(manuscript on file with author).

\(^{148}\) Again, I take no position on the underlying substantive questions.

technology standards\textsuperscript{150} and conduct continuous air quality monitoring for a period of one year\textsuperscript{151} in order to “determine the effect which emissions from any such facility may have . . . on air quality.”\textsuperscript{152} The Clean Water Act\textsuperscript{153} imposes an entirely separate set of mandates, and other federal and state regulatory bodies may place further demands on prospective polluters.

The pollution-controlling devices that firms must install can be extremely expensive, but they are far from the only source of cost involved. In addition, the administrative procedures themselves—the process of obtaining permits, filing monitoring reports, and ensuring compliance with overlapping regulatory regimes—can be extremely costly for polluting firms. For instance, the construction of a new chemical plant, involving the emission of scores of different chemicals from a variety of different points, can give rise to “stunningly complex” regulatory requirements and engender legal fees that run to the hundreds of thousands or millions of dollars, even if the plant’s construction is never challenged in court.\textsuperscript{154} The primary purpose of these administrative procedures is, of course, to ensure that concentrations of air and water pollutants remain at acceptable levels. But the high cost of compliance with environmental laws can serve a secondary purpose by weeding out those polluting activities that may not be cost-benefit justified, or at least may stray close to the borderline.\textsuperscript{155}

\textsuperscript{150} This may be either technology that achieves the “lowest achievable emission rate” (LAER), 42 U.S.C. § 7503(a)(2) (2007), or the “best available control technology” (BACT). 42 U.S.C. § 7479(3) (2007), depending on the circumstance. Certification of compliance can be no small matter. The relevant technology standards can be rather amorphous, and compliance often relies on the subjective judgment of state regulators. See, e.g., id. (“The term ‘best available technology means an emission limitation based on the maximum degree of reduction of each pollutant . . . which the [state] permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility . . . .’”); see also Celia Campbell-Mohn et al., ENVIRONMENTAL LAW FROM RESOURCES TO RECOVERY 820–22 (1997).


\textsuperscript{152} Id. § 7475(a)(7) (2007); see also Celia Campbell-Mohn et al., supra note 150, at 820.


\textsuperscript{154} Celia Campbell-Mohn et al., supra note 150, at 818.

\textsuperscript{155} I do not mean to suggest here that environmental permitting processes are ineffectual in the sense of being easily evaded, but rather that they will not always be well-suited to measuring the relevant quantity, which for present purposes I take to be overall social welfare.
The Price of Process

Consider the potential construction of a factory. Suppose that the factory will cost $c$ to construct (exclusive of any costs related to controlling pollution) and produce benefits $b$. $C$ and $b$ are private information known only to the firm; the regulating agency cannot easily discover how much profit some new project is expected to produce. In the presence of environmental regulations, the firm must undertake compliance actions (installing scrubbers, obtaining permits, etc.) at a cost of $a$ and produces pollution that imposes a social cost of $d$. If $b > c + a$, the firm will choose to construct the factory; if $b < c + a$, it will not. But the factory is only justified in terms of overall welfare if $b > c + a + d$; society must bear the remaining pollution-related externalities, but the firm need not. Imagine a situation in which that $b$ and $c$ are very similar—in other words, the factory has positive, but small value net the costs of construction. If $d > b - c$ (or, to rearrange, if $b < d + c$), these factories will do more overall harm than good and should not be built. If $a$ is small, they may be constructed regardless; if $a$ is larger, the administrative costs of compliance will discourage firms from undertaking the projects. In a very rough sense, the administrative expense forces firms to internalize the costs of their own pollution.

Now consider two firms within the same geographic vicinity, each of which is contemplating erecting a factory. The two factories have the same cost and produce the same pollution, but factory 1 provides greater benefits: $b_1 > b_2 > c$. Imagine that each factory by itself would be welfare enhancing: $b_{1,2} > c + a + d$. If the costs of pollution are linear—in other words, if each factory produces pollution with cost $d$, and together they produce pollution with cost $2d$—then both projects are worth pursuing. However, the costs of factory pollution may not scale linearly. Scientists suspect that many environmental responses to pollution behave non-linearly within certain domains or accelerate when pollution levels cross a certain threshold. It is conceivable that the combined pollution cost from both factories would be not $2d$, but $2d + s$, where $s$ is some undesirable synergy created by the two pollution sources. Together, the factories may not be welfare be enhancing, if $b_1 + b_2 < 2c + 2a + 2d + s$. In this case, welfare would be maximized if firm 1 constructed factory 1 (at a benefit of $b_1$) and firm 2 decided to forego factory 2. If $a$ is sufficiently

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156 For instance, the climatological response to greenhouse gas emissions is probably highly complex and non-linear in some domains. R.B. Alley et al., *Abrupt Climate Change*, 299 SCIENCE 2005 (2003); John Reilly et al., *Uncertainty and Climate Change Assessments*, 293 SCIENCE 430, 430 (2002). Dose-response relationships may also be non-linear in a variety of disparate contexts ranging from nuclear waste contamination, see W. Kip Viscusi, *Rational Discounting for Regulatory Agencies*, 74 U. CHI. L.R. 209, 235 (2005), to drug treatments. See Jeff Strnad, *Conceptualizing the “Fat Tax”: The Role of Food Taxes in Developed Economies*, 78 SO. CAL. L.R. 1221, 1229 (2005).
high such that \( b_2 \approx c + a \).\(^{157}\) This is exactly what will occur. The high costs of procedural compliance will act as a passive screen against the lowest-value polluters.

The problem with high process costs as a passive barrier is that they are themselves likely to expend much of the surplus they create. Better, as in the patent context, to minimize administrative costs and replace them with high administrative fees, which are not deadweight losses and could be plugged directly back into national or states fiscs.\(^{158}\) Section 110 of the Clean Air Act already authorizes states to impose fees in association with permit applications,\(^{159}\) though few states have availed themselves of the opportunity and none imposes fees of the necessary magnitude. Alternatively, emissions trading regimes could be used to select for the highest-value polluters while simultaneously holding total pollution beneath any relevant threshold.\(^{160}\) Such trading schemes remain rare, with the Clean Air Act’s sulfur dioxide deposition program standing as the only prominent national example.\(^{161}\) Under the right conditions, fees or emissions-trading programs might be profitably deployed. In their absence, process costs perform an important screening function.

C. Immigration and Naturalization

In a recent article, Adam Cox and Eric Posner suggest that the United States’ peculiar combination of methods of border control and naturalization function in large degree as inducements to self-screening.\(^{162}\) For example, the physical barriers to entry into the country, much like the administrative processes of having a patent examined and granted, are costly to overcome but

\(^{157}\) Of course, \( b_2 > c + a \) by assumption. However, uncertainty and risk aversion might dissuade firms from investing in a project that is not obviously cost-benefit justified.

\(^{158}\) See Part II.C.4., supra.

\(^{159}\) 42 U.S.C. § 7475(a)(2)(A) (2007) (listing “economic incentives such as fees, marketable permits, and the auction of emissions rights” as tools available to state regulatory agencies).


nearly always surmountable (sometimes literally so). These “process” costs thus exist in part to force potential immigrants to reveal private information about their expected productivity within the United States.\(^{163}\) Only immigrants who believe that they will be able to earn a great deal of money—and thus the immigrants that, by one metric, are most desirable—who will elect to attempt entry.

Related types of self-screening exist throughout the immigration system. For instance, consider an employer who wishes to hire a highly skilled foreign worker using an H-1B visa.\(^{164}\) H-1B visas are accompanied by a host of procedural requirements. These include, first and foremost, the filing of an extended series of documents with the U.S. Citizenship and Immigration Services (“CIS”) and the payment fees totaling $2,190.\(^{165}\) In addition, the employer must certify to the Department of Labor that the H-1B visa holder is earning a salary commensurate with American workers performing the same jobs, and must “[p]rovide working conditions for [H-1b holders] that will not adversely affect the working conditions of workers similarly employed.”\(^{166}\)

Certain U.S. employers may, in addition, be classified as “H-1B dependent” if a particularly large fraction of their employees are H-1B visa holders.\(^{167}\) Every H-1B dependent employer must certify: 1) that its H-1B-holding workers will not “displace” any American workers;\(^{168}\) and 2) that it has

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\(^{163}\) Id. at 824–27.

\(^{164}\) The H-1b is a special class of visa available to non-citizens who work in “specialty occupation[s],” defined as an occupation that involves the application of a “body highly specialized knowledge” and requires at least a bachelor’s degree. 8 U.S.C. § 1184(i)(1) (2007). The majority of H-1b recipients are scientists, engineers, doctors, and other technically trained professionals. See Alexander V. Ifill, Spain’s Double Shock: Hindsight from the United States Regarding an Immigration Influx and its Effects on Social Security Funding, 28 U. PA. J. INT'L ECON. L. 487, 504 n. 87 (2007).

\(^{165}\) Instructions for Completing Form I-129, available at http://www.uscis.gov/files/form/i-129instr.pdf, at 17–18. The fee is reduced to $1,440 if the employer is a small business. Id.


\(^{167}\) 20 CFR § 655.736(a)(1) (2007). This fraction varies based upon the size of the company, and for companies with 51 or more employees it is equal to 15%. Id. § 655.736(a)(1)(ii)(A) & (B).

attempted to recruit American workers to fill the open positions before hiring workers via the H-1B process. In practice, this means that the employer must advertise the open position in a newspaper or trade publication before hiring a foreign worker using an H-1B. This process is costly, and can involve a significant amount of delay. Immigration-centered law firms typically charge in the neighborhood of $2,000 to complete an H-1B visa application, exclusive of the fees paid to the CIS and the cost of running a newspaper advertisement and determining the appropriate market wage. In total, then, an employer will typically spend in the neighborhood of $5,000 to hire a foreign worker using an H-1B visa.

The procedural requirements involved in the H-1B process—certification that no American workers are available, that the employer is paying the prevailing wage, and so forth—are ostensibly designed to ensure that the employment of H-1B workers will not redound to the detriment of American workers. They are a type of active examination—they force employers to collect and disclose the particular information that interests the government (and the public at large)—and they rely upon the Department of Labor to scrutinize the private employer’s claims. At the same time, the screen is not a particularly effective one. Employers view the duty to advertise an open position as little more than a pro forma requirement, and tales of fraud and misconduct abound.

Simultaneously, though, the private cost of hiring an H-1B worker functions as a passive screening device that forces the employer to ascertain and evaluate the same information that the government has targeted actively. The hiring of a foreign worker, rather than an American citizen, presumably

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69 Id. § 655.739 (2007); see also Form ETA 9035, available at http://www.dol.gov/libraryforms/forms/ETA/Form_EETA_9035.pdf, at 2.

70 See 20 CFR § 655.739(d)(2)(ii) (“Passive solicitation methods include advertising in general distribution publications, trade or professional journals, or special interest publications (e.g., student-oriented; targeted to underrepresented groups, including minorities, persons with disabilities, and residents of rural areas); America’s Job Bank or other Internet sites advertising job vacancies; notices at the employer’s worksite(s) and/or on the employer’s Internet ‘home page.’”).

71 This information was provided by Davidson & Schiller, an immigration law firm located in Chicago, IL. Notes on file with author.

72 See, e.g., The Scams & Problems of H-1B Visas, available at http://www.edu-cyberpg.com/Teachers/H1B.html (“The scam here is that they put little tiny ads in the San Jose Mercury News with almost all the words abbreviated and in the smallest type they can find.”).
imposes some social cost upon the United States as a whole. At the same time, in many cases it confers a benefit upon the employing firm (and, by extension, upon the country at large) through the supply of skilled labor for which there may be no American substitute. By forcing the employer to navigate a series of expensive administrative procedures before hiring an H-1B worker, the government effectively ensures that the private benefit to hiring a foreign worker is substantially higher than the private benefit to hiring an American, which in turn renders it more likely that hiring the H-1B worker is cost-benefit justified overall. As with environmental permits, many of the benefits will be consumed by the same transaction costs that catalyze the necessary passive screening, and a substitution of higher fees for process would likely be welfare-enhancing. Nonetheless, the CIS and DOL procedures may accomplish through passive costs what they failed to achieve via active screens.

CONCLUSION

Patents do not come cheaply to applicants. Between the cost of hiring an attorney and the fees that an applicant must pay to the PTO, the average applicant spends approximately $18,000 to obtain a patent, and possibly much more if the patent is of debatable validity, concerns a complicated technology, or resides in a crowded technological field. Scholars have traditionally treated these expenses as nothing more than the purchase price of the patent examination process, a series of costs to be avoided or minimized wherever possible. This approach has overlooked the fact that procedural costs function as a passive screen against low-value, frivolous patents, the type of patents that can be used for little other than extracting nuisance settlements. By forcing prospective applicants to employ private information ex ante in determining whether to file for patents, the process costs themselves serve as an effective barrier to a particularly insidious class of property rights.

Administrative costs operate similarly in other contexts. Landlords who wish to evict tenants through summary process and employers who wish to terminate employees with due process rights are forced to reveal the private values they place on the evictions and terminations through their willingness to pay process costs. NEPA permit applicants demonstrate the economic value of the pollution-creating activities they wish to engage in via the same mechanism. Immigrants disclose the private value of their presence in the United States when they elect to pay the process costs necessary to enter the country. And employers establish that an H-1B worker is essential to the business not by advertising and failing to find an American citizen to fill the same job, but by absorbing the administrative costs required to hire that H-1B
worker in lieu of a citizen. Even where active administrative processes do not function effectively or efficiently, the process costs themselves may correct for many of the administrative scheme’s inadequacies.
Readers with comments should address them to:

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