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Do applicant patent citations matter?

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ABSTRACT

Patent law both imposes a duty on patent applicants to submit relevant prior art to the PTO and assumes that examiners use this information to determine an application's patentability. In this paper, we examine the validity of these assumptions by studying the use made of applicant-submitted prior art by delving into the actual prosecution process in over a thousand different cases. We find that patent examiners rarely use applicant-submitted art in their rejections to narrow patents, relying almost exclusively on prior art they find themselves. Our findings have implications for a number of important legal and policy disputes, including initiatives to improve patent quality and the strong presumption of validity the law grants issued patents—a presumption that makes patents more difficult to challenge in court.

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1. Introduction

Patent law imposes a duty of candor on patent applicants. They must disclose any material prior inventions, uses, and publications ("prior art") of which they are aware to the Patent and Trademark Office (PTO); failure to do so can render the resulting patent unenforceable. The idea is that applicants should help patent examiners decide whether an invention is patentable by submitting what is likely to be the most relevant information. And we trust that examiners will do so; when the patent issues we imbue it with a strong presumption of validity.

In this paper, we study the use made of those submitted prior art references by delving into the actual prosecution process in over a thousand different issued patents. We find, to our surprise, that patent examiners did not use applicant-submitted art in the rejections that narrowed claims before these patents issued, relying almost exclusively on prior art they find themselves. This is not simply because the applicants have "drafted around" the art they submitted. Even late-submitted art is not commonly used by examiners in their rejections. Nor does the explanation appear to be that applicant art is uniformly weak. We also provide evidence suggesting examiners are less likely to use prior art discovered by foreign search authorities for the same invention, art that is presumably of better than average quality and relevance. Taken together, the evidence points toward myopia as a plausible explanation: examiners tend to focus on references that they themselves identify.

Our findings have potential implications for policy initiatives that aim to improve patent quality through bringing more "prior art" before examiners, under the theory that with better access to prior art they would be less likely to issue patents of questionable validity. These include proposals that encourage outsourcing of search to applicants, to third party searchers, or worksharing with foreign patent offices. If examiners pay attention mainly to art they find for themselves, these proposals might generate prior art that will fall on deaf ears and go unused. Our results also have implications for patent law: it is far from clear that the law should presume a patent valid over applicant cited art if the examiner has not given much consideration to these references. The presumption of validity, which makes a patent harder to challenge in patent infringement litigation, is based on the assumption that patent office thoroughly tested the patent's claims for validity. Our findings bring this assumption into question. They therefore have implications for current policy debates that have occupied both the courts and Congress. Our conclusions also have implications for the legal doctrine of inequitable conduct, the willful failure to submit prior art to the PTO. Such conduct may be less of a problem than previously thought—not because applicants don't try to deceive the PTO, but because any effort to do so may be wasted.[1] Finally, our

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[1] The doctrine of inequitable conduct may still be important when applied to non-prior-art information like false assertions of unexpected results to overcome obviousness or representations regarding whether a prior use by the applicant was experimental or not. Thus, our findings do not argue for elimination of the

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findings appear to challenge some of the assumptions underlying the use of citation data as indicators by scholars of research policy, joining a growing literature analyzing the economic and social meaning of citation-based indicators (e.g. Alcacer et al., 2009).

In Section 2 we provide background on the collection of information in the patenting process, and the presumption of validity that results. We present our data in Section 3. In Section 4 we discuss implications. In Section 5 we summarize and conclude.

2. Patent examination, prior art, and the presumption of validity

The Patent and Trademark Office (PTO) examines patent applications to decide whether the government should issue a patent. An applicant submits a description of the invention, along with what they propose to claim as their own. Applicants must also submit any "prior art" (relevant prior publications and inventions) of which they are aware, but have no obligation to search for prior art (Cotropia, 2009).

Applications are assigned to examiners skilled in the general field of the invention. Those examiners are tasked with reading the application, conducting their own prior art search, reading and evaluating that art, and evaluating the application in a back-and-forth written (and sometimes oral) colloquy with the applicant. Examiners have a significant caseload, and can devote on average only about 18 hours over 3–5 years to searching for, evaluating, and applying the prior art to the application (Lemley, 2001). Applicants dissatisfied with the examiner's decision can (and often do) refile one of several forms of continuation application to try again (Lemley and Moore, 2004). At the end of the day, applicants obtain patents in about 75% of all cases (Lemley and Sampat, 2009).

Issued patents enjoy a strong presumption of validity that can be overcome only by clear and convincing evidence. The theory underlying that presumption is that the PTO has vetted the patent and their expert opinion is entitled to deference. If a scientific expert has considered whether the patent should be granted, a court is reluctant to second-guess that judgment lightly.

In recent years the strong presumption of validity afforded patents has come in for substantial criticism (Lemley et al., 2005; Lichtman and Lemley, 2007). Critics point out that the PTO operates under substantial resource constraints (Lemley, 2001), with skewed incentives (Lemley and Moore, 2004), and without the benefit of third-party participation (Thomas, 2001). Further, the PTO ultimately issues a patent to a large majority of the applicants who seek one (Lemley and Sampat, 2010). And nearly half of the patents that do issue and are later litigated turn out to be invalid (Allison and Lemley, 1998). The PTO seems positioned to narrow claims in patent applications, but generally not to reject applications (Lemley and Sampat, 2012).

Some of those bad patents have costs (Farrell and Merges, 2004). At a minimum they impose substantial attorneys' fees on defendants, a median of over $5 million per case in major lawsuits (AIPLA Survey, 2011). They may also lead small companies to drop products rather than defend their legality (Chien, 2009; Graham and Sichelman, 2008) and cause others to pay too much money to license the patent rather than face the risk of an injunction (Lemley and Shapiro, 2007). And in the biomedical industries, the mere issuance of a patent invokes a set of regulatory mechanisms that blocks market entry by competitors for a substantial period of time (Hemphill and Sampat, 2012).

Despite these problems, it seems unlikely that the courts or Congress will soon eliminate or weaken the presumption of validity. It is more plausible that they will change the structure of the presumption. Before 1982, the presumption was largely limited to prior art actually considered by the patent examiner.[2] (Lichtman and Lemley, 2007). The Federal Circuit expanded that presumption to apply to all invalidity arguments, whether or not they had been considered by the examiner (*Ultra-Tex Surfaces Inc. v. Hill Bros. Chem. Co.* [Fed. Cir. 2000]). The application of the presumption to prior art not before the PTO was called into question by the Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, which said "the rationale underlying the presumption—that the PTO, in its expertise, has approved the claim—seems much diminished" with regard to art not before the PTO. But the Supreme Court declined to change that presumption in 2011 in *Microsoft Corp. v. i4i LP*. It did, however, hold that courts should instruct jurors that it was easier to prove a patent invalid using evidence not considered by the patent examiner.

As a practical matter, whether prior art was before the examiner turns out to matter whether or not the law says it does. Allison and Lemley find that fact finders are far more likely to invalidate a patent on the basis of prior art not before the PTO (Allison and Lemley, 1998). The reason is intuitive: judges and juries not technically trained are unlikely to second-guess the decision of the expert examiner to allow the patent, but they may be much more receptive to arguments that the examiner never got to hear about a particular piece of prior art and would have rejected the application if she had.

That fact in turn gives applicants who hope to enforce their patents an incentive to disclose, and perhaps even to search for, prior art (Sampat, 2010). Disclosure of prior art to the PTO can help "bulletproof" a patent in later litigation. There are other incentives for disclosure as well. The PTO imposes a duty of candor on applicants, requiring them to disclose what they know. A deliberate failure to disclose material prior art is inequitable conduct that renders the entire patent unenforceable (Cotropia, 2009). Applicants may weigh these incentives to disclose against the perceived risk of disclosure: that the PTO will refuse to grant a patent at all, or will narrow it in ways that render it less useful. Prior work suggests that that balance differs by industry; at a minimum, applicants are much more likely to search in some industries than in others (Lemley and Sampat, 2012).

It is reasonable ex ante to assume that applicant-submitted prior art will be the most important to the evaluation of the application. After all, the applicant is closest to the invention, and ought to be best positioned to know about the most relevant prior art (Cotropia, 2009). Further, important categories of prior art such as prior sales and public uses do not show up in publications, and are accordingly unlikely to be found by patent examiners. That information is more likely to be in the possession of applicants (Cotropia, 2009).

Thus, it matters to the law whether an examiner actually has prior art in front of them when conducting the examination. It is quite plausible that it will matter more in the near future. And there are ex ante reasons to assume that the most significant prior art will be that submitted to the examiner by the applicant (Cotropia, 2009).

3. How examiners evaluate prior art

3.1. Sources of prior art

Given the importance of cited prior art in later litigation, we set out to examine how examiners actually consider prior art, recognizing the individual variation in examiner behavior (Cockburn

inequitable conduct doctrine entirely, but they do call into question the most common use of that doctrine.

[2] Before 2001, it was impossible to distinguish applicant-provided from examiner-provided art, so the rule was applied to all art cited on the face of the patent.

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