

WHAT IS PATENT QUALITY? -- A MERCHANT BANC'S PERSPECTIVE

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I. INTRODUCTION

The question "What is Patent Quality?" is one that has long been answered not by the authors of this paper but by the marketplace itself. It has been defined by the actions of patent holders in their decisions to maintain patents of quality and abandon patents of lesser quality and value. Ownership of quality patents has been rewarded by both public and private markets with a scale and precision that simply has not been well understood. Our statistical research shows not only that the marketplace appreciates quality patent assets, but that many of the attributes which drive quality assessment by market participants are well correlated to those that affect investor returns.

The purpose of this paper is first to shed light on the activities of the relevant marketplace to help inform public policy debate among lawmakers attempting to solve problems that may or may not exist – or at least may not exist as perceived. Second, we will put forth our argument that patent quality has not diminished and demonstrate the statistical analysis supporting this conclusion. Finally, we will share our unique perspective as an active investor in patents as an asset class -- as an Intellectual Capital Merchant Banc[®] firm -- and discuss briefly certain market observations that confirm our statistically developed views of patent quality and value.

This paper is focused on activities in the United States. The authors have begun similar analyses in both Europe and Japan and expect to report results in 2008.

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II. WHAT IS PATENT QUALITY?

Like beauty, patent quality is often believed to be in the eye of the beholder. If you are a patent owner, the concept of patent quality will be strongly flavored in terms of claim breadth relative to a commercially valuable technology – the broader the claims and the more valuable the underlying technology, the better. If you are a manufacturer or service provider in a patent-laden technology space, the concept of patent quality takes on stronger overtones of underlying validity concerns (should this patent have been granted?) and clarity and predictability of claim scope interpretation (what are the metes and bounds of this patent? how do I avoid infringing this patent?). With significant production capital at risk, manufacturers and service providers are acutely aware of the costly pitfalls of patent infringement and understandably desire to minimize these risks by raising patent standards (making it more difficult to obtain and enforce patents) while shrinking claim breadth and the associated penumbra of uncertainty surrounding claim scope interpretation.

An interesting twist in all this is that many patent holders are also manufacturers of underlying patented products and technologies and so the concept of patent quality can often take on a myriad of blended viewpoints, from the opposing extremes described above, to anywhere in between. In a particularly contorted example of diverging viewpoints on this topic, computer technology giant IBM (an obvious beneficiary of the patent system, receiving more U.S. patents than any other company in the world for many years running) and other ‘big-tech’ companies like Microsoft, Computer Associates, Adobe, Cisco, HP, Intel and Apple, have (almost counter-intuitively, it would seem) lobbied heavily in support of pending legislation that would generally make patents harder to get and easier to challenge. Sitting on the other side of the fence are ‘big-pharma’ giants like Pfizer, Eli Lilly, Bristol-Myers Squibb, AstraZeneca, GlaxoSmithKline, and Merck (also obvious beneficiaries of the patent system) who have fought equally arduously to defeat or curtail proposed legislative reforms they perceive as weakening the rights of patent holders.

the public equity analyses. The views herein are those of the authors and not Ocean Tomo or any other organization.

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The rather stark difference in perspective is more than a philosophical difference of opinion, but stems from fundamentally differing economic implications of patenting activities within each industry. Technology giants like IBM and Microsoft amass extensive, often sprawling patent portfolios, not so much for the purpose of creating product monopolies, but to help gain operational freedom in crowded technology spaces clogged with existing patents owned primarily by other large competitors. Patents are used extensively as a form of ‘negotiating currency’ to help extract favorable licensing and cross-licensing terms from other competitors.

But more and more big-tech companies have felt the sting of patent litigation brought by non-competitors, namely small patent holding companies, individuals and so-called Patent Licensing and Enforcement Companies (“P-LECs”) often referred to pejoratively as ‘trolls’. These patent holders, for the most part, have no interest in striking cross-license deals, but instead are focused on obtaining royalty payments or big cash damage awards from deep-pocketed defendants. A recent string of high-profile patent litigation cases resulting in record damage awards – some approaching and exceeding a billion dollars – has fanned the flames of the patent quality debate even higher.² The prospect of suffering continuing or even escalating financial pain under the current patent regime has motivated many folks on the big-tech side of the fence to lobby for and rally around various new legislative proposals designed to sharply pull back on the reins of the patent system and the legal rights of patent holders.³

Big-pharma companies (along with many independent inventors, university licensing departments and other smaller companies) have not exactly rallied to support the current proposed legislative reform measures and most would not likely characterize the proposed legislation as ‘reform’ in the positive improvement sense of the word. In contrast to big-tech, most big-pharma companies do not engage in extensive cross-licensing of patents, but rely heavily on patent protection to maintain monopoly pricing or

² This is more of a ‘kick the dog’ reaction since the patents that were involved in those high-profile litigation cases obviously survived whatever legal and/or technical challenges were mounted against them.

³ *Patent Reform Act of 2007*, House bill H.R. 1908 (2007) and corresponding Senate bill S. 1145 (2007). The House bill was passed on Sept. 7th, 2007.

DRAFT

near-monopoly pricing on their commercially successful drugs. Discovering and qualifying innovative new drugs is a high-risk enterprise requiring massive capital outlays which occur far in advance of potential product commercialization. Sunk costs are capitalized and recouped on the backs of a relatively small fraction of drugs that actually pass their clinical trials, are approved by the FDA, and become commercially successful products.

Because of these risks and heavy upfront investments, big-pharma companies rely extensively on strong patent protection to extract extraordinarily high profit margins from a relatively small number of patented drug products. As a result, big-pharma has not taken a favorable view toward various proposed legislative changes that would make patents even harder to obtain and enforce and easier to challenge and invalidate. Again, patent quality is defined according to the perspective of the beholder.

III. THE QUALITY DEBATE

In one sense, the debate over patent quality is really a political debate concerning fundamental issues of public patent policy. The ultimate point of the debate is whether and how to readjust the balance of private interests (limited monopoly rights secured to inventors) and public interests (encouraging disclosure of new ideas in exchange for granting limited monopoly rights) in a way that perhaps more optimally “promotes the Progress of Science and useful Arts...” as directed by Article 8 of the U.S. Constitution. But much of the political debate is squarely framed within the context of perceived patent quality problems, and so it seems appropriate to address it specifically within that context.

4

Within the spectrum of the patent quality debate there are at least two recurring themes that seem to drive the discussion and the growing calls for reform. The first broad theme centers on the concept of an overburdened patent office that is understaffed and ill-equipped to maintain pace with burgeoning new technologies and a perceived flood of

⁴ Maintaining high patent quality is obviously important to ensure that applicable public patent policies are being faithfully carried out, that patents are validly granted and that the public is able to reasonably rely on the work of the patent office.

DRAFT

new patent filings. This argument is usually heralded by a shocking, if not amusing, parade of patent horrors – bogus, dubious or outright wacky patents – which are offered up as evidence of a patent system run amuck. A particular parade favorite these days is the now infamous ‘peanut-butter and jelly sandwich’ patent (U.S. Pat. No. 6,004,596). A more apt theme, addressed later on below, argues that the patentability standards and/or applications of the patentability standards by the Patent Office are too low, resulting in the proliferation of many dubious patents on little more than trivial improvements.

a. Overburdened Patent Office

In substance, the first argument maintains that the Patent Office’s capacity and ability to process new patent applications has become overtaxed and overwhelmed to such an extent that it has now reached a level of crises. Faced with limited resources and overwhelming demand for patents, the argument goes, the Patent Office is simply no longer able to maintain adequate quality controls on its examination processes, resulting in the issuance of many ‘poor quality’ patents (queue up the patent parade). In support of this argument are the frequently cited anecdotal problems including: long prosecution delays; inadequate prior art searching (especially outside of the U.S. patent literature); and allowance of patents with overly broad claims.

This by now familiar rhetoric and anecdotal evidence seems logical enough, even compelling at times. But, several key underlying numerical and statistical trends simply do not support the asserted conclusion that the Patent Office is overburdened or that quality of U.S. patent examination is flagging. In fact, some of the statistical evidence we have analyzed seems to suggest that patent examination quality has either remained steady or has even improved somewhat over the past five years.

Beginning with the parade of patent horrors, it should be readily apparent that selecting a few wacky patents out of literally hundreds of thousands granted annually is hardly compelling evidence of a patent system ‘run amuck.’ Wacky patents are not a new phenomena. In fact, they have been a delightful source of chuckles for many patent attorneys, agents, and examiners over many decades if not centuries. There are plenty of wacky patents dating back to the early 19th and 20th centuries, many no more compelling

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than hats with spinning propellers. Truth be told, the vast majority of such patents do not cover anything of economic value anyway and so they are simply abandoned and go away after a few years by a process of natural attrition (discussed in more detail later on). The few that do survive, and by whatever fluke actually cover something of economic value can (assuming they were erroneously granted in the first place) be easily challenged and defeated either in court or at the Patent Office. Wacky patents are not the problem. In any event, they cannot fairly be taken as statistically representative of the broader population of patents granted by the Patent Office each year.

As for pendency delays, it is certainly fair to point out that average patent pendency times have risen steadily from a low of about 1.7 years in the early 1990s to an average of about 3.4 years presently.⁵ It is also fair to point out that long pendency periods are generally undesirable in an efficiently operating patent system because they delay the onset of patent protection, thereby depriving the inventor or patent holder of the full benefit of her limited patent monopoly and reducing incentives to create and disclose new ideas. The negative effects of long pendency delays are particularly pronounced in rapidly evolving technology areas where obsolescence rates can reach as high as 20% or 30% per year and technology (and product) half-lives can be as short as 3-4 years. But long patent pendency delays, while undesirable from an efficiency standpoint, do not necessarily translate into a 'broken' patent system.

Patent filing rates naturally ebb and flow with overall economic expansion and contraction cycles as well as other sporadic events and spurts of innovative activity affecting specific industries and underlying technologies. Over the past five years U.S. patent filing rates grew at an average annual rate of about 6.4 percent, reaching a peak of about 9.5 percent growth in 2005 and moderating back down to about 7.1 percent growth in 2007.⁶ The average growth rate in patent filings over the previous five years is actually

⁵ Based on the average pendency (from filing date to issuance date) of approximately 46,000 U.S. utility patents issued in the 1st quarter of 2008. This pendency calculation is slightly different than published pendency figures from the U.S. Patent Office which measure the average time from filing date to *either* patent issuance or abandonment.

⁶ Filing rates of U.S. utility patent applications based on annual filing statistics published by the US Patent Office.

DRAFT

lower than the average growth rate over the previous ten years (about 7.9%) and is only slightly higher than the average growth rate over the previous 20 years (about 6.7%).

The most recent peak of 9.5 percent growth in patent filings experienced in 2005 may, at first blush, seem alarmingly high. But it is not unique or even particularly extraordinary when viewed from a historical perspective. Over the past 40 years annual growth in patent filing rates reached similar peaks in 1968 (9.1%), 1988-1989 (averaging 9.3%), 1995 (11.9%) and in 1997-2001 (averaging 10.8%). Viewed within this proper historical context, the recent surge in the rate of patent filings is nary a blip in the road. Whatever implications can ultimately be drawn from the latest surge of activity, it can hardly be characterized as an overwhelming flood of crisis proportions as frequently described by some in the patent reform camp.

Of course, the rate and direction of new technology innovations are not always predictable. This may lead to occasional shortages in patent examination resources as hiring and training of new examiners in surging technology areas lags peak demand. Longer pendency delays are the natural result of this process. But, again, it does not necessarily mean the system is broken. In fact, a growing backlog of cases under peak usage conditions is the expected and desired result of a patent examination system that is maintaining standards and quality controls at steady levels. While exceedingly long pendency delays would be a fair cause for concern, the current average pendency of 3.4 years is comparable to those found in other major patent offices around the world.⁷ It is also not without precedent in the U.S. For example, in 1952 -- another period of rapid economic and technological development -- average patent pendency reached over 3.6 years. Increasing pendency delays are probably more fairly characterized as an indication of a growing patent system than a broken patent system.

Inadequate prior art searching (especially outside of the U.S. patent literature) is another frequently raised anecdotal facet of the overburdened-patent-office argument.

⁷ See, P. Jensen, et al., *Application Pendency Times and Outcomes Across Four Patent Offices*, Intellectual Property Research Institute of Australia, Working Paper No. 01/08ISSN 1447-2317 February 2008 (reporting average patent pendency times of 14 months for the Australian Patent Office, 42.7 months for

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Examiners, the argument goes, being highly pressed for time and resources, do not have adequate opportunity to conduct sufficiently thorough prior art searches. Examiners also are often said to lack latest generation search tools and specialized databases particularly adapted for searching and identifying relevant non-patent prior art. Again, several key underlying numerical and statistical trends simply do not support these conclusions.

As can be gleaned from Table 1 below, U.S. utility patents issued in 2007 actually cited *significantly more* prior art, on average, than patents issued five years ago, including 41% more U.S. patent documents, 36% more foreign patent documents, and 23% more non-patent documents.

Table 1

YEAR	US REFS	FOREIGN	NONPAT
2007	18.95	4.04	4.10
2006	17.78	3.67	4.04
2005	15.61	3.30	3.78
2004	14.09	2.95	3.39
2003	13.40	2.98	3.34

While this significant growth in prior art citations may not be conclusive evidence of increased search thoroughness or search quality, it is certainly suggestive evidence and is plainly inconsistent with the notion that search thoroughness and search quality have somehow *declined* in recent years. Even our common sense tells us that the most ubiquitously available search tools today (e.g. Google®) can access references that a decade ago would have remained undiscovered. The statistical data appears consistent with the conclusion that examination search thoroughness and search quality is as good or better today than it was five years ago.

Examiners granting patents with overly broad claims is another commonly cited anecdotal factor in support of the flagging quality and overburdened-patent-office argument. But, statistical analysis of the underlying numerical data suggests otherwise – that examiners, on average, are granting patents with slightly more *narrow* claims than

DRAFT

they were five years ago. While claim breadth cannot be precisely measured mechanically or statistically, counting the average number of words per independent claim in an issued patent can serve as rough proxy if taken from a sufficiently large, statistically relevant sample.⁸ That is because each word in a claim introduces a further legal limitation upon its scope.

In this case, we find that patents issued in 2007 had an average word count per independent claim of 160.1. This reflects approximately a 4.4% increase over the average per claim word count of 153.3 among patents issued in 2003.⁹ As a point of reference, applications published in 2007 contained an average per independent claim word count of 111.1, indicating a substantially broader claim-scope 'ask' relative to what the Patent Office ultimately granted -- patent examiners requiring 42.1 additional limiting words, on average. This latter statistic is roughly consistent with previous years' data. Taken together, the data appears consistent with the conclusion that examiners are not granting patents with broader claims, but are granting claims of approximately the same scope or slightly narrower scope (having 6.8 more limiting words on average) than five years ago.

From all of the numerical and statistical evidence we examined above there does not appear to be support for the conclusion that the Patent Office is overwhelmed or that the quality of patent examination has declined in recent years. On the contrary, there seems to be at least some key statistical evidence suggesting that the Patent Office is operating under a growing, but more-or-less normal case load and that patent examination quality has either remained steady or has improved somewhat over the previous five years. Therefore, we reject the politically convenient but overreaching argument that patent quality has suffered as a result of an overburdened Patent Office.

patents filed during the period from 1990 to 1995).

⁸ More sophisticated measurements could also be applied (e.g., counting the number of different words in each claim, filtering words according to frequency of use, and weighting words according to frequency of use) but these measurements introduce additional complexities and, in any event, lead to the same or similar conclusion.

⁹ Based on the average number of words per independent claim across approximately 158,000 utility patents issued in 2007 compared to approximately 169,000 utility patent issued in 2003.

