The Giants Among Us

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The patent world is undergoing a change of seismic proportions. A small number of entities have been quietly amassing vast treasuries of patents. These are not the typical patent trolls that we have come to expect. Rather, these entities have participants such as Apple, Google, Microsoft, Sony, the World Bank, and non-profit institutions. The largest and most secretive of these has accumulated a staggering 30,000-60,000 patents.

Investing thousands of hours of research and using publicly available sources, we have pieced together a detailed picture of these giants and their activities. We consider first the potential positive effects, including facilitating appropriate rewards for forgotten inventors, creating a market to connect innovators with those who can manufacture their inventions, and most important, operating as a form of insurance – something akin to an Anti-Troll defense fund.

We turn next to the potential harmful economic effects, including operating as a tax on current production and facilitating horizontal collusion as well as single firm anticompetitive gamesmanship that can raise a rival’s costs. Most important, we note that mass aggregation may not be an activity that society wants to encourage, given that the successful aggregator is likely to be the one that frightens the greatest number of companies in the most terrifying way.

We argue that mass aggregators have created a new market for monetization of patents. It is vast, rapidly growing, and largely unregulated. We conclude with some normative recommendations, including that proper monitoring and regulation will require a shift in the definition of markets as well as a different view of corporations and their agents.
The Patent world is quietly undergoing a change of seismic proportions. In a few short years, a handful of entities have amassed vast treasuries of patents on an unprecedented scale. To give some sense of the magnitude, our research shows that in a little more than five years, the most massive of these has accumulated 30,000-60,000 patents and could earn $48 billion for its investors.

Although size is important in understanding the nature of the shift, size alone is not the issue. It is also the method of organization and the types of activities that are causing a paradigm shift in the world of patents and innovation.

These entities, which we call mass aggregators, do not engage in the manufacturing of products nor do they conduct much research. Rather, they pursue other goals of interest to their founders and investors. Non-practicing entities have been around the patent world for some time, and in the past, they have fallen broadly into two broad categories.² The first category is universities and research laboratories, which tend to have scholars engaged in basic research but to license out inventions rather than manufacturing products on their own. The second category is small individuals or groups who purchase patents to assert them against existing, successful products. Those in the second category have been described colloquially as “Trolls,”³ which appears to be a reference to the children’s tale of the three billy goats who must pay a toll to the troll.

³ Peter Detkin, vice chairman and co-founder of Intellectual Ventures ironically coined this term when he was at Intel.
waiting under the bridge if they wish to pass. Troll activity is generally despised and reviled by operating companies as falling somewhere between extortion and a drag on innovation. In particular, patent trolls often extract a disproportionate portion of a product’s value relative to the value that their patented invention adds to the commercial product.\(^4\)

The new mass aggregator, however, is an entirely different beast. To begin with, funding sources for mass aggregators include some very successful and respectable organizations, including manufacturing companies such as Apple, eBay, Google, Intel, Microsoft, Nokia and Sony, as well as academic institutions such as University of Pennsylvania and Notre Dame, and other entities such as the World Bank and the William and Flora Hewlett Foundation. Nations such as China, France, South Korea, and Taiwan even have their own mass aggregators to varying degrees.

Moreover, the acquisition appetites and the source of the patents are quite interesting. Mass aggregators may have portfolios that range across vastly different areas of innovation from computers to telecommunications to biomedicine to nanotechnology.\(^5\) In some of the acquisition activity, mass aggregators purchase large chunks, and even the majority, of a manufacturing company’s patents and patent applications, paying cash up front, as well as a share of any future profits generated from asserting the patents against anyone other than the selling manufacture. They have engaged in other unusual acquisition approaches as well, including purportedly purchasing the rights to all future

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\(^4\) McDonough, supra note 2, at 189-90; Lemley, supra note 2, at 613-14.

\(^5\) Pharmaceuticals seems to be the one technical area generally excluded from mass aggregation, perhaps because the pharmaceutical innovation system has evolved to include lesser degrees of technical sharing.
inventions by researchers at universities in developing countries. Other acquisition approaches purportedly include targeted purchases of patents that are of interest to their investors.

The types of returns promised to investors and the types of benefits offered to participants are also quite different from garden-variety non-practicing entities, as are some of the tactics used in organizing the entities and in asserting the patents. Finally, the scale itself is simply mind-boggling. Mass aggregators are operating on a scale and at a level of sophistication and complexity that would have been unimaginable a decade ago.

The goal of this article is to shed some light on mass aggregators. We hope to provide some understanding of the nature of the change, to analyze the economic and implications, and to offer some normative considerations. For the descriptive section, we focus on the largest of the mass aggregators, Intellectual Ventures, which has gone to great lengths to maintain secrecy. Working from public sources and investing thousands of hours of research, the section offers a detailed picture of the entity, tracing through approximately 1,300 shell companies and thousands of patents. The section also describes in brief form several other mass aggregators, including ones that are public companies.

For the analytic section, we examine the potential implications of mass aggregators for the patent system specifically, for innovation in general, and for the economy as a whole. We look at the potential positive effects that mass aggregators might bring including facilitating appropriate rewards for forgotten inventors, creating a market to connect innovators with those who can manufacture their inventions, and most
important, operating as a form of insurance – something akin to an Anti-Troll defense fund.

On the other side, we look at the potential economic dangers of mass aggregators and the market for patent monetization that is created. Given the imperfections of the patent system and the odd characteristics of the product created by the market for patent monetization, mass aggregators may simply serve as a tax on current production that reduces future innovation. Characteristics of the market may also provide opportunities for anticompetitive behavior.

Finally, we offer a few preliminary normative observations on whether and to what extent the sovereign, in the form of various governmental bodies, should become involved in this change that is taking place at the market level. The section also considers the types of changes that would have to occur if such participation is going to take place in a meaningful fashion.

I. Facts

Over the last five years, information about mass aggregators has slowly filtered out into the patent community. Initial information was fueled largely by speculation as well as quiet, oblique comments from those bound by confidentiality agreements or concerned about incurring the wrath of the aggregators. As a reporter trying to write about one of the mass aggregators noted as recently as July of 2011,

[W]e called people who had licensing arrangements with [Intellectual Ventures], we called people who were defendants in lawsuits involving [Intellectual Ventures] patents, we called every single company being sued by Oasis Research.
No one would talk to us.⁶

We encountered similar reticence when we first began trying to understand the structure and activities of aggregators. “You can’t find out anything about them; don’t even try,” is a chant that has been whispered in intellectual property for a number of years. It motivated us to take a hard look, and the information has unraveled like the yarn from an old sweater.

A literature search on Intellectual Ventures reveals many opinions about the company but few independent facts. We have aimed to fill that void by tracing the intellectual property assets that the company appears to own, identifying the sources of those assets, and describing the company’s activities. The data we provide here is the result of four years of painstaking research, piecing together bits of information available from public sources.

For the descriptive section of this piece, we will focus primarily on the entity that is by far the largest, oldest, and most secretive of the mass aggregators, Intellectual Ventures. This entity is also useful as a focal point, given some of the interesting connections and interactions it has with other aggregators.

⁶ See, Alex Blumberg & Laura Sydell, When Patents Attack, National Public Radio’s This American Life, July 22, 2011, transcript available at http://www.npr.org/blogs/money/2011/07/25/138576167/when-patents-attack (noting that the reluctance was fueled in part by fear and in part by Intellectual Ventures’ nondisclosure agreement, rumored to be the strictest in Silicon Valley).
A. Intellectual Ventures

Much about Intellectual Ventures is shrouded in secrecy. Intellectual Ventures has acknowledged it intentionally withholds the true scope and nature of its IP portfolio.7 Its licensing transactions and interactions are protected by strict nondisclosure agreements, and the structure of its business activities makes it difficult to get a handle on the full extent of its activities. For example, our research has identified more than a thousand shell companies that Intellectual Ventures has used to conduct its intellectual property acquisitions, and it has taken considerable effort to identify these. The range and scope of its activities are so vast that it is difficult to conceptualize the reach of Intellectual Ventures.

Intellectual Ventures was founded in 2000 by Nathan Myhrvold and Edward Jung, both of whom formerly served in high-level positions at Microsoft.8 Peter Detkin also played a key management role in developing Intellectual Ventures. In one of patent law’s great ironies, Detkin was the person who originally coined the derogatory term “patent troll” during his tenure as the chief intellectual property officer at Intel.

Although operations began in 2000, Intellectual Ventures does not appear to have

7 See Victoria Slind-Flor, *The Goodfellas: Detkin and Myrvold on Patents, Trolls & Intellectual Ventures*, 19 INTELLECTUAL ASSET MANAGEMENT 28, 34 [Hereinafter IAM] (noting that Intellectual Ventures will not reveal how many patents it has or the entities to which it has licensed technology and citing Myhrvold’s response that “We’re a private company. We don’t disclose our investment plans any more than Warren Buffet does”), see also Steve Lohr, *Turning Patents into ‘Invention Capital’*, NEW YORK TIMES (Feb. 17, 2010) (citing Myhrvold’s comment that Intellectual Ventures’ penchant for secrecy is a legacy from its startup days when it did not want to tip its hand).

8 According to the Washington Secretary of State’s Office, Intellectual Ventures LLC was formed on September 21, 1999. Nathan Myhrvold formerly served as Microsoft’s chief technology officer and Jung served as Microsoft’s chief architect.
begun its massive patent acquisitions in earnest until somewhere around 2004 or 2005, when the annual number of acquisitions transaction we could identify rose from a handful to several hundred.

According to Intellectual Ventures, invention *per se* is its product, and both Myhrvold and Detkin have referred to the company’s business model as “invention capitalism.” They define Invention Capital as applying concepts from venture capital and private equity to develop and commercially exploit new inventions.⁹

Although Intellectual Ventures is designed to make money from trading in patent rights, the founders view their activities as ones that will incentivize research and development in all technical subjects. Myhrvold, for example, has been quoted as saying the following:

Most of people think of research as a charity, a philanthropic thing. They don't view it as a for-profit venture. So our goal is to make research something you can invest in. I think it's a valuable investment if you know what you're doing. So we think that if we supply capital and expertise in the right way then we can make a hell of an investment and if we are successful at doing it, the net research budget will go up.¹⁰

The range and scope of Intellectual Ventures’ activities are so vast that it is difficult to contemplate the reach of the company. It has invested in innovations and technologies

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⁹ *See, Steve Lohr, supra note Error! Bookmark not defined.* (citing Nathan Myhrvold); Nathan Myhrvold, *The Big Idea: Funding Eureka*, HARVARD BUSINESS REVIEW (March 2010) (excerpt available at [http://hbr.org/2010/03/the-big-idea-funding-eureka/ar/1](http://hbr.org/2010/03/the-big-idea-funding-eureka/ar/1)).

across a broad spectrum of industries – everything from computer hardware to biomedicine to consumer electronics to nanotechnology. In more than 1000 transactions, by our count, the company has acquired inventions and related intellectual property from individual inventors, corporations of all sizes, governments, research laboratories, and universities.

Getting a handle on the scope and activities of an entity as secretive as Intellectual Ventures is not easy.\(^\text{11}\) We have tried to create a picture of the company by piecing together information from publicly available sources. Such sources included the patent assignment records of the United States Patent and Trademark Office (USPTO); the USPTO’s PAIR database,\(^\text{12}\) which includes the file histories of patents; the USPTO’s patent and application database, government records for key states, including Delaware, Nevada, Washington, and California; Internal Revenue Service Filings for non-profit entities; Securities and Exchange Commission data from 10Q and 10K filings by corporations; the Federal Register; and press releases and other publications from various entities.

The structure of the Intellectual Ventures network of operations makes it tremendously difficult to detect and trace the company’s activities. For example, Intellectual Ventures has acknowledged that it uses shell companies for purchasing and holding patents, although it has not publicly identified the number of shells or their

\(^{11}\) Credit for this exhaustive research goes to co-author Tom Ewing.  
\(^{12}\) PAIR stands for Patent Application Information Retrieval.
names. In 2006, one magazine identified 50 shell companies that it believed were being operated by Intellectual Ventures. Our research has pieced together 1,276 shell companies associated with Intellectual Ventures. We do not believe that we have identified all of the Intellectual Ventures shell companies, but these 1,276 companies alone hold roughly 8,000 United States patents and 3,000 pending United States patent applications as of May 2011.

We also note that even with some knowledge of the shell companies, tracking the Intellectual Ventures portfolio is further complicated by the fact that Intellectual Ventures has at times neglected to record its ownership for long periods of time. In some cases, for example, we found parties indicating that they had sold or licensed patents to Intellectual Ventures – even to the point of identifying the intellectual property with great particularity – but we could not locate a corresponding assignment in the USPTO database.

Although Intellectual Ventures has never divulged the precise nature and extent of its portfolio, the company has reported that it holds some 35,000 “invention assets.” The company does not define the term, but we assume that this phrase refers not only to

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13 See IAM, supra note Error! Bookmark not defined., at 32 (quoting Peter Detkin as acknowledging that Intellectual Ventures uses shells for acquisitions and arguing that all companies do this to keep potential liabilities of the acquired company from affecting the whole organization).

14 We note that at least 175 of the patents acquired by IV have reached the end of their terms and expired. Likewise, many more of the patents will expire in just a few years. We have not checked patent maintenance fee payment information to determine if any of the other patents have expired due to failure to make maintenance fee payments. In any event, the “active” portfolio is likely a bit smaller than suggested by the numbers above.

15 In one case, IV opted not to record a change of ownership for some 2,506 days following execution; see, assignment record for US Publication No. 20090254972 for an assignment executed on Aug. 9, 2002 but not recorded until June 19, 2009; enter “20090254972” in the publication number field at http://assignments.uspto.gov/assignments/?db=pat.
patents but also to patent applications, non-filed invention disclosures,\textsuperscript{16} design patents, trademarks, and any trade secrets owned or licensed by the company. Further confusing the issue is whether the company counts as “invention assets” patents or patent families. The company also is not clear about where these assets exist, but we assume that this number represents the company’s worldwide portfolio. If the number were to represent the company’s United States portfolio alone, Intellectual Ventures would hold a portfolio larger than IBM’s United States portfolio, which is generally acknowledged as the largest portfolio in the country.

To give a more full picture of precisely what Intellectual Ventures owns, we assembled as much information as possible from public sources on the company’s holdings that are actually patents. To summarize the information below, we estimate that Intellectual Ventures has a worldwide portfolio of 30,000-60,000 patents and applications as of May 2011. This would mean that in just a few short years, Intellectual Ventures has acquired at least the 5th largest patent portfolio among domestic United States companies and approximately the 15th largest patent portfolio worldwide.\textsuperscript{17}

A. United States Patents and Applications Held by Intellectual Ventures

As described above, with a great deal of digging, we were able to locate 1,276 shell companies and related entities that appear to be associated with Intellectual

\textsuperscript{16} The company has claimed to have some 3,000 unfiled invention disclosures.

\textsuperscript{17} Patent holdings are difficult to compare and rank because, among other things, to be completely accurate, one must account for patents expired on the basis of age and/or failure to pay annuity/maintenance fees.
Ventures. These companies hold approximately 8,000 United States patents and 3,000 pending United States patent applications.\textsuperscript{18}

We do not believe that we have found all of the shell companies.\textsuperscript{19} Nevertheless, we believe we can create reasonable, although conservative, approximation of Intellectual Ventures’ patent holdings from what we have learned about these 1,276 in the following manner. First, we have identified some 50+ shells that appear to serve a management function, one shell that serves a trademark function, a dozen or so that serve investment functions. Of the remaining 1,100+ companies, 954 companies have patents recorded against their names, and some 242 shells do not have patents recorded against their names, although some of them clearly hold licensed-in patent rights.

We have noticed that Intellectual Ventures has a pattern of establishing a shell to receive assets well before the transaction related to those assets has been completed. Thus, we suspect that at least some of the 242 companies without patents recorded against their names are awaiting allocation of assets from a patent-related transaction. We suspect that others have already experienced a patent-related transaction, but that transaction has yet to surface in the public record. For example, if Intellectual Ventures receives an exclusive license to a patent, the effect would be similar to owning the patent outright, but the parties would not necessarily record a change of patent ownership with the PTO.

\textsuperscript{18} We note that at least 175 of the patents acquired by IV have reached the end of their terms and expired. Likewise, many more of the patents will expire in just a few years. We have not checked patent maintenance fee payment information to determine if any of the other patents have expired due to failure to make maintenance fee payments. In any event, the “active” portfolio is likely a bit smaller than suggested by the numbers above.

\textsuperscript{19} As noted elsewhere, we have found approximately 100 other companies registered in Delaware that appear to be shell companies but do not presently hold patents. We will continue to monitor these companies.
especially if the receipt of the exclusive license believed it highly unlikely that the legal patent owner might resell the patent to someone else.

The 954 shell companies that do have patents recorded against their names have an average of 8.5 patents and 3.2 patent applications per company. Assuming that the other 242 shell companies contain unrecorded transactions, and applying these averages would yield another 2,057 patents and 774 applications. Adding these missing patents and applications to our totals would yield roughly 10,000 patents and 3,700 applications.20

The actual portfolio may be substantially smaller or larger than this estimate suggests. For example, if Intellectual Ventures has been more prompt about recording assignments than appears to be the case, then the portfolio may be smaller. Conversely, if Intellectual Ventures has significantly more shell companies than we have found, then the portfolio may be substantially larger than our estimate.

Despite having uncovered more than 1,200 shell companies, we have little doubt that other shell companies have been formed. Exclusive licenses granted to Intellectual Ventures represent the greatest source of unknown patents since these agreements may not necessarily be recorded against the patents to which they pertain. For example, we are aware of transactions involving the University of Rhode Island and Campinas State University in Brazil, but we have no idea what shell company was involved. Similarly, the University of California San Diego has reported agreements with five shell companies

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20 This estimate does not include the Transpacific IP portfolio of approximately 2,500 patents and applications or the Digimarc portfolio of some 800 patents/applications. – I would leave out Transpacific and Digimarc; Digimarc is an old transaction …
but the patents involved in the licensing arrangement have not been recorded.21 Similarly, the US Navy publicly disclosed the licensing of patents to two shell companies, but these licenses have not been recorded.22

B. Non-US Patents and Applications Held by Intellectual Ventures

We note that approximately half of Intellectual Ventures’ United States portfolio originated with non-US entities. Much of these came from European entities, where intellectual property seems to be particularly undervalued in relation to United States intellectual property. This suggests that Intellectual Ventures may be acting as an arbitrageur to exploit the disparities in intellectual property valuation between the United States and the rest of the world. Finally, in contemplating the size of the company’s foreign patents, we note that a sizeable portion of the company’s portfolio is fairly young, and as a general matter, younger portfolios are prosecuted more vigorously in international jurisdictions than has historically been the case for older portfolios.

These factors strongly suggest that a typical US patent in the Intellectual Ventures’ portfolio has at least one foreign counterpart. Given that the world has more than 150 patent-granting countries, the global scope of any patent portfolio can jump tremendously when the foreign counterparts are considered.23 Not all patents have a

21 These companies are Eileen Technologies, Jacksonville Timucuan, Discovery Advance, Bettles Gates, and 10Spot.
22 These companies are Bixenta Ventures and NanoComm Systems.
23 Additionally, some patent owners continue to count provisional applications and PCT applications as being part of their portfolios long after these applications have expired. Similarly, some patent owners double count their EPO patents by counting the EPO-issued patent while also counting its counterpart patents throughout Europe. Finally, many patent owners do not distinguish patents granted by examination
foreign counterpart, however, and most patents do not have foreign counterparts in more than a handful of countries.

We did not search foreign corporate records, but it is possible that one could find more Intellectual Ventures patents that way -- not just foreign patents held by Intellectual Ventures but also United States patents held by the company. For example, we happened upon two examples of this in finding a set of United States patents rights that Intellectual Ventures obtained from two foreign companies, only because the transactions with the shell companies were mentioned in documents published by the foreign company that we discovered during our research.24

Based on the information above, we assume that the typical Intellectual Ventures patent has also been filed in two to four foreign jurisdictions as well. Extrapolating only from the United States patents, and not taking into account any patents Intellectual Venture may have acquired that were filed only in foreign jurisdictions, the worldwide portfolio would be roughly 20,000-40,000 patents25 and 9,000-18,000 applications, by May 2011. Thus, adding the estimated number of patents and patent applications together would suggest a portfolio that ranges from approximately 29,000 to 58,000 patents and applications worldwide. This range is, of course, an estimate, and a fairly conservative one. Nevertheless, even these figures would place Intellectual Ventures

24 The two foreign companies noted here were Campinas and Torino Wireless.
25 This “worldwide” estimate includes the US patents.
among the 5th largest patent portfolio holders in the United States and among the 15th largest patent portfolio holders worldwide.

C. Origins of the Portfolio

We were able to find to fine evidence that Intellectual Ventures has engaged in more than 1,000 acquisition transactions. Through these transactions, the company has acquired inventions and related intellectual property from individual inventors, corporations of all sizes, governments, research laboratories, and universities.²⁶

Intellectual Ventures states that its portfolio has been built through transactions variously classified as “strategic acquisitions,” “targeted acquisitions,” and “in-bound market-driven” opportunities. The strategic acquisitions represent large transactions that take place with a private equity buyer. We suspect that some of these large transactions also arise in conjunction with an investment in Intellectual Ventures by the party supplying the patents. The targeted acquisitions are purposeful acquisitions based on either rounding out or completing a portion of IV’s portfolio or a targeted growth area for the future.

i. Acquisitions through university transactions

²⁶ Intellectual Ventures often gives the impression that much of its portfolio has been built by acquiring one or two patents from small inventors. In terms of number of transactions, this is probably true. In other words, many of its transactions involve acquiring one or two patents from small inventors. This is probably less true, however in terms of numbers of patents obtained. In other words, the company has obtained huge numbers of patents from just a few transactions with large corporations.
The transactions with universities are particularly interesting, not necessarily as a percentage of the company’s portfolio, but as offering insight into Intellectual Ventures’ vision and potential effects on innovation. The company has announced that it has relationships with some 300 universities, although it has not identified the institutions. These relationships are not necessarily public because they may involve patents whose ownership remains with the university. For example, the company may simply receive an exclusive license to commercialize the intellectual property involved, which would not appear as a recorded transfer of ownership. Nevertheless, we were able to find nearly 50 universities that appear to have signed deals with Intellectual Ventures, which we have listed at Appendix A. Some deals may involve sale or licensing of a few patents; some may involve investment by the university in Intellectual Venture, and some deals may involve wholesale assignment of future innovation.

We did find one fascinating example of the wholesale assignment of innovation with an institution in a developing nation and have heard that this may represent a pattern. Specifically, we received a summary of an agreement with Brazil’s Campinas University, one of that country’s largest academic institutions. In that agreement, Intellectual Ventures appears to have secured the rights to file Patent Cooperation Treaty (PCT) patent applications for inventions developed at the university. In other words, the university may file domestic patent applications in its own country, and then Intellectual Ventures has the right to file PCT applications and secure worldwide rights to the inventions. The agreement appears to provide some revenue-share potential with the university as the result of Intellectual Ventures’ commercialization, although we were not able to determine the specific terms and conditions.
We have been told that similar deals exist with universities in other developing countries. It is certainly a forward-looking approach towards gathering rights to future innovation, but it is one that could backfire on the company. Suppose, for example, that some individuals at academic institutions were unhappy with the deal that was cut and responded by creating very little that would fall within the terms of the agreement for the period of the agreement. That would be a bad result on all levels, for the academic institution, for Intellectual Ventures, and for innovation as a whole.

ii. Acquisition through portfolio assumption

Another source of patents for Intellectual Ventures comes from offering a turnkey licensing service for small-to-medium enterprises. Consider, for example, the deal that Intellectual Ventures completed with the Digimarc Corporation in 2010. According to Digimarc’s SEC filings, the company has granted Intellectual Ventures an exclusive license with the right to sublicense almost all of Digimarc’s patents.\(^\text{27}\)

The broad terms of Digimarc’s deal with IV are as follows:

- a license issue fee of $36 million, paid in increasing quarterly installments over three years;
- 20% of the profits generated from the IV’s licensing program, less expenses that include the license issue fee above;
- IV assumes responsibility for approximately $1 million per year in prosecution

\(^\text{27}\) The deal includes 597 patents and 288 patent applications owned by Digimarc. The company has retained 4 patents and 128 patent applications, as well as 26 patents and 26 patent applications for which it holds rights with third parties.
and maintenance costs previously borne by Digimarc for the licensed patents;

• a minimum of $4 million of paid support over five years from Digimarc to assist IV in licensing-related efforts; and

• a royalty-free grant-back license to the licensed patents to continue Digimarc’s existing business related to those assets.

Thus, Intellectual Ventures buys the rights to most of Digimarc’s patents, assumes the costs of maintaining the portfolio and gains the right to go after other companies. Digimarc gets a cash payment plus a percentage of income earned when Intellectual Ventures goes after other companies with the portfolio. Digimarc also retains a license to use the patents, as long as that relates to its existing business.

D. Funding Sources

To finance its acquisitions and operations, Intellectual Ventures has raised at least $5 billion, according to published reports. The company’s initial funding seems to have come from operating companies such as Microsoft, Intel, Sony, Nokia, Apple, Google, and eBay. Subsequent funding sources include financial investors, comprised heavily of institutional endowments and wealthy individuals. These include the William and Flora Hewlett Foundation, the University of Pennsylvania, the University of Notre Dame, Grinnell College, Charles River Ventures. The Bill and Melinda Gates Foundation has asked Intellectual Ventures to perform some contract research related to antimalarial device; as far as we can tell, these are the only physical products made by the company.
IV’s investments are distributed among more than five funds, and the investors have not necessarily invested in each fund or in each fund equally. In litigation against Xilinx in May of 2011, Intellectual Ventures was forced to disclose the investors for four of its funds. In addition to the initial funding group mentioned above, investors included Amazon.com, American Express, Adobe, Cisco, Verizon, and Yahoo!, as well as Xilinx itself.

According to Myhrvold, the funds raised by Intellectual Ventures are in the form of capital commitments that the company can use over a certain time period. The company claims that it has been structured to operate in a manner resembling that of venture capital and private equity funds. Thus, the company strives to receive approximately a 2% management fee plus 20% on the carried interest, although actual terms from may vary significantly from fund to fund and acquisition to acquisition.

E. Return on Investment

One of the most interesting questions, and one that is difficult to generalize, is what do investors get in return? The investors vary tremendously, as do the types of deals they are likely to have made. Some investors appear to be interested both in financial returns and in access to Intellectual Ventures’ vast pool of patents. As Vincent Pluvinage, Intellectual Ventures’ former head of acquisitions once explained, for

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28 These funds that we know of are: the Invention Science Fund I LLC; the Invention Science Inventors Fund I, LLC; the Invention Development Fund I LLC; the Invention Investment Fund I LP, the Invention Investment Fund II LLC, the Intellectual Ventures Fund 1, and the Intellectual Ventures Fund II.
29 The full list of investors in the four funds is listed at Appendix B.
30 See IAM 2009, supra note 7, at page 10.
31 For example, Verizon paid $350 million for patent licenses and an equity stake in one of IV’s investment funds in July 2008, according to published reports. Intuit similarly struck a $120 million deal with IV in early 2009.
investors that are technology companies, Intellectual Ventures can provide a defensive function in the form of access to patent licenses.\textsuperscript{32} Pluvinage has stated, in fact, that some technology company investors have indicated specific technology areas where they would like IV to acquire patent rights in order to obtain license rights.

A smaller category of investors, however, would have little interest in access to patents. For example, one would not expect William and Flora Hewlett Foundation or the World Bank to be particularly interested in patent licenses. In fact, Pluvinage has confirmed that the company has some purely financial investors, and financial investors typically would have little interest in a patent defense fund. Pluvinage believes that the financial investors have chosen Intellectual Ventures and the general category of intellectual property as an investment because it’s believed to be uncorrelated to other investment classes.

For investors who get access to the patent pool, that access provides something far more sophisticated and complex than the patent licenses that would be necessary to produce a product. Consider the story of Verizon, which paid $350 for patent licenses and an equity stake in one of the Intellectual Ventures Funds in 2008. TiVo sued Verizon for infringement. Verizon purchased a patent from one of Intellectual Ventures’ shell companies, which was then put to work as a counterclaim in the TiVo suit.\textsuperscript{33} Intellectual

\textsuperscript{32} For a description of using patents as bargaining chips in infringement litigation, see infra, text accompanying note x.

\textsuperscript{33} The Intellectual Ventures shell was originally named Aerosound LLC before a recordation of its name change was made with the USPTO on Feb. 17, 2010; see, Assignment History provided by USPTO at http://assignments.uspto.gov/assignments/?db=pat (search in “patent number” field for U.S. Patent No. “5410344.”). It is uncertain precisely when Verizon bought this patent, as the transaction has not been recorded at the USPTO; however, the counterclaim was added on February 24, 2010, and Verizon asserts that all rights in the ‘344 patent have been acquired by a wholly owned subsidiary named Services Corp.
Ventures executive Michael Pierantozzi explained in a conversation with one of the authors that the sale of the patent to Verizon included terms for Intellectual Venture to re-purchase the patent once the litigation had been completed. In other words, as part of its investment in Intellectual Ventures, Verizon could access the patent that it needed for a particular litigation and then return the patent when it was no longer needed.

Access to a vast pool could be enormously valuable to a technology company, but one must be careful of the hand that feeds. When infringement litigation broke out between Intellectual Ventures and Xilinx in 2011, it was interesting to note that Xilinx itself is listed as an Intellectual Ventures investor.

Xilinx had filed a declaratory judgment suit against Intellectual Ventures after Intellectual Ventures sued three of Xilinx’ competitors. One cannot help but wonder what might have transpired between Intellectual Ventures and its investors that lead the parties to litigation under these circumstances. No information is available, but one could imagine that the following might have happened. Perhaps Xilinx’s agreement with Intellectual Ventures includes that Xilinx purchases both an interest in the Intellectual Ventures investment fund and a license to use some of Intellectual Venture’s patents. If the license is based on sales data from Xilinx, and Intellectual Ventures across time began to doubt that Xilinx was properly reporting its data or to dispute that data, one could see the infringement suits against Xilinx’s competitors as serving a dual purpose. The suits have the potential to both bring in settlement money from Xilinx’s competitors.

See, Defendant’s Answer to First Amended Complaint and Counterclaims at 15, Tivo, Inc. v. Verizon Communication, Inc. et al., 2:09-cv-257-DF (ED Tex, 2009); see also, the USPTO assignment database that shows no patents assigned to “Services Corp.”; http://assignments.uspto.gov/assignments/?db=pat (search in “Assignee” field for “Services Corp”).
and to send a message to Xilinx that Intellectual Ventures has confidence in its patents and is serious about its demands. Under that scenario, the Xilinx suit, in which Xilinx asks the court to declare the Intellectual Ventures either invalid or not infringed by Xilinx, coupled with a Xilinx discovery request that has the effect of publicly revealing a list of the Intellectual Ventures investors, can be seen as Xilinx’s cannon shot reply.

i. Capital Returns

One of the most striking figures to contemplate is the amount of money Intellectual Ventures will need to earn, if it is going to operate successfully in the model it has described for itself. In particular, Intellectual Ventures defines itself in comparison to venture capital firms. Venture Capital firms typically must return an investment of at least 20% to its investors over the lifetime of the investment. The funds tend to be extremely illiquid, with lifetimes of approximately 7-10 years during which the investor’s capital is unavailable. This illiquidity is one justification for higher expected returns than the returns from more liquid investments.

Myhrvold, Detkin, and other Intellectual Ventures executives have repeatedly described the company as a venture capital or private equity company operating in the intellectual property rights space. Given the comparison that Intellectual Ventures has chosen for itself, combined with the well-heeled investors the company has drawn, and in consideration of the other investments those investors could have made instead, one could presume that Intellectual Ventures intends to generate revenues comparable to those of a successful venture capital or private equity firm. The minimum return, given the illiquidity that investors in venture capital or private equity firms expect in the United
States is approximately 20%. Intellectual Ventures has said that of the money it makes for investors, it intends to keep 20% of that for itself plus a 1-2% management fee. We will use the figure 1.5% as an average management fee for simplicity. Therefore, the total expected minimum return would be a little over 25%.

Although the length of investment is an unknown parameter, assume a 10-year investment, which is standard in the venture capital world. Combining these parameters with $5 billion in investment would yield a lifetime revenue expectation for all the funds of at least $48 billion – to be considered a successful investment. If one assumes that the funds have lifetimes longer than 10 years, then the revenue expectations grow even larger. If, for example, Intellectual Ventures has pegged the revenue expectations at the lifetime of a patent, which is 20 years, the lifetime revenue expectation jumps to a minimum of $470 billion.

F. Collecting Revenue: Privateering & Other Exploits

Intellectual Ventures claims to have collected approximately $2 billion in licensing fees so far, based on the company’s disclosures and recent licensing deals. Most large-scale IP licensing today exists only among very large technology companies, and this is consistent with Intellectual Ventures’ licensing efforts at this point. Myhrvold, however, told the Wall Street Journal in 2008, that the company ultimately plans to sign up hundreds or even thousands of companies as patent licensees.
In addition, until recently, Intellectual Ventures used third parties to carry out much of its litigation activities. The technique is reminiscent of the historic practice known as privateering. Privateering was an extremely effective and troubling method of waging war, which was finally abolished by treaty in 1856.\textsuperscript{34} It allowed state governments to issue a “letter of marque and reprisal” to private ships, which allowed the ships to 1) capture any ships carrying the enemy’s flag, 2) sell the ship and cargo at auction, and 3) keep the proceeds. Privateering allowed governments essentially to enlist private parties in their aggressive activities so that the country could wage war without having any impact on the treasury.

With Intellectual Venture’s version of privateering, the company sells a patent to a more aggressive licensing company, retaining a license for the Intellectual Ventures investors. The new owner is free to sue or license anyone not covered by the previous owner. The approach allows Intellectual Ventures to profit indirectly from the litigation without engaging in the expenditures or the risks of litigation.

Although we do not have a specific example to offer related to Intellectual Ventures in particular, we note that the technique could be a very effective way of nudging reluctant licensees in the following manner. An aggregator approaches a company, and demands that the company license one of the aggregate’s patents. When the company demurs, the aggregator sells the patent to an aggressive third party, who

\textsuperscript{34} One of the authors has previously discussed the similarity between historic privateering and the activities of modern non-practicing entities. See, Thomas L. Ewing, Indirect Exploitation of Intellectual Property Rights by Corporations and Investors: IP Privateering & Modern Letters of Marque & Reprisal, HASTINGS SCI. & TECH. L.J. The treaty abolishing Privateering is the Declaration Respecting Maritime Law. Paris, April 16, 1856. The text of the treaty is available from the International Red Cross at http://www.icrc.org/ihl.nsf/INTRO/105?OpenDocument.
sues for a far higher license value. The aggregate then approaches the company again, this time demanding that the company license a different one of the aggregate’s patents. This time, the company may be much more compliant.

The approach could also be used to prod one’s own licensees to toe the line, as speculated with the Xilinx circumstances above. Specifically, if the licensee must make payments to the aggregator based on the licensee’s sales volume, and the aggregator believes that the licensee is being less than candid, the aggregator could sponsor an aggressive action by one of its proxies against a competitor of the licensee as a way to demonstrate potential consequences to its recalcitrant licensee. This approach would be reminiscent of the old Chinese adage of “kill the chicken to frighten the monkey.”

We did, however, find many examples of Intellectual Ventures using third-party proxies to litigate infringement claims against companies who appear to be likely licensing targets for large portions of Intellectual Ventures’ portfolio. In particular, many of the patents sold by Intellectual Ventures have ended up in litigations brought by their new acquirers. Patents formerly owned by apparent Intellectual Ventures shells Viviana LLC,35 Gisel Assets KG LLC,36 Kwon Holdings Group LLC,37 SF IP Properties 24 LLC,38 Ferrara Ethereal LLC,39 and Mission Abstract Data LLC40 have been employed in

35 See, Assignment History provided by USPTO at http://assignments.uspto.gov/assignments/?db=pat (search in “Assignee” field using “Viviana,” and see Ewing, infra note 479.
36 See, Assignment History provided by USPTO at http://assignments.uspto.gov/assignments/?db=pat (search in “Assignee” field using “Gisel Assets” and see Ewing, infra note 479.
37 See, Assignment History provided by USPTO at http://assignments.uspto.gov/assignments/?db=pat (search in “Assignee” field using “Kwon Holdings” and see Ewing, infra note 479.
38 See, Assignment History provided by USPTO at http://assignments.uspto.gov/assignments/?db=pat (search in “Assignee” field using “SF IP Properties” and see Ewing, infra note 479.
39 See, Assignment History provided by USPTO at http://assignments.uspto.gov/assignments/?db=pat (search in “Assignee” field using “Ferrara Ethereal” and see Ewing, infra note 479.
patent infringement litigations respectively brought by the purchasers Picture Frame Innovations LLC,\(^{41}\) Patent Harbor LLC,\(^{42}\) Oasis Research LLC,\(^{43}\) InMotion Imagery Technologies, LLC,\(^{44}\) Webvention LLC,\(^{45}\) and Mission Abstract Data LLC.\(^{46}\) These litigations have been brought against companies such as Kodak, Hewlett Packard, Samsung and CBS Radio. Don Merino, senior vice president of licensing at Intellectual Ventures has said the sales were a logical step for the company and generally denied that the y related to privateering.\(^{47}\) “I have enough of a set of assets where it just makes sense to start turning inventory,” he told Dow Jones in a 2010 interview.\(^{48}\) Selling expiring assets makes perfect business sense, of course. Nevertheless, the technique could be used, both to maximize aggressive litigation returns while attempting to stay at arms length, as well as reinforcing the message to one’s own license targets that cooperation is the better strategy. In addition, when the extent of the patent portfolio is unclear, the technique

\(^{40}\) See, Assignment History provided by USPTO at http://assignments.uspto.gov/assignments/?db=pat (search in “Assignee” field using “Mission Abstract” and subsequent assignment from Intellectual Ventures Audio Data LLC, and see Ewing, infra note 479. IV also continues to sell patents, such as the recent sale from IV’s Sinon Data LLC to Personal Voice Freedom LLC, a company apparently associated with Charles Eldering’s Technology, Patents, and Licensing Inc.


\(^{42}\) See, e.g., Patent Harbor, LLC v. LG Electronics, Inc. et al., 6:2010-cv-00436 (ED Tex, 2010).


\(^{44}\) See, e.g., InMotion Imagery Technologies, LLC v. JVC Americas, Corp. et al., 2:2010-cv-00474 (ED Tex 2010).

\(^{45}\) See, e.g., Webvention LLC v. Adidas America Inc. et al., 2:2010-cv-00410 (ED Tex 2010).

\(^{46}\) See, e.g., Mission Abstract Data LLC v. Beasley Broadcast Group Inc. et al., 1:11-cv-00176-LPS (D. Del 2011). Note that a Rule 7.1 filing in Mission Abstract Data states that the sole owner of this plaintiff is Digimedia Holdings, LLC, a Delaware entity formed in January 2011 just a few weeks prior to the assignment of patents from Intellectual Ventures Audio Data LLC. One could conclude that Mission Abstract Data has different owners now than it did prior to the transaction with Intellectual Ventures Audio Data LLC. Mission Abstract Data LLC was formed as a company in April 2007.


\(^{48}\) Id.
could be used to hint to targets that the patent being offered for licensing is only one piece of a more extensive portfolio in that area.

In another example of using third parties for infringement litigation, Avistar Communications sold a group of 41 patents and applications to Intellectual Ventures Fund 61 in December of 2009 for $11 million. In June of the following year, Intellectual Ventures re-sold these patents to Pragmatus. Five months later, Pragmatus used three of these patents to sue Facebook, YouTube, LinkedIn, and PhotoBucket.com for patent infringement.

Pragmatus has also filed infringement lawsuits against the major United States cable companies, including Time Warner Cable, Cox Cable, Charter Communications, and Comcast, for infringement of two additional patents that were acquired from Intellectual Ventures prior to that lawsuit. An Intellectual Ventures shell company had acquired these patents in 2007 as part of a larger patent lot purchased at an Ocean Tomo patent auction for $3.025 million. While Intellectual Ventures does not own Pragmatus, it is not presently clear if Intellectual Ventures sold the patents for a lump sum cash payment or whether it is entitled to receive a percentage of the commercialization profits, including patent infringement damage awards and settlements. Deal terms comprising an upfront cash payment plus a revenue share seem fairly common in the mass aggregator world.

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49 According to Avistar’s SEC filings, the complete transaction involved 99 US and foreign patents and 26 pending applications worldwide.
50 These are the only patents whose ownership has been recorded to Pragmatus.
The activities described above are only some examples of Intellectual Ventures’ transfers to third parties for the purpose of infringement litigation that we came across. We suspect there may be many more examples.

After primarily using third parties to file infringement litigations, Intellectual Ventures began suing companies directly in December of 2010. On a single day, for example, Intellectual Ventures filed three large patent litigations, one against a group of software security companies, one against DRAM and flash memory manufacturers, and one against field programmable gate array (FPGA) manufacturers. The company has filed additional infringement suits against the parties in other jurisdictions including the International Trade Commission.

B. Other Mass Aggregators & Interconnections

IV’s success in raising capital has led to the creation of a number of smaller versions of the company. We will discuss a few such organizations briefly. It is unclear whether and to what extent Intellectual Ventures has partnered with these companies, but there are a number of striking connections and interactions among them. It is possible

51 Patents formerly owned by apparent IV shells Gisel Assets KG, LLC, Kwon Holdings Group LLC, S.F. IP Properties 24 LLC, and Ferrara Ethereal LLC have been employed in patent infringement litigations respectively brought by Patent Harbor LLC, Oasis Research LLC, InMotion Imagery Technologies, LLC, and Webvention LLC. IV also continues to sell patents, such as a recent sale from IV’s Sinon Data LLC to Personal Voice Freedom, LLC, a company apparently associated with Charles Eldering’s Technology, Patents, and Licensing, Inc. The Webvention patents, previously owned by the Ferrara Ethereal shell, were previously licensed to companies like American Express, Apple, Google, Hewlett-Packard, Intuit, Microsoft, Nokia, and Sony, according to Webvention’s website. This makes sense since many of these companies are known to either be investors in IV and/or licensees of IV’s patents. We have not checked all of IV’s 11,000 US patents to see which ones have been sold to third parties, but we suspect that IV has sold more patents than the ones identified here.
that Intellectual Ventures maintains ties to such other organizations as a way of lowering its exposure for various deals. In addition, with the amount of capital at Intellectual Ventures’ disposal, it would make sense for the company to make some investments of its own.

i. Transpacific IP Ltd.

Transpacific IP Ltd. began operations in Taiwan in 2004 and has expanded to include offices in Hong Kong, Beijing, Tokyo and Singapore. Unlike the typical intellectual property aggregator, Transpacific seems to have kept a very low profile with a fairly nondescript website and only a few news stories about the company.

Despite its low profile, the company has amassed a portfolio of more than 3,000 US patents and applications. The company has also purchased patents from Asian companies. It is possible that Transpacific and Intellectual Ventures conducted some sort of business arrangement with each other in late 2007 or early 2008, although the terms and the timing are unclear. During this time period, a number of Transpacific’s patents seem to have shifted to new intellectual property attorneys who also appear to represent Intellectual Ventures for patent prosecution matters.

We initially found Transpacific while searching for Intellectual Ventures shell companies but concluded that Transpacific is probably not an Intellectual Ventures shell, given that it seems to have its own corporate identity. Transpacific’s corporate structure

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52 Plus an even greater number of non-US patents/applications.
seems to resemble that of Intellectual Ventures but in miniature, including a number of shell companies of its own.

Intellectual Ventures has purchased patents from Transpacific and its shells. For example, two of the patents Intellectual Ventures is using in its spate of direct infringement lawsuits filed at the end of 2010 were purchased from Transpacific. The transaction was characterized as a merger in documents filed with the USPTO.

We noted above that Transpacific and Intellectual Ventures often share the same patent counsel. The sharing is so close that in one instance, a patent practitioner mistakenly filed a power of attorney signed by a Transpacific representative in the prosecution file for a seemingly unrelated Intellectual Ventures shell company, a mistake one would not expect to see with completely unrelated portfolios.53

ii. RPX

John Amster founded RPX in September 2008. Just prior to founding the company, Mr. Amster was Intellectual Ventures’ general manager of strategic acquisitions and vice president of licensing. RPX’s business model is to buy potentially problematic patents and then license those patents to its members. Thus, the company’s members can head off the problems of intellectual property infringement litigation for a

53 The power of attorney filed for US Patent 7,427,742 on Sept. 2, 2010 is for Tang Sung Capital, a TransPacific IP shell, when the correct owner of the patent is IV’s shell Buvane Holdings. A power of attorney for Buvane was filed in the case on Jan. 11, 2011. We note that nothing in the assignment history for the ’742 patent indicates that it was ever owned by a TransPacific shell; in contrast IV has done numerous transactions with Cypress Semiconductor, the patent’s previous owner. Thus, it would seem that the patent prosecutor was simply confused about which power of attorney paper to file, a mistake that does not often arise in completely unrelated portfolios.
fraction of the cost. The company has grown rapidly, with annual revenues now in excess of $65 million. RPX held its initial public stock offering in 2011.

It is possible that some of Intellectual Ventures’ investors wanted to participate in an aggregator that overtly operated as a patent defense fund, and a fund limited more to areas directly related to its investors’ businesses and interests, and that RPX was formed to fill this market need. The patents that RPX acquires tend to be somewhat more along the lines of nuisance value patent than the patents that Intellectual Ventures acquires, and it is possible that the two companies would not find themselves competing for the purchase of a given patent. At present, RPX has signed up approximately 65 technology companies, about half of which have either sold patents to Intellectual Ventures or have invested in Intellectual Ventures.

RPX has spent nearly $250 million acquiring patents and controls them via several funds, such as RPX-LV Acquisition LLC and RPX-NW Acquisition LLC. RPX apparently also plans to operate some sort of program that will return the patents it acquires to other potentially litigious owners while reserving licenses for its members.

iii. Round Rock Research

Round Rock Research, LLC holds a portfolio of more than 3,400 US patents. All of these patents were acquired from Micron Technology in December of 2009 and collectively represent roughly 20% of Micron’s total patent assets. The company was incorporated in Delaware nearly a year before it was publicly announced that John
Desmarais, a prominent US patent litigator, would be leading the company. It was also formed nearly a year before the 3,400 patents were transferred from Micron to Round Rock.

Micron has not made a formal filing with the SEC regarding the large patent sale to Round Rock or issued a press release about it. Curiously, Micron’s annual disclosures to the SEC from 2007-2010 report a consistent figure for the number of patents held by the company and show no drop in the number of patents owned. Nevertheless, in litigation filings, Round Rock says that it has no parent company and that no publicly held company owns 10% or more of its stock. This has raised questions as to who owns Round Rock and/or who financed the sale.

Desmarais is the only public face for Round Rock. One could estimate that the value of 3,400 Micron patents probably approaches or exceeds a hefty fraction of $1 billion, which is seemingly a larger sum than even a successful patent litigator would be likely to muster.

Suggesting a connection between Round Rock and Intellectual Ventures would be speculation, but we do note an interesting number of intersections between the people involved in each entity. For example, Desmarais is the litigator for the patent infringement lawsuit that Intellectual Ventures has filed against the field programmable gate array manufacturers. He is also the litigator for one of the Pragmatus cases filed using patents formerly owned by Intellectual Ventures, as well as the litigator for Oasis 54 The Nortel patent auction was completed on July 1, 2011 for $4.5 billion and comprised a comparable number of patents.
Research, an apparent Intellectual Ventures privateering operation. Melissa Finocchio, Intellectual Ventures’ chief litigation counsel, was formerly the head of the litigation department at Micron. In addition, Samsung has reportedly signed separate licensing agreements in 2010 with Round Rock, Micron Technology, and Intellectual Ventures.55

II. Potential Positive Effects

We will begin by examining the potential positive effects that mass aggregators could bring. What opportunities or failures are remedied by their appearance in the market? What positive implications do these mechanisms have for innovation or for individual players in the world of invention?

A. The Forgotten Inventor

In a perfect world, there might be no role for mass aggregators. An inventor, incentivized by the rewards available through the patent system, creates an invention bringing forth the idea for all to see and benefit from. The inventor either manufactures a resulting product from the invention or licenses the invention to others for manufacture. Those who want to enter a particular commercial space, thoroughly scour the record of

55 Round Rock is to some extent the successor to Keystone Technology Solutions, LLC. Keystone was closely tethered to Micron and may well have been wholly owned by Micron. Many of Round Rock’s patent assets began as Micron properties, were transferred to Keystone, transferred back to Micron, and then transferred to Round Rock. Keystone does not appear to have had any employees who were not also Micron employees.
patents granted to determine whether they must obtain rights from any patent holders. If rights are needed, the parties willingly negotiate a license and the product goes forward. At the end of the day, inventors are rewarded for the innovations they bring to the field, and society benefits from the introduction of new products and ideas.

The patent system, however, is far from perfect, and the pathway from invention to patent to product is unlikely to be so simple and direct. Ideas and information can permeate intellectual exchanges, particularly in fields where academic research plays an important role. Such ideas may skip lightly along a discussion pipeline, moving around unmoored from their intellectual property tethers. Producers may incorporate ideas unconsciously, failing to recognize that the inspiration or credit belongs to someone else. In another scenario, a producer develops the idea through independent creation often completely unaware that someone else was technically “first” with the idea but maybe not with the product. Numerous researchers and inventors may be working on similar issues at the same time, as they try to push through the barriers at the edge of a field.

In theory, the producer should be able to search for relevant patents and arrange necessary licensing, but in the real world, this description is no more than a pleasant myth. Many patent attorneys actively counsel their clients not to look at issued patents for fear of their client being put on notice, which risks additional damages; many corporations have adopted similar firm-wide directives. Limited resources at the Patent and Trademark Office prevent patent examiners from screening out bad patents and weak claims. With roughly 2 million active US patents, identifying all potentially relevant patents is tremendously challenging. Moreover, it is difficult, if not impossible, to know in advance how broadly a patent will be interpreted and whether a particular patent claim
will be upheld. Much of this uncertainty stems from the fact that the metes and bounds of the patent, when enforced, are determined by the court through the process of claim construction, a process that is notoriously unpredictable.\textsuperscript{56} In a classic example of the problem, two recent litigations happening at the same time within the same district court produced different constructions of the same claim term.\textsuperscript{57}

Even when a producer has diligently acquired all the licenses that appear to be needed, a new party may appear. In a problem known as patent stacking, producers find themselves paying out ever-greater amounts of their revenue to a theoretically unlimited number of patent holders. There is no law, rule, or guideline that necessarily limits the aggregate number of intellectual property licenses for a product to a fixed percentage of revenue, and it is theoretically possible for the collective amount of royalties to exceed 100\% of revenue.\textsuperscript{58}

In short, the patent system works just fine for generating patents but stumbles in rights licensing.\textsuperscript{59} Some producers take licenses from aggressive licensors whose patents


\textsuperscript{57} \textit{See Arlington Indus. v. Bridgeport Fittings, Inc.}, 632 F.3d 1246, 1248 (Fed. Cir. 2011)

\textsuperscript{58} Eleven patentholders each entitled to 10\% of gross revenue would amount to 110\% of revenue.

\textsuperscript{59} And may stumble even further in fulfilling its ultimately \textit{raison d’etre} in society.
may not be infringed while other producers play games to avoid licensing rights from parties whose patents probably are infringed. It’s a hard knock life for the small inventor and the forthright producer.\textsuperscript{60}

Even when the proper parties do identify each other, information gaps, valuation difficulties, and other transaction obstacles may prevent consummation of a deal. Plagued by boundless uncertainty, insufficient information, and high transaction costs, the true patent system looks nothing like the idealized version. Imagine a real property market where almost no comparable information is available. The sales price for the house next door is unavailable as is the sale price for the house two blocks away with an identical floor plan.\textsuperscript{61}

In this world of imperfections, mass aggregators may provide a market mechanism for the forgotten inventor whose innovations are in use every day but who remains uncompensated. By creating a market for monetization of patents, mass aggregators might make it possible for individual inventors to find others who have the capital and expertise to identify and pursue claims against those who are producing products that infringe.

Compensating existing inventors does not increase the store of available products or necessarily fund further innovation. One could argue, nevertheless, that a market for patent monetization benefits innovation beyond simply providing cash for the patent holder. Inventors as a whole may be more likely to bring forth new inventions if the

\textsuperscript{60} Charles Strouse and Martin Charnin, “It’s a Hard Knock Life,” Annie, 1977.
mechanisms for reward operate more effectively than the roulette wheel that inventors face today.62

B. The Middleman

In addition to the possibility of compensating forgotten inventors, one could argue that mass aggregators serve as a form of efficient middle man, a market intermediary who helps patents find their way to those who would exploit them to create new products. Inventors may not have the capital, expertise, or other necessary capacity to manufacture products. One could see the market for patent monetization as a matching system moving patents to those with proper production capacity.

Middleman systems do have some precedence in the world of innovation finance. Venture Capitalists have been known to set up incubators to help those with ideas bring them to fruition. The market for patent monetization could be another variant on the theme. One possibly stark difference, however, is that the patent aggregators work purely with patent legal rights and not with technology licenses. Similarly, they do not tend to push the direction of new creations but instead scoop of creations in areas of interest to them. In short, there does not seem to a technology aggregator who works to facilitate the spread of otherwise unknown information and know how as opposed to spreading legal rights whose boundaries are set forth on publicly available websites and patent libraries.

62 We will discuss the 26-year “time lag” of patent exploitation and “To Serve Man” later.
As described above, Intellectual Ventures, if not the other mass aggregators, does have a laboratory set up like an incubator. The problem with the notion of mass aggregators as middle men connecting innovators with production capital and capacity, is that for the most part, they do not seem operate that way. Very little mass aggregator activity appears to be of the middleman variety. Most activity seems to be focused on the interaction of existing patents with existing products. In short, the mass aggregators are not “technology push” in the sense of directing the spark of creation for tomorrow’s new products. Rather, their activities follow the pattern of scanning the horizon to pick out today’s hot technology areas and then finding and securing orphaned and non-aligned patents that can be used to extract a return from today’s products.

In theory, a market for patent monetization could operate as a type of exchange, where buyers and sellers can meet with lower transaction costs. Exchange markets, however, do invite arbitration and speculation, which does not always have a stabilizing economic influence. The speculative effects are multiplied by the extreme information asymmetries in the intellectual property rights markets in which some parties have access to extensive market information and other parties have little more than a gut feel. For this and other reasons, exchange systems tend to have a fairly extensive degree of regulation and supervision.

C. The Litigation Defense Fund

63 Although the lab is a mere 30,000 square feet and tends to do little more than contract applied research in anti-malarial devices for the Bill and Melinda Gates Foundation.
The most likely positive role for mass aggregators may be as a Litigation Defense Fund. The patent world is characterized by extensive bargaining.\textsuperscript{64} Of particular relevance to the aggregator scenario, a company faced with an infringement claim may look at its own portfolio to see what patents can be asserted against the entity that is threatening them. In other words, suppose you sue me for patent infringement. If I have an extensive patent portfolio and can threaten to assert them against your products, you may be more willing to settle your infringement claim against me, or we may be able to work out a cross-licensing arrangement. I am much more vulnerable to infringement suits, both ones that strong and ones that are weak, if I do not have appropriate patents to bargain with.

Wouldn’t it be nice if one could find precisely the patent one needs at the just the right moment? Mass aggregators seem to be organized to provide exactly that service. Recall for example, the Verizon scenario described above, in which Verizon purchased patents from the Intellectual Ventures portfolio to assert against TiVO as a counterclaim in TiVo’s infringement litigation against Verizon.\textsuperscript{65} This is reminiscent of the Just-In-Time inventory strategy, in which materials are purchased and products are made only as they are actually needed to meet customer orders.

One can think of mass aggregators as allowing Just-In-Time Patenting. When a company is sued for infringement or must enter into a negotiation to acquire rights from another entity, the company can shop for and acquire precisely the patents that could

\textsuperscript{64} For an extensive discussion of bargaining in the world of patents, see ROBIN FELDMAN, RETHINKING PATENT RIGHTS (forthcoming Harvard University Press) (arguing that patents do not grant clear, definitive rights but rather serve as the beginning of the bargaining over the contours of those rights).

\textsuperscript{65} See discussion at text accompanying note Error! Bookmark not defined., supra.
present a counter threat to the opposing party. When the litigation is complete, the patent can be returned. This type of strategy could ensure that a company has the comfortable freedom to operate without worrying about patent suits that are the scourge of the modern patent world.

In addition to the Verizon example, several other companies have successfully used this tactic to mitigate lawsuits brought against them. Hewlett Packard, for example, filed an infringement suit against Acer in March 2007. Acer, a Taiwanese company, subsequently bought several patents from a Taiwanese research organization, and then asserted the patents in a countersuit against HP. The lawsuit was settled by mid-2008.

Similarly, Samsung defended itself in a patent infringement case by buying patents and then using them in a countersuit against Matsushita. Over the course of the litigation, Samsung also filed counterclaims related to patents that it had previously obtained from a German government agency.

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71 See, USPTO Assignment history for ‘209 patent at http://assignments.uspto.gov/assignments/?db=pat (search in “patent number” field for U.S. No. Patent “5181209,” which was purchased from the German aerospace research center now known as Deutsches Zentrum für Luft- und Raumfahrt e.V.).
It would be difficult to overestimate the value of having an effective response to the problem of modern patent litigation. It is tremendously challenging, if not impossible, to determine whether an asserted patent is valid and whether it applies to the product it is being asserted against. Patent litigation is lengthy and expensive, and it is tough to predict the outcome of any individual case. When a company is sued for infringement, the rational choice may be to pay the person bringing the claim, even if the claim is quite weak. If a settlement cannot be reached, a company must slog through years of exhausting litigation that can drain the company’s finances, distract the company’s executives, and generate negative publicity. The ability to acquire the perfect weapon, tailored to a particular patent litigation, just at the time it is needed would be of great value to modern companies.

Mass aggregators may offer a secondary function that can also help with litigation woes. Just-in-Time Patenting will not necessarily help in fending off trolls. Trolls, by definition, are non-practicing entities. Thus, trolls do not have any products that might be vulnerable to threats from other patents. There may be complicated strategies, in which patents can be used through third parties to interfere with a particular troll’s activities, but in general, Just-in-Time patenting is not a troll solution.

Mass aggregators, however, can impede troll activities in other ways. Large patent pools with vast capital resources can deal with trolls by sopping up their potential patent inventory when it appears on the market. In other words, an aggregator on behalf of its subscriber operating companies may compete with trolls by buying up patents that could possibly used against any of them if they appear in an open market. The companies still incur costs to respond to the troll problem, but it may be cheaper to buy patents than to
buy off trolls, and it is certainly less distracting and aggravating for company executives. In addition, the anti-troll patent acquisition activity is outsourced to a third party – the mass aggregator – who may gain experience as a repeat player in the market for patent monetization, allowing the company to focus on its core activity of production.

Similarly, the aggregator may simply approach a non-practicing entity that has already sued or threatened to sue members of the aggregator’s anti-troll club and simply buy the patent and or secure licenses. This process may provide settlement for the operating company members at lower cost than they would spend litigating (and settling) individual lawsuits, although one could question whether it constitutes horizontal collusion by competitors.

This process may also be good for the aggregator’s business. When the non-practicing entity has also sued companies who are not members of the aggregator, the aggregator may also purchase additional licenses or make other arrangements with the non-practicing entity that make “joining the club” attractive for the non-member operating companies. Of course, this process does not really break the non-practicing entity’s business model, and in some sense provides it with greater certainty of an ultimate deal, albeit possibly at a lower profit.

This particular anti-troll approach also has a pleasant side effect. As the aggregator amasses patents, those patents can be used as a hammer to bash competitors who haven’t joined the club, and the income can be used to defray the costs of acquisition.

Intellectual Ventures has taken a particularly forward-looking approach to the activity. By signing up universities, research labs, and inventors, Intellectual Ventures
has optioned future patentable ideas prior to their conception. In other words, they are not just swatting the pesky mosquitoes; they are actually draining the swamp. Of course, this analogy assumes that “the swamp,” also known as a “biologically diverse wetland,” is a bad thing that all parties agree should be drained, filled in, paved over, and forgotten.

This value of this litigation defense and anti-troll activity may explain why some of the largest market incumbent technology companies are listed as early investors and participants in mass aggregators. These companies may find the possibility of a defense fund tantalizingly appealing, even if they would be more reluctant to join troll-like activity. In addition, the pressure of joining a mass aggregator becomes greater across time. As your fellow technology companies sign up, it becomes harder to resist, even if it falls outside of corporate policies or the goals to which one might otherwise aspire. Business is a form of communication, and market actors tend to replicate the behavior of others.

If the model works well enough, it could become more than Just-In-Time patenting. Over time, a company may not have to do much more than rattle the defensive sword against a competitor. The largest market incumbents presumably have the greatest potential access to the Just-in-Time patents. When one has an insurmountable weapon, there is no need to use the weapon.72 In this context, as companies demonstrate that they have access to any sort of patent for use against any sort of company via access to a pool,
the amount of producer v. producer patent litigation could potentially be reduced as prospective litigants contemplate the potential impact of a new, unknown weapon that the well-heeled market incumbent could assert against them by virtue of its platinum club card. Thus, participating in a patent mass aggregator becomes a form of insurance. One may never need it, but it is there if necessary. Like any doomsday device, however, it needs to be advertised and concretized with strategic demonstrations of its potential power.73

Finally, in thinking about the troll activity that mass aggregators could potentially counter, one must be careful that the cure is not worse than the disease. As patent scholars Meurer and Bessen point out in their book, troll activity accounts for only a small part of the costs of the patent system. If the potential harms from this anti-troll approach are too great, the solution could be worse than the problem. We will turn to considering the potential harms from mass aggregation activity.

III. Potential Harms

If the patent system worked efficiently, one might be able to anticipate and measure the types of positive effects described above. The patent world, however, is far from perfect. In fact the same market imperfections that fuel the trolling phenomenon are likely to prevent the market for patent monetization from offering the positive effects

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73 See, e.g., Stanley Kubrick, Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb, (Columbia Pictures, 1964). (The problem with the Soviet “doomsday device” was that they had not told the Americans they had developed it.)
contemplated and to create harm instead. The aspects of the patent system that ensure high transaction costs, encourage nuisance litigation, and create incentives for inefficient behaviors will carry over to the new patent system with the addition of aggregators.

The overarching problem is that it is difficult, if not impossible, to get a quick and inexpensive answer in a patent dispute. Given the difficulty of translating the abstract language of a patent from one context to another, the lack of predictability in patent decisions, and other uncertainties in patent law, it is difficult to tell whether a particular patent claim will be upheld and whether a particular product will be found to infringe a given claim. No matter what the trial court decides, litigants have fairly good chances that the Court of Appeals for the Federal Circuit may find differently. The cost of finding an answer to the question is quite high in terms of both dollars and time. Patent litigation is lengthy and expensive, so the cost of testing whether a particular threat of infringement has merit will be high. The cost is so high, in fact, that testing a threat can easily exceed the cost of settlement, and parties may rationally choose to pay a complainant even when the claims seem quite weak.

In calculating the potential costs of litigating an infringement claim, a company must also include the risk that damages will be assessed. Current doctrines on measuring damages from patent infringement can result in awards that have a devastating impact on a company. Suppose a company makes a complicated, multi-component product. If one component of the company’s product is found to infringe someone else’s patent, the damages may far exceed the value of that component to the overall product. The greatest risk from an infringement suit, however, is that the company’s product will simply shut down. Although the Supreme Court recently ruled that patent holders are not
automatically entitled to an injunction after proving that someone is infringing the patent, nevertheless, injunctions are still frequently granted. Having to shut down the entire product could be devastating, even if the product could eventually be reconfigured to avoid infringing. In short, the problem is not just the high costs of getting an answer but also the risks associated with getting an adverse answer. These are not bets that the typical commercial actor wants to accept, who may therefore want to make the problem go away by settlement.

Such tremendously high transaction costs have the effect of incentivizing suboptimal behavior from all actors. For example, patent holders have an incentive to assert marginal patents in the hopes of getting the company to settle for an amount less than it would cost the company to litigate. With insufficient validity and valuation information, some patent asserting valid patents that are being infringed may seek damages far in excess of the patent’s value. Conversely, operating companies have an incentive to utilize the power that comes from their ability to employ better legal counsel in these complex interactions, even when the operating companies suspect that they are infringing a valid patent.

Even perfectly honest and diligent operating companies are caught in the maelstrom. With the millions of active patents on record, each of which may have dozens or even thousands of claims, combined with the difficulty of knowing how they will be interpreted, it is impossible to know with certainty that one’s product will not infringe anyone’s patent claims.
In short, the patent system is plagued by a vast supply of patents, many of which may be quite weak. The present system for granting patents does not overtly consider the overall patent supply in a given technical area in granting new patents. In addition, regardless of whether the patent is weak or strong, the range of each patent cannot be determined without a large investment of time and effort, and any pre-litigation predictions about the scope of a patent may prove incredibly wrong.

Mass aggregation will not alter the high transaction costs of obtaining an answer within the system, the vast supply of patents, or the incentive structures of the parties involved. These characteristics will persist regardless of whether the patent holder is an original inventor, a traditional troll, or a mass aggregator.

One can think of mass aggregation as the patent system on speed. More bargaining and swordplay will take place among a company producing products, its competitors, and non-practicing patent holders, but some of the parties involved in this gamesmanship will be larger and have more sophisticated weaponry. Trolling activity will occur, but it will be carried out more often and by larger trolling entities. Without changing the basic incentive structures of the patent system, mass aggregation will be no better than the current patent system at rewarding the deserving inventor and greasing the wheels of innovation while protecting diligent producing companies.

\footnote{The technical distance between issued patent claims in crowded fields may be lessened, leading to patents with narrower claims, but the Patent Office has yet to declare that it is even difficult to obtain a new patent in any given area, and no one has demonstrated that new patents in crowded areas are difficult to obtain. The patent prosecution system essentially functions as a bargaining process between the Patent Office and its “customers,” the patent applicants.}
If mass aggregation were merely no better than the current system, one might not be too concerned over about its appearance. Unfortunately however, while mass aggregators are likely to create harms to innovation as a whole.

A. A Tax on Production

In our vastly imperfect patent system in which transaction costs are substantial, information is difficult to obtain and is asymmetrically distributed, and the cost of testing the validity of a patent may be quite high, mass aggregators will be able to extract value through patents regardless of the strength of the patents they are asserting. The value ultimately would have to come through payments from manufacturers of current products, and the process would serve as a tax on current products.

Such a tax on current on production may serve to decrease future production and or operate as a cost passed on to consumers. When costs of production increase, potential manufacturers must factor that cost into the decision of whether to produce. As the price point for rational production rises, fewer products will cross the threshold at which it is worth introducing the product.

From another perspective, the tax on production also could end up reducing R&D. Although tracing spending decisions in a single firm is complex, at a very simple level, a company that must spend more on current production costs will have less to spend on
research and development of new products. Many companies have historically funded their R&D from the same source that pays the company’s licenses.\textsuperscript{75}

From either perspective, a tax on production is likely to have the effect of reducing genuine product innovation. Thus, the products and services that are being created with the introduction of the market for patent monetization may not be ones that society wishes to encourage.

B. Opportunities for Anticompetitive Conduct

Certain characteristics of the market for patent monetization make it an excellent vehicle for anticompetitive conduct. The market for patent monetization itself may never be truly competitive. For example, the market for patent monetization may have first mover advantages. As many scholars have noted, larger groupings of patents may be more useful than smaller groupings or individual patents.\textsuperscript{76} With mass aggregation, early players in the field may become large enough to ensure success before others enter the market, not because the early players are better at evaluating patents and choosing good ones, but because of their sheer size combined with tactics used to intimidate. This phenomenon could create entry barriers such that those who come later will never be able to compete on even terms.\textsuperscript{77}

\textsuperscript{75} This has led to what is sometimes known as “the two-dollar swing.” For every royalty dollar exchanged from between a company and a competitor, a two-dollar differential is created between them if inbound and outbound licensing fees are tied to R&D funding.

\textsuperscript{76} See Peter N. Detkin, 6 J. Marshall Rev. Intell. Prop. L. 636, 641 (2007);

\textsuperscript{77} Patents are goods somewhat like fine art. It is for similar reasons that the Getty Museum announced early on that it would stick to acquisition in certain key areas and would provide grants and subsidies to
Antitrust law established some time ago that being big is not bad, in and of itself. Certain tactics, however, are troubling when taken by those who have the power to hurt consumer welfare in a particular market by adversely affect prices, quantities, qualities, or varieties of goods and services that are currently or potentially available. In other words, big is not bad; it is what you do with your girth that matters. If entry barriers do exist, early entrants into the mass aggregation game may have the girth and the tactics that would raise antitrust concerns.

We note, as an initial point, that the extensive ties among the various mass aggregators should raise questions and concerns about horizontal collusion. The complexity and opaque nature of the corporate structures make it extremely difficult to track the interactions and connect the dots.

For example, consider the scenario suggested above in which the mass aggregator negotiates a license from a troublesome troll on behalf of its members. Under certain circumstances, one might consider this to be an example of horizontal collusion in which competitor producing companies join together to force a lower price from a supplier.

In the largely unregulated environment of this early market, there do seem to be opportunities for horizontal interactions that could raise questions about anticompetitive behavior. For example, one investor in mass aggregators reported interesting interactions between two aggregators, Acacia and RPX.

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79 See email from investor on file with authors. The investor reports that the

other museums. Otherwise, the best art would always be acquired by the Getty given the size of its endowment.
have a monthly call in which Acacia describes the producers they are in the process of targeting and the patents they will assert against the producers. Acacia then names a price for the patents in question, and RPX purchases the patents if it wishes.

Conceivably, the interactions could constitute nothing more than innocent, periodic sales. On the other hand, the interactions could constitute horizontal collusion. This emerging market environment is reminiscent of the Wild West, in which the early settlers created and enforced their own norms, and there was little scrutiny or law enforcement from sovereign entities.

D. Raising Rivals’ Costs

The current market for patent monetization offers other opportunities for anticompetitive behavior. For example, wouldn’t it be nice if you could create a tax on production for your competitor while keeping your own costs low? The market for patent monetization may be a good vehicle for that. Characteristics such as entry barriers to keep new entrants out, the inability to quickly resolve issues of patent validity and application, as well as the extensive bargaining inherent in the patent system provide ample opportunities for using the market for patent monetization to raise rivals’ costs. A tax on production is even more troubling when administered through a market concentrated in the hands of a few actors.

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Consider the recent lament of Google’s chief legal officer, David Drummond. Google introduced a smartphone operating system called Android to compete with Apple’s iPhone and smartphone devices that use Microsoft’s Windows system. As sales of Android increased, Apple and Microsoft joined a coalition of companies to purchase a set of patents from recently acquired Novell. Apple and Microsoft then teamed up in a second coalition to purchase a large set of telecommunications patents at auction from recently bankrupt Nortel Networks. Drummond complained that the group entered the Nortel auction, sending the bidding far above expected value, in order to prevent Google from purchasing the patents and to assert those patents against makers of Google’s Android phone in an effort to raise the cost of the phone. As Drummond commented so colorfully, “Microsoft and Apple have always been at each other’s throats, so when they get in bed together you have to start wondering what’s going on.”

The Justice Department, expressing concerns over the competitive effects of the group’s purchase of the Novell patents, insisted on certain requirements, including that 1) Microsoft sell back the Novell patents and maintain only a license; and 2) all of the patents acquired must be available for open source licensing. These requirements are

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82 Drummond, supra note 81.
cold comfort to Google, which is still subject to efforts by members of the group to assert the Nortel patents acquired in various ways against makers of Android phones.84

Concerns about the possibility of raising rivals’ costs is particularly troubling in light of the privateering behavior that is prominent for most of the mass aggregators. Tom Ewing has described extensively how privateering through third parties can be used to damage one’s competitors or advance one’s competitive position through a variety of techniques. These include privateering activities that bring patent lawsuits aimed at scaring off a competitor’s customers and suppliers; patent suits timed to lower the stock price before an initial public offering or a merger so that the potential investor buys the stock for less, and privateering activity in a particular nascent field, which is designed to distract young management and drive risk capital towards particular companies.85 If particular mass aggregators accumulate sufficient power, then those who are “in the gang” have a tremendously powerful club that could be used for anticompetitive activity.

The purchase of the Novell and Nortel patents has focused attention on activities in the smartphone sector. In general, however, purchasing patents to assert against a competitor, either directly or through third-party proxies, in an effort to raise the


competitor’s costs is a type of behavior that can be difficult to detect and even harder to deter. A targeted competitor could try to assert private antitrust claims or claims of patent misuse. Current doctrinal trends in both areas, however, make these claims difficult to pursue. The Federal Circuit is hostile to claims of patent misuse and rarely finds such claims to be valid. Antitrust claims are even more difficult to pursue. In general, one has a right to petition the government, even if the successful petition would have an anticompetitive impact, and the definition of government include includes a petition to a court. There is an exception in which one can base an antitrust claim on court filings that constitute sham litigation. This requires a finding that from both an objective and subjective perspective, the claim filed was a sham. Given the uncertainties in patent interpretation, however, it is extremely difficult to establish that assertion of a patent against a product is a sham, particularly given the high burden of proof that some courts

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86 Particular to smartphones, patents that are essential to communication standards have been subject to high antitrust scrutiny. Members of standards bodies are required to license their patents on Fair Reasonable and Non-Discriminatory (FRAND) terms. However, due to the massive number of patents held by different members and the effect of cross-licensing on license rates, it is nearly impossible to find similarly-situated licensees in order to determine whether offered license rates are anti-competitive. Qualcomm v. Broadcom is a singular case finding an antitrust violation because the licensor had blatantly offered reduced license rates for standard-essential patents to customers.

87 See, e.g., Robin C. Feldman, The Insufficiency of Antitrust Analysis for Patent Misuse, 55 HASTINGS L.J. 399 (2003) (arguing the fundamental limitation of antitrust analysis to evaluate abusive licensing practices). The Federal Circuit most recently re-affirmed the strict limits of the patent misuse doctrine in Princo Corp. v. ITC, 616 F.3d 1318, 1329 (Fed. Cir. 2010) (“Recognizing the narrow scope of the doctrine, we have emphasized that the defense of patent misuse is not available to a presumptive infringer simply because a patentee engages in some kind of wrongful commercial conduct, even conduct that may have anticompetitive effects.”).

88 FELDMAN, supra note 64, at Chapter 5.


have required in sham litigation cases. In sum, it is tremendously difficult to succeed in a private antitrust claim.\footnote{FELDMAN, supra note 64, at Chapter 5.}

Competition authorities, such as the Federal Trade Commission, the Department of Justice, and state antitrust agencies might choose to file antitrust claims. These tend to be slow moving processes, however, and these agencies would face the same hurdles as private antitrust claimants. By the time the competition authorities detect the behavior, and the courts understand it enough to make room in the doctrines, early movers may have reaped gathered their rewards and moved on to other tactics. In short, the type of tactics available to mass aggregators, given characteristics of patents and the structure of the market for patent monetization may raise troubling concerns of anticompetitive effects.

A. Odd characteristics of the inputs supplying the market

In addition to harm from a tax on current production and opportunities for anticompetitive conduct, the new market for patent monetization has other characteristics that raise the specter of harm to innovation and innovation industries. Consider first the odd characteristics of the inputs that are supplying the market for patent monetization.

One can think of mass aggregators as any other type of market producer. Aggregators have a product to sell, and they must purchase inputs to create the product. In this case, the sole raw materials are patents and patent applications.
Purchasing patents as raw inputs for something other than a manufactured product differs from the traditional assumptions about the role of patents in the economy.\footnote{Of course, some historical inventors such as the Wright Brothers were primarily interested in licensing their patents rather than making products, but such inventors were outliers.} The primary role of patents is to allow an inventor or the inventor’s licensee to have market space for bringing a new product to market from the invention by excluding others from making, using, or selling the invention. As described above, however, aggregators make almost no effort themselves to cross the divide from patent to product.

Patents are also created or acquired for defensive purposes. Once a company secures patent rights to an invention, that company frequently tries to patent possible variants of the invention, to keep competitors from making a close substitute for the product.\footnote{This is called “defensive patenting”, in which patent continuations (procedural revisions of patent applications) are used to create new claims for different variants. For a discussion of use of defensive patents as bargaining chips in cross-licensing, see William E. Kovacic, \textit{Intellectual Property Policy and Competition Policy}, 66 N.Y.U. ANN. SURV. AM. L. 421 (2011).} Patents also flow out of R&D activity as academic institutions or commercial R&D departments search for innovations, patent them, and then put them aside, hoping to find a licensee who will develop the product or to turn to them when the company is ready to pursue new products.

Once inventions have been created and patented, they traditionally change hands for a limited set of reasons, most of them related to product development. Companies producing a product may acquire patents or license them to create what is known as “freedom to operate”, that is the ability to produce a product without concerns of infringement suits.\footnote{Analysis of freedom to operate is complicated by the sheer volume of issued patents as well as the possibility of overlapping rights, termed by Carl Shapiro as a “patent thicket.” See Carl Shapiro, \textit{Navigating}} Along these lines, patents may also be acquired to create a robust
portfolio so that competitors who might be tempted to file an infringement claim will be deterred or rebuffed by the number of patents that the company can threaten in return. Companies also find themselves with a varied patent portfolio through mergers and acquisitions, which may bring patents that range far from the company’s core products.

Thus, the patents that are now being acquired as inputs for mass aggregators traditionally have been created and exchanged for other reasons, if at all. Whether patented offensively or defensively, inventions have typically been created and acquired either in hopes of creating a commercial product or for reasons closely related to a commercial product. These inputs, very few of which would ever generate revenue, are now being monetized and traded independent of underlying products.

In the words of the patent system, we are finding a “new use” for these old products as inputs for the mass aggregator product. The new use, however, is not necessarily a good use, from society’s perspective, although it might potentially generate huge returns for certain investors and early adopters.

C. Odd Characteristics of the Business

Although there are many ways to conceptualize the product that mass aggregators offer, consider the following perspective: What is the mechanism by which mass aggregators expect to generate income to share with their investors? Some investors

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95 We note that small trolls were already altering the uses of patents many years ago.
receive the benefit of being able to use the portfolio as a shield from infringement 
litigation, but not all investors need this particular benefit. Investors such as the William 
& Flora Hewlett Charitable Foundation and the World Bank, for example, are unlikely to 
worry much about patent infringement lawsuits. All investors, however, are promised a 
share of the profits from the mass aggregator’s core business. That business involves 
gaining a return by monetizing patents.

In order to gain a direct return from monetizing patents, the return must be 
collected from revenues on existing manufactured products. Someone, someplace has to 
make something that is at least sort of like the patented invention. There is simply no 
other way to make a penny from a patent. \(^{96}\) In other words, the aggregator’s level of 
return depends on how successful it is at extracting value from existing products. In a 
world of perfect information (especially regarding valuation), low transaction costs, and a 
smoothly functioning patent system, one might have fewer concerns about any negative 
effects on the innovation system. Aggregators would simply play the role of ensuring 
that the proper value is shared with the proper inventor, an activity that might well 
stimulate future innovation. \(^{97}\)

In the real world of patents, however, the picture is quite different. As described 
above, the system is not structured to filter out or even retard weak or misapplied 
patents, \(^{98}\) and the costs and risks of litigating an infringement suit may far exceed the 
costs of paying off a claimant. Thus, the result of having a market for patent monetization

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\(^{96}\) A technology license and/or know how would be a different matter.

\(^{97}\) Although even in a perfect system, one would presumably want to balance the royalties that are going to 
old technology (up to 26 years old) as opposed to rewards/royalties going to newer technologies.

\(^{98}\) E.g., patents that are valid but just misapplied against a given licensing target.
is not simply that the forgotten inventor triumphs; patents are monetized regardless of whether they are strong or weak.  

To put it bluntly, the successful aggregator is likely the one that frightens the greatest number of companies in the most terrifying way. In fact, a potentially successful approach might be to use a large number of patents of questionable value acquired cheaply and mixed in with a handful of strong ones. When the aggregator knocks on the door, manufacturers may capitulate simply because the aggregator is the biggest, baddest guy on the block.

This may not be the type of market that society wishes to encourage. At the very least, society might want to curtail certain behaviors, if not forbid them altogether. How can one do this, however, without causing even greater harms to the innovation system? How does one water the garden so that only the beneficial plants grow while the weeds whither?

E. Economic Stability

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99 Indeed, one of the benefits of the aggregator model is that it achieves the scale of the licensing operations of the large operating companies, such as IBM, where at least a few patents from a portfolio of 30,000 active patents is almost certain to be at least arguably infringed by any licensing target—and there are few reasons why the prospective licensee should review the 30,000 active patents and develop strategies for arguing invalidity and/or non-infringement—which is precisely the game played by operating companies when approached by a small portfolio comprising just a few patents.

100 This approach, of course, arguably mimics the approach target for a generation by the large operating companies in conducting their licensing operations. This is precisely the reason behind legendary licensing procedures such as the ruler metric in which each side literally measures its stack of patents against the other side’s stack.

101 A process frequently described at IP symposiums as “a value proposition.”
Although the possibilities are more remote, one should also consider the potential negative effects for the broader economy. Patents are linked to innovation in general, which is likely to affect all sectors. Thus, the effects of the market for patent monetization could be felt broadly across the economy.

One reference point could be the dot.com crash of the early 2000s, which had a negative impact on the economy as a whole.102 The run-up to the dot.com crash featured large amounts of capital flowing into early stage and speculative technology companies, mostly related to the Internet. Many of the companies had yet to develop a product or to turn a profit; this was the era of “vaporware”, in which companies could receive funding, go public, and sell products on little more than the promise of what they might be able to develop. Everyone agreed that some companies would surely strike it rich in the Internet game, and investors were willing to bid up prices on shares of entities with little proven value in the hopes that some of them would prove to be gold. The “irrational exuberance” that drove investment to a frenzied level eventually burst, creating a recession in the technology industry with ripple effects across the broader economy.103

Not all of the companies that failed that during the technology crash were weaklings. Many of these companies had good business models, and the myriad of ways

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102 Roger Lowenstein thoroughly examines the fervor that led to the crash in ROGER LOWENSTEIN, ORIGINS OF THE CRASH: THE GREAT BUBBLE AND IT’S UNDOING, PENGUIN (2004). Discussing the cavalier attitude of analysis and use of the rising market as a benchmark for investment, Lowenstein offers the following quote from Morgan Stanley’s Mary Meeker: “We have only one response to the word ‘valuation’ these days: ’Bull Market.’” Id. at 111.

in which the Internet could be utilized offered legitimate opportunities for economic exploitation. Others have successfully resurrected the business models for certain companies that failed when the technology bubble burst in subsequent years. Nevertheless, the sector could not absorb all the capital that was being thrown at it indiscriminately, and this, among other problems, led to the crash.

Although there are certainly differences between the emergence of the market for patent monetization and the run-up to the 2002 technology crash, the similarities are interesting. Most patents traditionally have proven to have little value. The promise of a new use for this intangible and abstract asset is already driving up prices for patents and could conceivably move prices above a rational level. This is particularly true given the venture capital like returns being promised to some investors, returns that are difficult to duplicate elsewhere in the current economy. One might reasonably wonder how much capital can be absorbed into the market for intellectual property rights over a period of time without the investment activity itself causing a local economic deformation.

Specifically, if prices are driven to an irrationally high level, there could easily be a correction, one whose trajectory might be as steep as the run-up. With a sector crash, less aggressive aggregators could fail along with more aggressive ones, and publicly traded aggregators could fail along with the private ones.

Normally, if some people are foolish enough to bid prices up to an irrational level, society would be unconcerned when those investments fail. We may care more, however, if the crash is such that it impacts the economy as a whole or impairs our ability to innovate in an economy largely based on innovation. The government would allow
Border’s Books to fail, for example, but would be more concerned with a threat of extensive bank failures.

Although the chances of a wild patent ride followed by a broad economic crash are remote, the scenario is worth contemplating, nevertheless. To the extent that patents affect all sectors of the economy, one should be mindful of potentially destabilizing events.

F. “To Serve Man”\textsuperscript{104}

Mass aggregator activity may have additional effects that will reduce or delay the benefits of innovation. In particular, the value proposition put to inventors from 300 universities worldwide and presumably a comparable number of independent inventors may have been something along the lines that this process would facilitate the commercial development of their inventions. But there is a stark difference between just patenting an invention and building a technical prototype, developing related know how, and creating a market for the invention. To obtain a patent one does not need to have a working product. Indeed, a genuinely working product could be years away. For example, Chester Carlson’s patented experimented with copying machines from 1936 until the first commercially successful Xerox machine was produced in the early 1950s. His experience provides a cautionary example of the difference between a patent and

\textsuperscript{104} Damon Knight, “To Serve Man,” (1950); immortalized as a Twilight Zone episode in 1962; \url{http://www.youtube.com/watch?v=m5tcg00Ujqw}. 
working product.\textsuperscript{105} Funding an aggregator at best funds the Chester Carlson’s of the world in 1936 and not the Haloid Xerox Company of the 1950s. Chester Carlson’s work on developing a photocopier would have likely stopped once the aggregator purchased his first few patents. The aggregator would then wait for someone else to take up the ideas later and then request royalties. If Chester Carlson turns out to be the truly lone pioneer, then a practical photocopier will not be produced, at least not on any sort of speedy timeframe.

The situation of dropped invention has already happened before. The Fax machine, which was all the rage in the ‘80s and ‘90s was invented in the 1881 but then largely dropped with the exception of improvements for the transmission of photographs by news agencies.\textsuperscript{106} Even if a Chester Carlson sells his first patent to an aggregator and continues working, his further work will not be guided by the real world fits and starts associated with an early prototype and early commercial activity but will much more likely comprise blue sky thought experiments disconnected from the real world.

It is possible, of course, that buying up all the early Chester Carlson patents will encourage new Chester Carlson’s. For this to happen, however, Chester Carlson will have to believe that he got a good deal in selling his patents to the mass aggregator. While he might appreciate the cash that he was paid for the patents, Chester like many

\textsuperscript{105} Carlson’s first patent US Patent 2,221,776 claimed priority from an application filed in 1937. This initial patent was followed up by some 40 other patentable inventions over nearly a 35-year period by Carlson alone – apart from the additional inventive contributions made by Xerox employees working to elaborate Carlson’s initial inventive vision.

\textsuperscript{106} US Patent 2,292,387 to Hedy Lamarr and George Antheil which reported the invention of spread spectrum communication and frequency hopping had nearly expired as a patent before the US Navy began preliminary work in developing a prototype. Lamarr and Antheil never sought to create a company around their invention, and the inaction resembled that of a patent aggregator. This communications technique underlies all modern communications techniques, however.
inventors, probably wants to see his technology developed. Society’s interests would parallel Chester’s in this regard. Innovations that are delayed or never produced can create little benefit for society. The imperfections of the patent system suggest that many of these patents would not have made it to market. Some percentage of those, however, would have stayed in someone’s drawer and had little effect on the system at all, other than complicating patent searches. With mass aggregators, the products go into the drawer and the patents are used against current producers who might otherwise have continued on their way unimpeded.

If the inventors who have sold to a modern mass aggregator had aspirations that the aggregator would facilitate the commercial exploitation of their inventions, they are likely to be sadly mistaken. The largest of the mass aggregators, Intellectual Ventures, has built only one prototype from all the inventions that it has purchased, and this one prototype was for an improved nuclear reactor that was co-invented by the company’s founder Nathan Myhrvold.

Thus, while aggregators may defend their activities on the grounds that they are promoting innovation and the great rewards that society will receive through new products, the reality may be that many fewer inventions ever become products. For inventors who hope that that mass aggregators will turn their patents into real products and the world will finally appreciate their innovations, the scenario is somewhat reminiscent of an old Twilight zone episode entitled, “To Serve Man.” In the episode, friendly aliens arrive and offer humanity a panacea from all the woes that beset them. The aliens even take some lucky humans back to their home planet who are so happy that
they never return. Only later does humanity discover that the aliens’ book “To Serve Man” is not a gospel of benevolent duty but a cookbook.

G. Ancillary Implications

In addition to the economic concerns raised above, the accumulation of power may be troubling in light of the potential for mischief in ancillary avenues. For example, in March of 2011, a company called Mission Abstract Data LLC sued a large number of defendants in the radio industry from different parts of the country for patent infringement.\[107\] Intellectual Ventures previously owned the underlying patents, and the pathway from Intellectual Ventures to Mission Abstract Data’s present owner Digimedia Holdings LLC is unclear.

The litigation is in early stages and very little information is available. The action of suing a large number of outlets in an area of the media, however, sparked our imagination. We offer the following scenario as a hypothetical and note that there is no indication of such intent on the part of any of the companies.

Imagine a mass aggregator that is unhappy with the press coverage it is receiving or would like to encourage media support for a particular issue. With this in mind, the mass aggregator sues a large number of players in a particular sector of the media based on patents that the aggregator has recently acquired. When the parties sit down to negotiate, the mass aggregator notes obliquely that, “it is so odd to be on opposite sides

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\[107\] We are able to identify 116 defendants, although many may be related to each other.
of the table when we have so many issues of mutual interest.”108 The conversation could then touch lightly on coverage that would portray the mass aggregator in a better light or political initiatives that the media outlets might be interested in investigating or supporting. Across time as the parties work together on various issues, the settlement costs seem to move into a range that is remarkably comfortable for the media stations.109

Players in the patent world are quite adept at oblique conversations. In many circumstances, a patent holder may wish to demand that a producer pay for a license without taking the risk that the producer will file a declaratory judgment action to have the patent invalidated. Declaratory Judgment actions can only be filed if there is a sufficient threat of litigation.110 To avoid crossing the threshold, patent holders may send correspondence referring to areas of mutual interest or issues that might be worth pursuing. This has been described as the Dance of the Sugar Plum Letter,111 and the media scenario above is simply a variation on the theme.

The type of behavior suggested in the media hypothetical would be quite difficult to identify or to address. The hypothetical is a reminder that massive power can be troubling, not just for its potential economic effects, but for its potential effects in other dimensions as well.

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108 This lawsuit ironically came to light about the same time that National Public Radio, not a party to the lawsuit, produced a program called “When Patents Attack,” that was highly critical of Intellectual Ventures.
109 One could imagine an alternative scenario in which a new line of business as an “influence peddler.” An aggregator sues X number of media outlets for patent infringement. As a settlement, the aggregator then seeks some defined measure of editorial control. Having obtained a slice of editorial control over a huge swath of the media, the aggregator then sells this editorial control (or slices of it) to the highest bidder.
111 See FELDMAN, supra note 64, at Chapter 2.
III. A Few Observations

The market for monetized patents, which has been created through patent aggregators, should be understood as a massive, rapidly growing, and essentially unregulated market. It has grown up quietly, remaining under the radar as early entrants have garnered power and strength. Like any market, however, it should be monitored and regulated, with sovereign entities giving some thought to whether aspects of the market should be encouraged, tolerated, deterred, or outright forbidden.

A. Regulatory Oversight

Competition authorities, such as the Federal Trade Commission and the Department of Justice, are in the best position to address the activities of mass aggregators and the market for patent monetization. Establishing the rules for this market, however, will require a certain amount of reorientation in the conceptualization of innovation markets.

The most natural FTC/DOJ regulatory structures for analyzing the activities of mass aggregators are those in the context of licensing and acquisition activity.112

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licensing, the Agencies follow a set of basic principles that are applies to intellectual property licensing in general. These principles are that intellectual property is comparable to any other form of property and standard antitrust analysis applies, that intellectual property is not presumed to create market power, and that intellectual property licensing is generally procompetitive.\textsuperscript{113} The Agencies believe that problems arise, however, when a licensing arrangement harms competition among entities that would have been actual or likely competitors in the absence of the arrangement.

In analyzing intellectual property licensing agreements, the Agencies consider three basic markets that can be affected by anticompetitive licensing restrictions: goods markets, technology markets, and innovation markets. Goods markets, of course, are those related to final or intermediate goods and their close substitutes. When rights to intellectual property rights are marketed separately from the products in which they are used, the Agencies use technology markets to analyze competitive effects.\textsuperscript{114} Technology markets consist of the Intellectual Property that is licensed and its close substitutes.

Finally, licensing arrangement may have competitive effects on innovation that cannot be adequately addressed through goods or technology markets. Thus, the Agencies have identified a third type of market, innovation markets, which is defined as the research and development directed to particular new or improved goods or processes.\textsuperscript{115}

\textsuperscript{113} See, Antitrust Licensing, \textit{supra} note 112, at 2.
\textsuperscript{114} \textit{Id.} at 8.
\textsuperscript{115} \textit{Id.} at 10-11.
The Agencies do have particular guidelines for certain types of arrangements that may be relevant to the activities of mass aggregators, including guidelines on cross-licensing, pooling arrangements, and grant backs. Grant backs are licensing arrangements in which the license holder agrees to give the patent holder rights to any improvements on the invention.

In the case of pooling, for example, the guidelines note that exclusion from pooling arrangements can be anticompetitive if a) excluded firms can’t effectively compete in the relevant market and b) pool participants collectively possess market power in the relevant market. Similarly, grant backs may be found anticompetitive if they substantially reduce the licensee’s incentives to engage in research and development. One should note, however, that these concerns are analyzed against a backdrop of the Agencies’ perspective that licensing is generally precompetitive.

In a 2011 report on The Evolving Intellectual Property Marketplace, the Federal Trade Commission took notice of increasing activity by what it called, “patent assertion entities” or “PAEs” in the information technology industry. In particular, the Agency noted the following:

Some argue that PAEs encourage innovation by compensating inventors, but this argument ignores the fact that invention is only the first step in a long process of innovation. Even if PAEs arguably encourage invention, they can deter innovation by raising costs and risks without making a technological contribution.

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116 Id. at 28.
117 Id. at 30.
118 See Evolving Marketplace, supra note 112, at 8.
119 Id. at 9.
The report, however, notes the difficulty in distinguishing patent transactions that harm innovation from those that promote it, and rather than recommending antitrust action proposes various improvements in patent notice and remedies.

Although these are important considerations, a full analysis of the impact of mass aggregators requires identification of a different market. Even when Agencies think about separately marketed intellectual property rights or innovation markets, those categories are grounded in their relationship to a particular product market. Moreover, market power is measured in relationship to that product market.

When patent rights float unmoored from any underlying products on a large-scale, widespread manner such that they are traded and arbitrated, that activity begins to resemble a market of its own. This is the market we have been describing as the market for patent monetization. Viewed from this perspective, an entity could acquire market power in the market for patent monetization without necessarily holding a monopoly in any individual product markets. Considering only product, technology, and innovation markets could miss a fair amount of worrisome activity.

Another way to think about floating patent rights and anticompetitive effects is the following: One may not need a monopoly on patents in a particular product market to create negative effects in that market. Perhaps one simply needs a large enough group of all kinds of patents in combination with tough tactics or even just a reputation for tough tactics.

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120 See, the discussion above about IV and the Ocean Tomo patent auctions, for example.
Moreover, the Agencies may need to reconsider the general principle that licensing is pro-competitive. In the context of a market for intellectual property rights floating separately from invention or production, that general principle may be less applicable. One has to take a much harder look at licensing when it has become such an expansive activity that is separated so far from the activity of introducing new technologies.

The same types of considerations should be used for reorienting the Agencies’ approach to acquisition of intellectual property rights. Section 7 of the Clayton Act requires that certain proposed acquisitions of assets be reported, which is interpreted as including patents. The FTC and DOJ may conduct a preliminary antitrust evaluation and decide whether to take enforcement action.121

Certain transfers of intellectual property rights and transaction that grant an exclusive license are analyzed by applying the principles and standards used to analyze mergers.122 Such transactions may have the effect of removing a participant from the market, in the same manner as a traditional merger would.123

In any merger enforcement action, the Agencies will normally identify one or more relevant markets in which the merger may substantially lessen competition. Such market definitions focus solely on demand substitution factors, which are customers’ ability and willingness to substitute away from one product to another. Again, the

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121 For a description of notice and filing requirements, see http://www.ftc.gov/bc/hsr/introguides/introguides.shtm.
122 Id. at 31.
123 Such transactions may be assessed under §7 of the Clayton Act, §§1 and 2 of the Sherman Act, and §5 of the FTC Act.
traditional Agency focus in this inquiry would be on the market for the products that can be made by the patents that are being purchased, but not on the market for patent monetization itself. Such an inquiry would miss a wealth of potential anticompetitive conduct and consequences.

In short, competition agencies should think about a market composed of floating intellectual property rights as its own market, in order to capture the potential for harm and mischief. Courts also must be willing to understand and approach patent markets in this manner. Although the focus initially may be on patents in this market, it is possible over time it will become clear that the market for all intellectual property rights, including trade secrets and know-how as well as patents, should be considered.

Courts, agencies and government entities must also engage in doctrinal changes that will allow for the curative power of sunshine. As we encountered in trying to track the acquisition and litigation activity of the mass aggregators, many of the current doctrines in corporation and agency law allow aggregators to shield their identities from government view. The targets themselves may be unable to determine who the aggregator is, sometimes even when the parties are in litigation. The less appealing behavior described above is much easier to carry out in secrecy than in the light of day. We should consider changes that will bring such activities to light, making them easier to monitor and evaluate their individual and cumulative effects.

B. Removing the Teeth of the Tiger
We cannot close the article without highlighting the systemic problems giving rise to the phenomenon of mass aggregation. One must keep in mind the peculiar elements that have brought us to the point at which large, respectable companies feel the need to sign onto patent defense funds. These are the same elements that make mass aggregation activity so potentially troubling.

Troll behavior, whether small or aggregated, is fueled by a patent system that lacks a cost-effective method of quickly resolving validity and infringement questions. A copious supply of patents that are only lightly tested at the time of the grant enhances the problem. As long as insufficient information, uncertainty, and high transaction costs reign, troll activity will continue to flourish. We should focus our efforts not only on limiting troubling behavior among mass aggregators but also on making trolling a less lucrative endeavor in the first instance.

**Conclusion**

The patent world is poised to undergo a change of astounding proportions. A system that has operated such that the vast majority of patents bring little or no return is shifting to a system in which a substantial number of patents will become traded and monetized, largely through a system of mass aggregators. The giants among us are undoubtedly changing the patent world. The question that remains is how.

One could argue that mass aggregators could potentially have positive effects. Mass aggregators could ensure that the forgotten inventor receives the compensation due or could serve as a middleman to connect inventors with capital and expertise. Mass
aggregators could also serve as litigation defense funds, providing Just-in-Time patenting and creating a powerful weapon stream that will deter troublesome infringement suits. Mass aggregators may also reduce troll activity by soaking up the supply of monetizable patents. The question, however, is whether the cure is worse than the disease.

In particular, the same market characteristics that have made let to the rise of troll activity are likely to plaque the activities of mass aggregators as well. Without changing the basic incentive structures of the patent system, mass aggregation will be no better than the current patent system at rewarding the deserving inventor and greasing the wheels of innovation while protecting diligent producing companies. Moreover, the activity of mass aggregation brings its own potential harms. Rather than contributing technological innovations, mass aggregators operate as a tax on current production, burdening existing products and potentially reducing future innovation and productivity. In addition, characteristics of the market for patent monetization make it an excellent vehicle for anticompetitive behavior, including horizontal collusion and single firm or multi firm behavior that raises rivals’ costs. Most important, the basic business model of mass aggregation is troubling. The successful aggregator is likely to be the one that frightens the greatest number of companies in the most terrifying way. This may not be an activity that society wants to encourage.

These and other concerns suggest that mass aggregators and the market for patent monetization should not be allowed to flourish unchecked. The burgeoning market must be properly monitored, regulated, and restricted so that the considerable risks associated with this activity may be fully contemplated and cabined.
Appendix A

Universities

- Alabama, University of
- Brigham Young University
- Bristol, University of
- British Columbia, University of
- Brunel University
- California Institute of Technology
- California, the Regents of the University of
- Campinas State University (Brazil)
- City University London
- Clemson University
- Connecticut, University of
- Darmstadt, Technical University of
- Duke University
- Florida Institute Of Technology
- Florida, University of
- Helsinki University of Technology
- Hiroshima University
- Hong Kong University
- Indian Institute of Technology - Bombay
- Manitoba, University of
- Monash University
- New Jersey Institute of Technology
- New Mexico, University of
- New South Wales, University of
- North Carolina at Charlotte, University of
- Oklahoma, University of
- Ottawa, University of
- Oulu, University of
- Polytechnic University
- Ramot at Tel Aviv University
- Rhode Island University
- Rochester Institute Of Technology
- Rochester, University of
- Rutgers University
- Singapore, National University of
- Southern Mississippi, University of
- Stevens Institute Of Technology
- Stirling, University Of
- Strathclyde, University of
- Texas, University System, the Board Of Regents
- University of California San Diego
- Western Sydney, University of
- Westminster, University of