UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Economic Rationales for Patents in the Current Context

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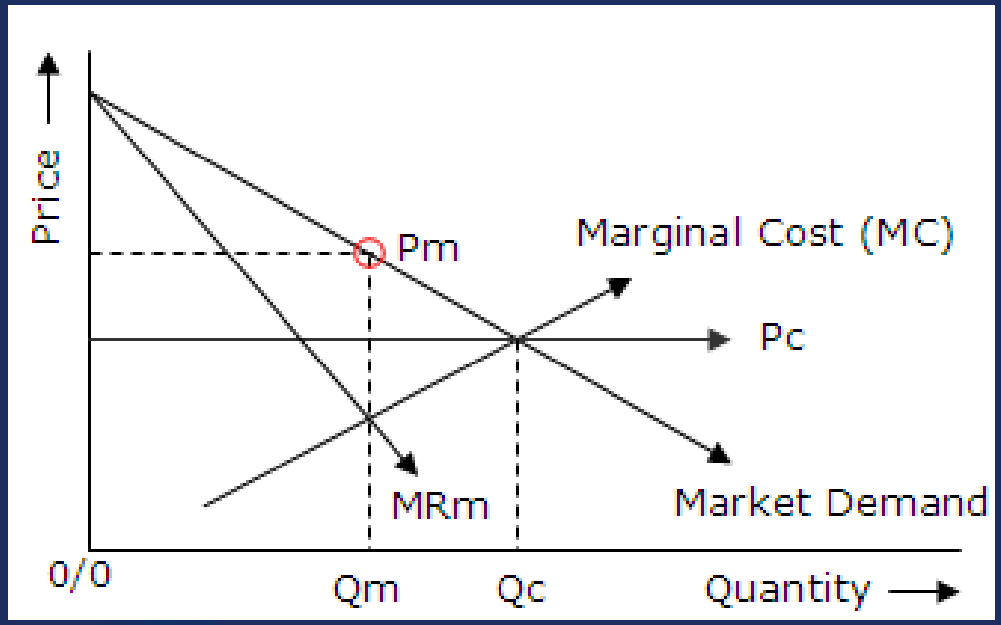
Outline

- Ex Ante (Traditional) Patent Rationales
- Ex Post Patent Rationales
  - Coordination Value
  - Signaling
  - Monetization Value
- Private Ordering
  - Standards
  - Patent Pools
  - Non-Traditional Licensing
  - Patent Pledges

Traditional Ex Ante Justifications

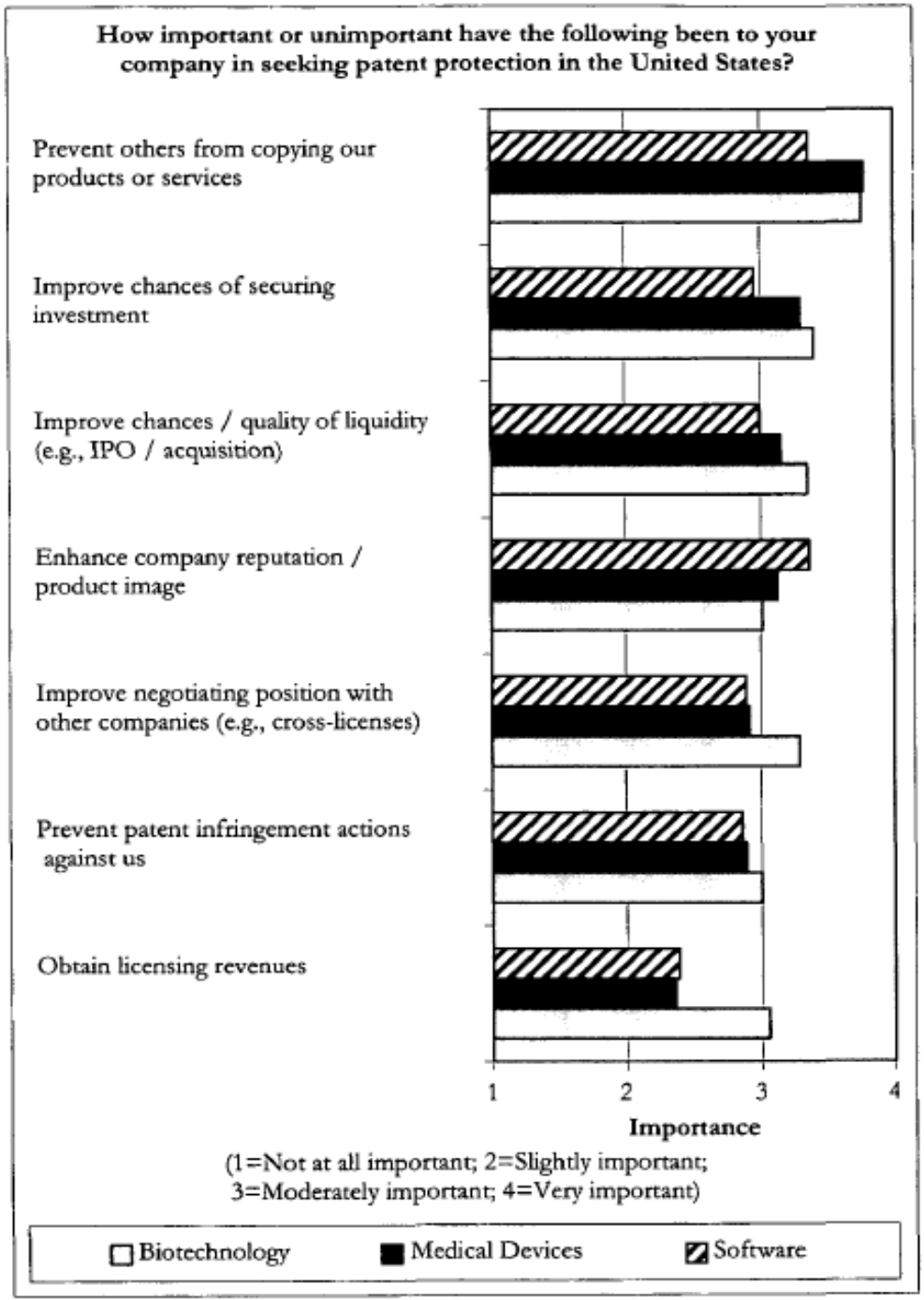
- Incentive to create
- Incentive to invest in R&D
- Incentive to finance



Ex Ante Rationales-Still Relevant?

- Other motivations to invent
  - First mover advantage
  - Trade secret protection
  - Reputational gains/Professional recognition
- Patents are an important mechanism to protect technological innovation, even if one of many. Heterogeneous mix needed.
- Other reasons to patent
  - Ex post rationales
  - Defensive patenting

Figure 3: Motivations for Seeking Patent Protection, by D&B Industry



Ex Post Rationales for Patenting

- Patents give rights holders control & ability to engage in numerous activities with confidence that their interest is protected
- Prospect Theory: Patent rights motivate the holder to continue to invest (commercialize, improve) in the invention
- Tragedy of the Commons: Technological innovation is likely to be used inefficiently unless one rights holder has an individual stake in the efficient use of the technology

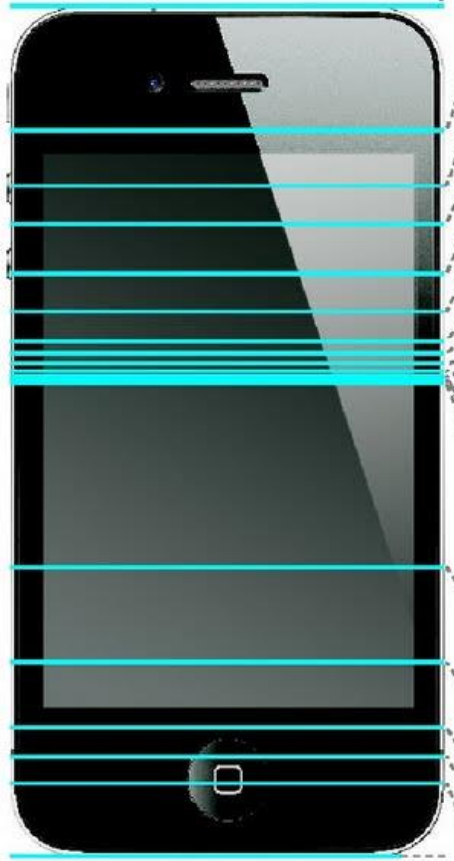
Ex Post Rationale: Coordination in the Value Chain

- Patents allow inventors to specialize and collaborate
  - E.g., University research & TTOs
- Especially important in growing number of fields dominated by cumulative technology
  - E.g., Cell phone components
- Modularity is efficient and favored in many sectors

Apple iPhone 4 teardown

CONTRIBUTING COMPONENT COSTS AND MANUFACTURERS

16 GB GSM version cost breakdown, U.S. $



- **Flash memory: $26**
  Samsung/S. Korea
- **DRAM memory: $11.60**
  Samsung/S. Korea
- **Applications processor: $8.08**
  Samsung/S. Korea
- **Baseband: $10.25**
  Infineon/Taiwan
- **Bluetooth & Wi-Fi: $8**
  Murata/Japan & Taiwan
- **Baseband: $6.20**
  Skyworks; TriQuint/ United States
- **Flash memory: $2.50**
  Micron/United States
- **Accel. & gyroscope: $2.25**
  ST Microelectronics/Italy
- **Power management: $1.51**
  Dialog Semiconductor/Taiwan
- **Audio: $0.98**
  Texas Instruments/ United States
- **Touchscreen control: $0.90**
  Cirrus Logic/United States
- **E-compass: $0.70**
  AKM Semiconductor/Japan
- **Display & touchscreen: $38.50**
  Unknown
- **Mechanicals & electro-mechanicals: $19.97**
  Unknown
- **Camera: $13.70**
  Unknown
- **Battery: $6**
  Unknown
- **Accessories: $5.67**
  Unknown
- **Other parts: $15.19**
  Others

Coordination Value & Signaling

- Signal to firms--ready for commercialization
- Signal to complementary asset holders
- Signal to industry/other inventors regarding the status of research
- Signal to partners/investors/markets as patents correlate with other less measurable firm attributes (e.g., knowledge capital)

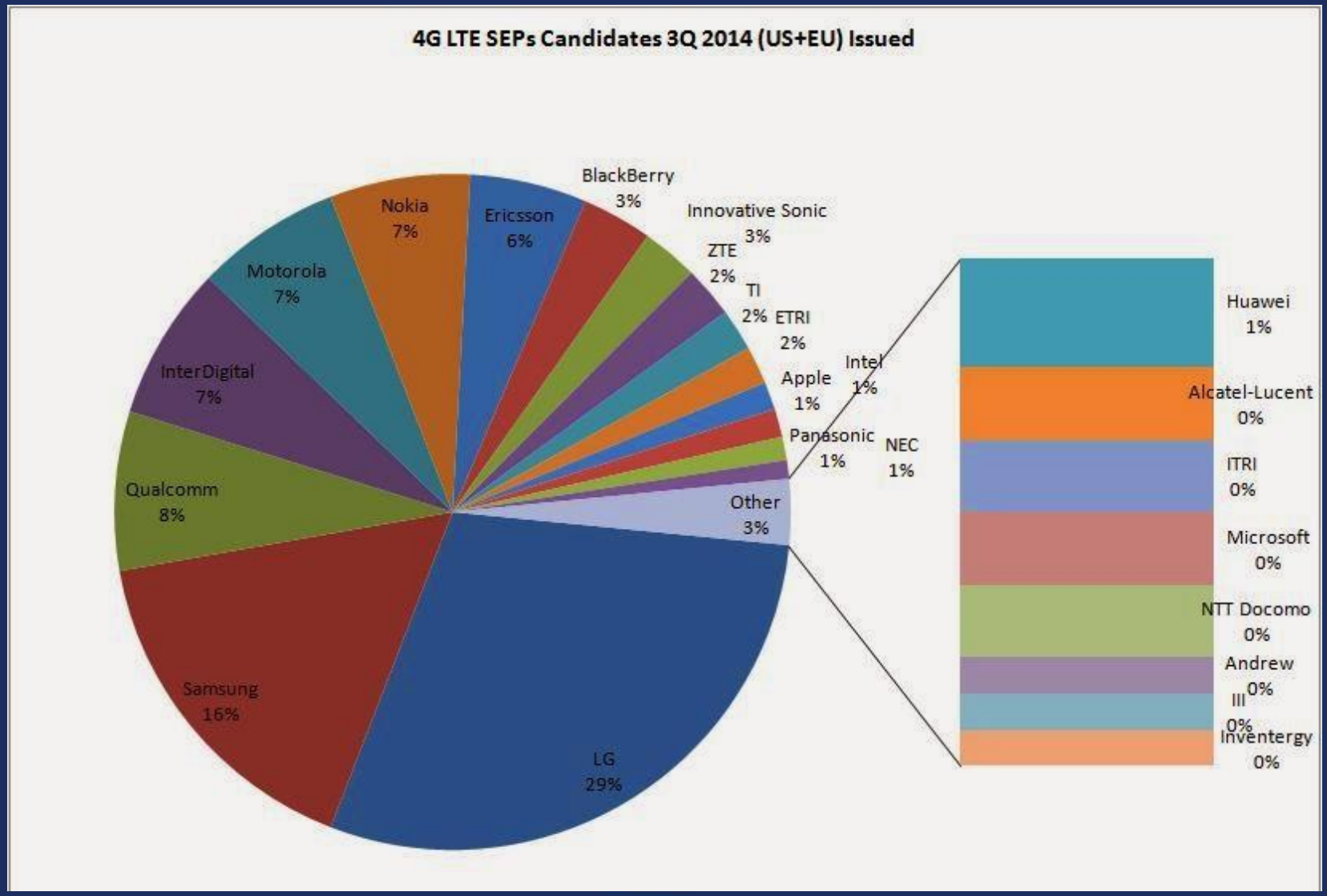
Ex Post Rationale – Monetization Value

- Patents permit one to assign a value to an intangible asset in a particular market
- Licensing
- Legal bargaining chip
- Appropriation among collaborating rights holders

Private Ordering: Standards

- Standard Setting Organizations (SSOs) – Rights holders contribute their patents towards creation of a standard to be used across the industry.
- Very important in fields such as IT where interoperability is crucial.
- For example, the LTE Standard

LTE Standard Contributors



Private Ordering: Patent Pools

- Patentees cross-license complementary patents to one another; then offer the pool of patents to others
- "In a case involving blocking patents, such an arrangement is the only reasonable method for making the invention available to the public." *Int'l Mfg. Ct. v. Landon*
- E.g., LTE Standard

LTE Standard Licensors

- AT&T
- China Mobile Communications Corp.
- Clear Wireless LLC
- Deutsche Telekom AG
- DTVG Licensing
- Hewlett-Packard Co.
- KDDI Corp.
- NTT DOCOMO
- SK Telecom Co.
- Telecom Italia
- Telephonica
- ZTE Corp.

Non–Traditional Licensing

- Patents give rights holders the ability to license as they see fit—which can include factors not typically considered in the open market
  - E.g., Cohen/Boyer patent
  - E.g., Global Access Licensing Framework

Cohen/Boyer Patent

"Stanford and the University of California wanted the terms of the license agreement: (a) to be consistent with the public service ideals of the universities; (b) to provide the appropriate incentives to industry to bring genetic engineering technology forward to public use and benefit in an adequate and timely manner; (c) to minimize the potential for biohazardous development; and (d) to provide income for educational and research purposes."

"No genetic engineering research, academic or industrial, was to be inhibited by Stanford's licensing program."

"Royalty-bearing sales have been divided into four categories: Basic Genetic Products (10% royalty), Bulk Products (1-3%), End products (1/2 – 1%), and Process Improvement Products (10%)."

Global Access Licensing Framework

“Every university-developed technology with potential for further development into a drug, vaccine, or medical diagnostic should be licensed with a concrete and transparent strategy to make affordable versions available in resource-limited countries for medical care. Licenses are complex and each will be unique. Universities should therefore implement the Global Access Policies that adhere to the following principles…”

Patent Pledges

- Some firms have pledged not to assert their patents under certain circumstances to facilitate access, develop their own markets, and the like.
  - E.g., Google
  - E.g., Tesla Motors

"Google is committed to promoting innovation to further the overall growth and advancement of information technology and believes that Free or Open Source Software is a very important tool for fostering innovation. Google is therefore pledging the free use of certain of its patents in connection with Free or Open Source Software on the following terms…"

"Tesla Motors was created to accelerate the advent of sustainable transport. If we clear a path to the creation of compelling electric vehicles, but then lay intellectual property landmines behind us to inhibit others, we are acting in a manner contrary to that goal. Tesla will not initiate patent lawsuits against anyone who, in good faith, wants to use our technology."

Conclusions

- Traditional justifications still apply in many industries.
- Ex post justifications explain how patents define and assign value to an innovation, allowing rights holders to more efficiently license, invent complementary assets, collaborate, and appropriate benefits from their innovation.
  - Leads to greater interoperability and increased access to technology
- We still need patents!

For more information…

- Stuart J.H. Graham *et al., High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey,* 24 BERKELEY TECH. L. J. 1255 (2009).
- Petra Moser, *Innovation Without Patents: Evidence From World's Fairs*, 55 J.L. & ECON. 43 (2012).
- Petra Moser, *Patents & Innovation: Evidence from Economic History*, 37 J. ECON. PERSPECTIVES (2013).
- Julien Penin, *Patents Versus Ex Post Rewards: A New Look*, 34 RESEARCH POLICY 641 (2005).

For more information...

- Thomas Hellmann, *The Role of Patents for Bridging the Science to Market Gap*, 63 J. ECON. BEHAVIOR & ORG. 624 (2007).
- Jay P. Kesan, *Intellectual Property Protection & Agricultural Biotechnology: A Multidisciplinary Perspective*, 44 AMERICAN BEHAVIORAL SCIENTIST 464 (2000).
- Mark Lemley, *Ex Ante Versus Ex Post Justifications for Intellectual Property*, UC Berkeley, Public Law and Legal Theory Research Paper Series, No. 144.
- Clarisa Long, *Patent Signals*, 69 U. Chi. L. R. 625 (2002).
- Daniel F. Spulber, *How Patents Provide the Foundation of the Market for Inventions*, Northwestern Sch. L., Law & Econ. Series, No. 14-14.

For more information...

- F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697 (2001).
- Mark Lemley, *Intellectual Property Rights & Standard-Setting Organizations*, 90 CAL. L. REV. 1889 (2002).

LIARnomics

Coming in 2015

How Similar are Copyrights and Patents?

Stan Liebowitz
University of Texas - Dallas

What is protected by P&C?

- Copyright is narrow, the “expression” of ideas.
- Does not rule out independent identical creation, although highly improbable.
- Patent goes to the first “winner” to file. This punishes other independent creators. Is it fair? Is it efficient? Perhaps it should allow all independent creators to “share” patent? Different holders could be allowed to collude.

Economic logic is similar

- Provide ownership [“monopoly”] over creative/innovative works.
- Ownership allows the possibility of price staying above average cost, allowing creator/innovator to cover costs (including cost of creation) and possibly earn a profit.
- Increases in profits presumably increases the number of works/innovations.
- Period of ownership is limited. The famous “balance” between incentives and consumption levels.
- Some claim the main purpose of patents is to ensure optimal commercialization of the innovation, avoid a “tragedy of the commons” type of problem.

The Similar Criticisms of P&C

- Based on the similar criticisms of each, you would think they were identical.
- The extreme version of criticisms:

The Similar Criticisms

- Based on the similar criticisms of both, you would think P&C were identical.
- The extreme version of criticisms:
  - Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly

The Similar Criticisms

- Based on the similar criticisms of both, you would think they were identical.
- The extreme version of criticisms:
  - Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly, Monopoly
  - Creators/inventors would do it for free.
  - P&C hinders follow-on creations.

Nature of the “Monopoly” created.

- **EVERY PROPERTY RIGHT PROVIDES A MONOPOLY!**
- But copyright does not restrict entry. It does not provide an economic monopoly.
  - Copyright critics tend to whine thoughtlessly about monopoly.
- Patents, unlike copyrights, keep out independent creators. Patents can provide a viable monopoly, depending on the breadth of the patent.

Are Rewards Needed?

- The assumption that higher profits (prices) increase production is not usually controversial. But critics are unwilling to apply it to intellectual products.
- After all, don't inventors, writers, composers, just create for the fun of it? Unlike, say, athletes.
  - Autonomous creation, according to Plant (1934): "necessity is not the mother of invention; the act of inventing rather is a necessity in itself. The inventor cannot help it."*
- If all creators work for free there would be no need to pay for it. No need for P&C.
- But Even Plant agreed that rewards were necessary for some creators.

*Arnold Plant "The Economic Theory Concerning Patents for Inventions," Economica, New Series, Vol. 1, No. 1 (Feb., 1934), pp. 30-51.

Non-Economic Aspects

- Does the public, or public domain, have a "right" to your creation?

- If giving your work to the public increases its value by more than your loss, should we force you to give up your work?**

**Stan Liebowitz "Is Efficient Copyright a Reasonable Goal?" George Washington Law Review, 79(6), September 2011, p1692-1711.

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The Common Economic Case for Patents: A View from the Pharmaceutical Sector

Jon Santamauro

Senior Director, International Government Affairs, AbbVie

Patents: The Rationale

- **The basic case**
  - The IP Continuum*: Problem ➔ Knowledge ➔ Imagination ➔ Innovation ➔ Intellectual Property ➔ the Solution (new/improved products, technologies)
- **In exchange for the inventor disclosing the details of their invention, a patent grants the right to exclude others from making, using, selling, offering to sell, or importing the invention for a limited period of time (20 years from filing)**
- **Patents can be used to stimulate economic development in four main ways*:**
  - Patent information facilitates technology transfer and investment;
  - Patents encourage R&D at universities and research centers;
  - Patents are catalysts of new technologies and businesses; and
  - Businesses accumulate and use patents in licensing, joint ventures, and other revenue-generating transactions.

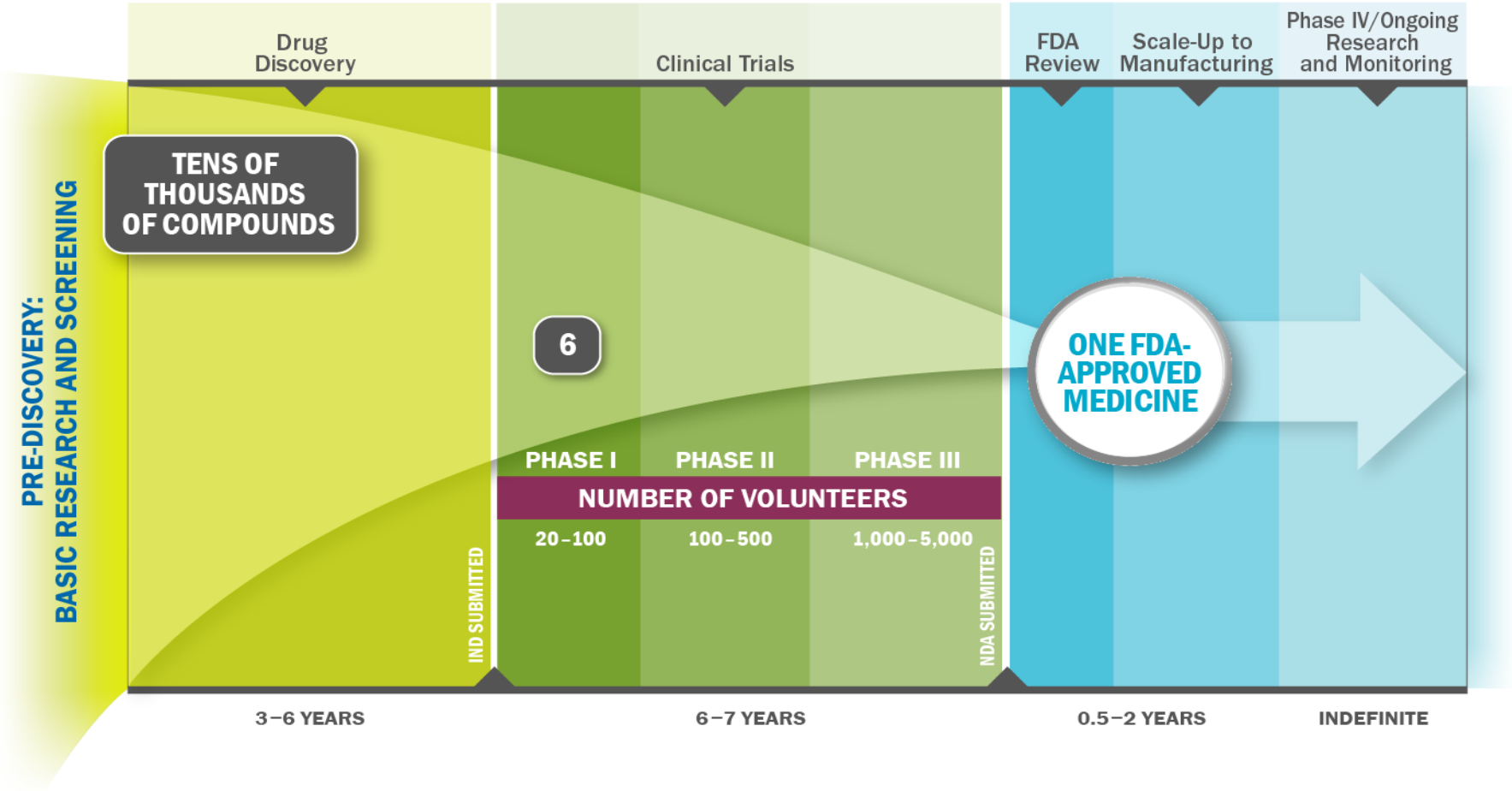
*Source: K. Idris, "Intellectual Property: A Power Tool for Economic Growth, WIPO," 2008

Patents and Developing Economies

- **Economic research shows developing countries benefit from IP rights**
  - OECD: One percent change in strength of country's IP rights is associated with 2.8% increase in FDI inflows
  - World Bank: IP Enforcement is a prerequisite for MNCs to shift R&D Activities to developing countries
    - Conversely: weaker IP protection leads to less FDI overall and less technologically sophisticated FDI
- **Patents associated with higher economic growth**
  - World Bank: study finds that a 20 percent increase in the number of patents granted annually was associated with a 3.8 percent increase in the output of 92 countries during 1960-2000.

Pharmaceuticals: The Research and Development Process

Developing a new medicine takes an average of 10 to 15 years.

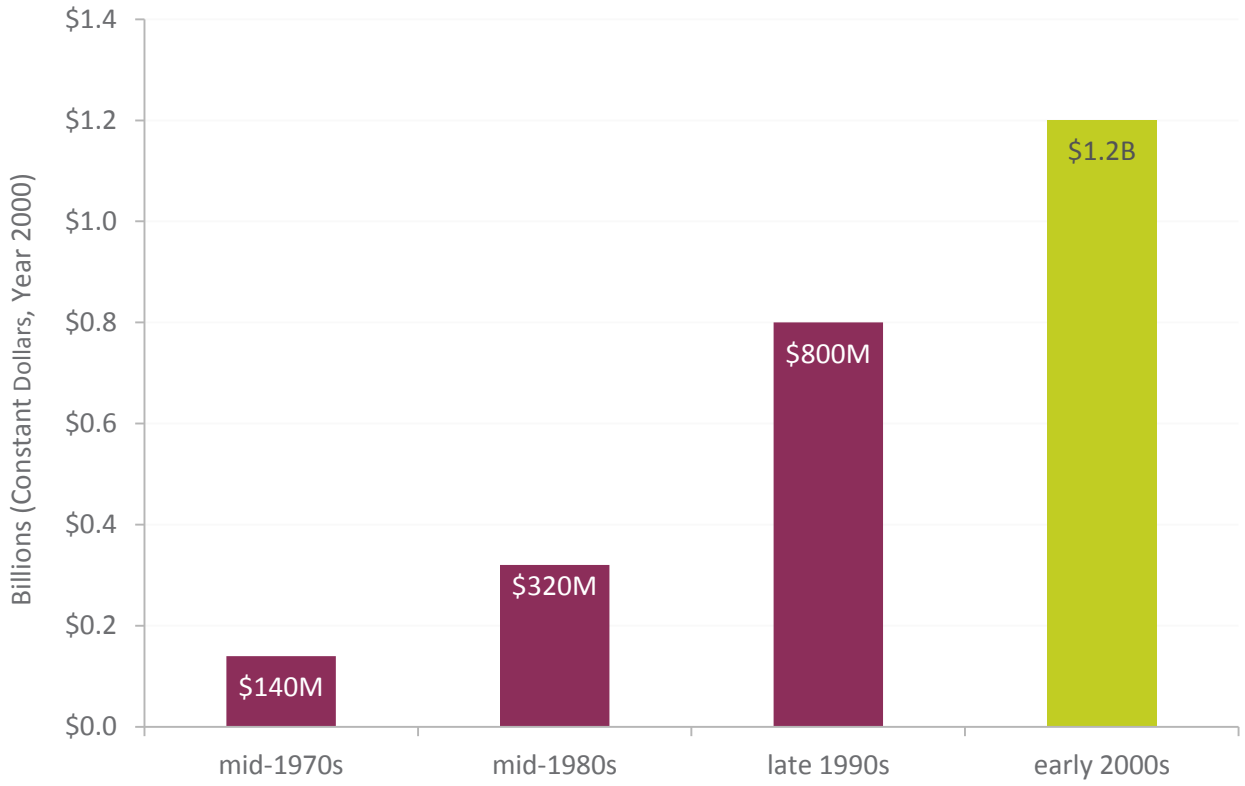


Source: Pharmaceutical Research and Manufacturers of America. "Drug Discovery and Development: Understanding the R&D Process." Washington, DC: PhRMA, 2014.

Drug Development Costs Have Increased

According to a 2007 study, it costs an average of $1.2 billion to develop one new drug. More recent studies estimate the costs to be even higher.

The Average Cost to Develop One New Approved Drug — Including the Cost of Failures



Sources: J.A. DiMasi and H.G. Grabowski. "The Cost of Biopharmaceutical R&D: Is Biotech Different?" *Managerial and Decision Economics* 2007; 28: 469–479. More recent estimates range from $1.5 billion to more than $1.8 billion. See J. Mestre-Ferrandiz, J. Sussex, and A. Towse. "The R&D Cost of a New Medicine." London: Office of Health Economics, 2012; S.M. Paul, et al. "How to Improve R&D Productivity: The Pharmaceutical Industry's Grand Challenge." *Nature Reviews Drug Discovery* 2010; 9: 203–214. J.A. DiMasi, et al. "The Price of Innovation: New Estimates of Drug Development Costs." *Journal of Health Economics* 2003; 22: 151–185. Study findings originally reported in 2005 dollars. Based on correspondence with the study author, these figures were adjusted to 2000 dollars.

The Research-Based Pharmaceutical Industry: A snap-shot

- **Research-based pharmaceutical companies: A look at the US and EU**
  - US: PhRMA Companies invested $USD 51bn in R&D for new medicines in 2013
  - Europe: EFPIA Companies invested Euro 29bn in R&D in Europe
  - Jobs: 810,000 employed in US; 700,000 in Europe

- **A robust pipeline: over 5,000 medicines in development globally**
  - More than 900 biologic medicines in development in the US alone

- **But, PhRMA R&D Model is High-Risk**
  - Just 2 in 10 approved medicines produce revenues that exceed average R&D costs

Protection Needed for High-Risk Investment

- **In light of the high-risk, and time- and cost-intensive R&D needed to bring pharmaceuticals to market, the biopharmaceutical industry may be the industry sector most reliant on appropriate (consistent, predictable) patent protection.**
- **2011 Study: Stronger IP – greater clinical trial investment**
  - For both developed and developing economies, a strong correlation between level of IP protection and level of biomedical FDI measured by CT activity
- **Patents Enhance Ability to Obtain VC Investment in Biotechnology**
  - Patenting is important for the general VC investment
  - Patents help biotechnology firms to attract VC faster than would be possible without patents.
  - Start-ups that have successfully filed patents prior to seeking investment receive more VC funding

Sources: M. Pugatch, "The Strength of Pharmaceutical IPRs vis-à-vis Foreign Direct Investment in Clinical Research: Preliminary Findings", Journal of Commercial Biotechnology (2011). C. Haussler et al., "To be Financed or Not:: The Role of Patents for Venture Capital Financing," GESY (2009).

Opportunities to Improve IP Globally

- **IP rights and enforcement are critical to encouraging the development of lifesaving medicines**
- **How do we improve global IP infrastructure**
  - Address existing non-alignment in patent protection:
    - Availability of adequate patent protection
      - Ensuring that patents are available for entire range of deserving inventions
      - Introduction of meaningful patent grace period when determining novelty
    - Ability to adequately enforce patents and related rights
      - implementation of patent enforcement systems to permit early patent dispute resolution
      - Limit availability of CLs to extraordinary situations and in a manner consistent with international obligations

Opportunities to Improve IP Globally

- **Opportunities to enhance the global IP environment**
  - Continuing to build on the minimum standards of the TRIPS Agreement through Free Trade Agreements
  - Global consensus through International Organizations, but current deadlock through multilateral fora (e.g., WIPO, WTO)
- **Perhaps now is the time for more robust plurilateral process**
- **Enhance non-legislative efforts**
  - Build on existing efforts to promote procedural convergence (e.g., PPH)
  - Enhance opportunities for raising awareness and implementation of “best practices” on a market-by-market basis

Conclusions

- **Patents provide essential incentives for innovation and are a “power tool” for economic growth**
- **Globally, patents and other IPR benefit both developed and developing economies**
- **More so than other sectors, the pharmaceutical sector (and other similarly situated sectors) rely heavily on patent protection to ensure that high-risk R&D costs can be recouped and lead to commercialized innovation**
- **What can we do?**
- **Leverage trade tools, international organizations, and bilateral or plurilateral dialogs; there is room to enhance cooperation and to improve the global patent system**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Driving green solutions for the future through Innovation

Dr. Ken B. Anderson

Southern Illinois University Carbondale

and Thermaquatica Inc.

Center for the Protection of Intellectual Property
George Mason University School of Law

October 2014

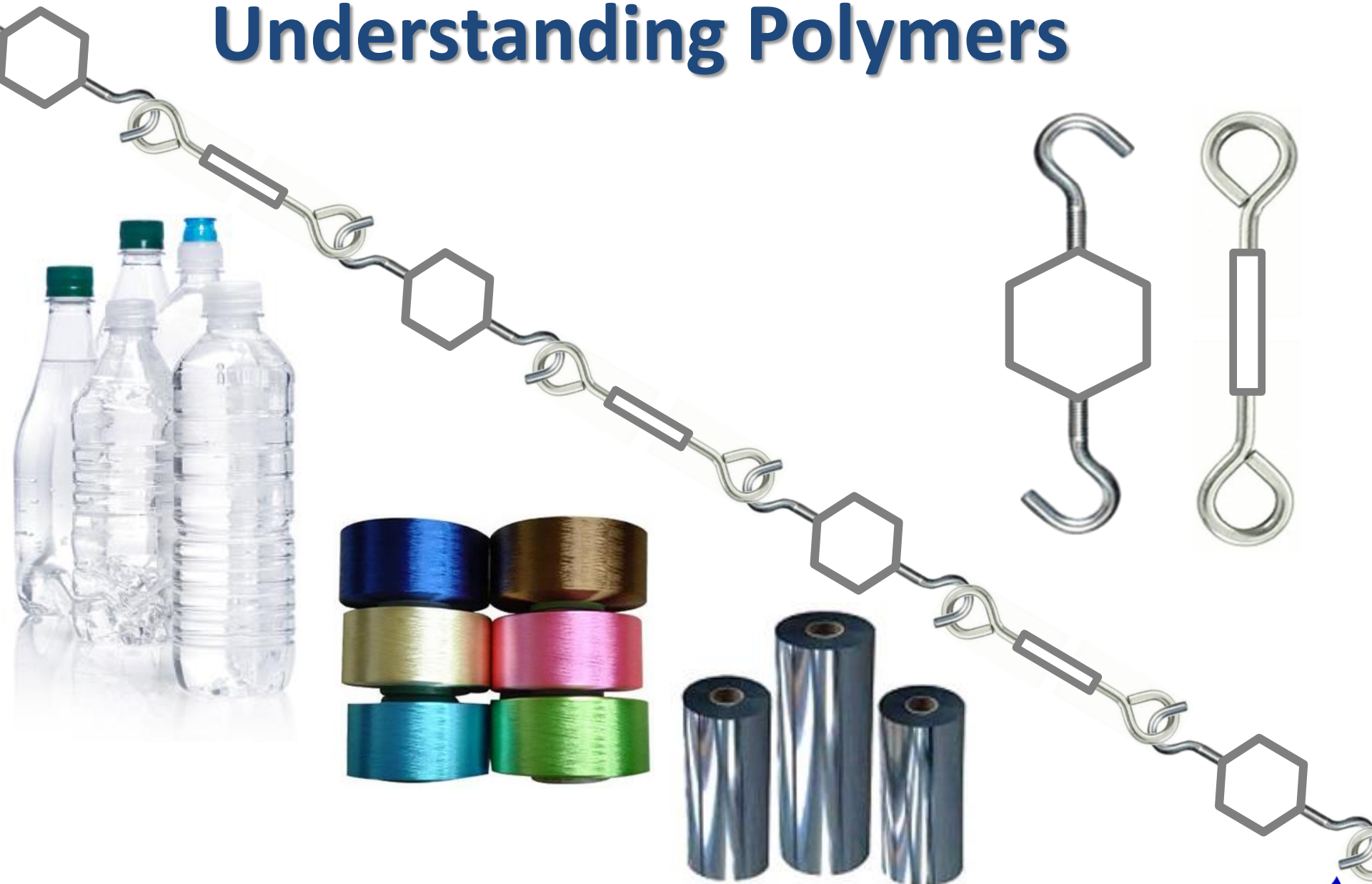
PET

Polyethylene terephthalate

PET

Thermaquatica

Understanding Polymers



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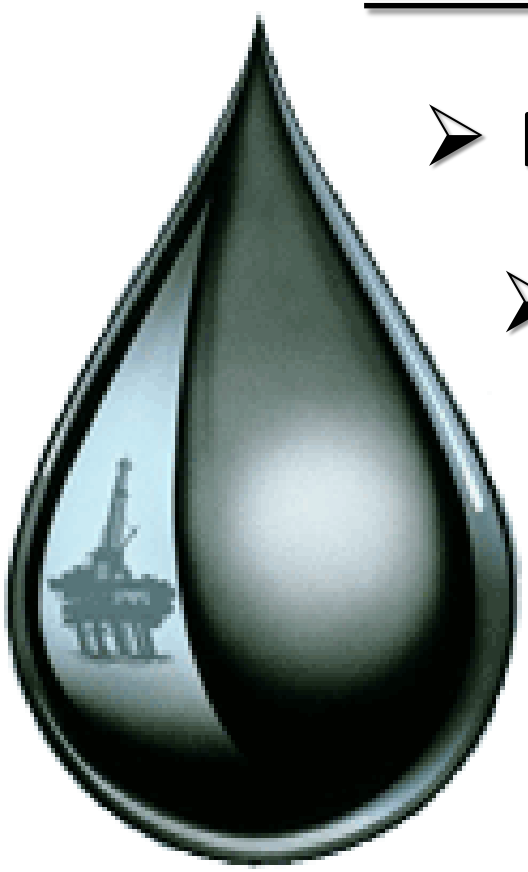
PET

- **Third highest production polymer**
  - Following polyethylene and polypropylene
- **Global market > 45 Mt/year**
  - Forecast to exceed 60 Mt/year by 2017
- **> 40 $Billion annual gross sales**
  - Forecast to exceed $50B/year by 2017

There are no PET mines, we make it all …

The PET Supply Chain



Crude oil

- Naphtha
- *para*-Xylene
- Terephthalic acid
- Polyethylene terephthalate (PET)

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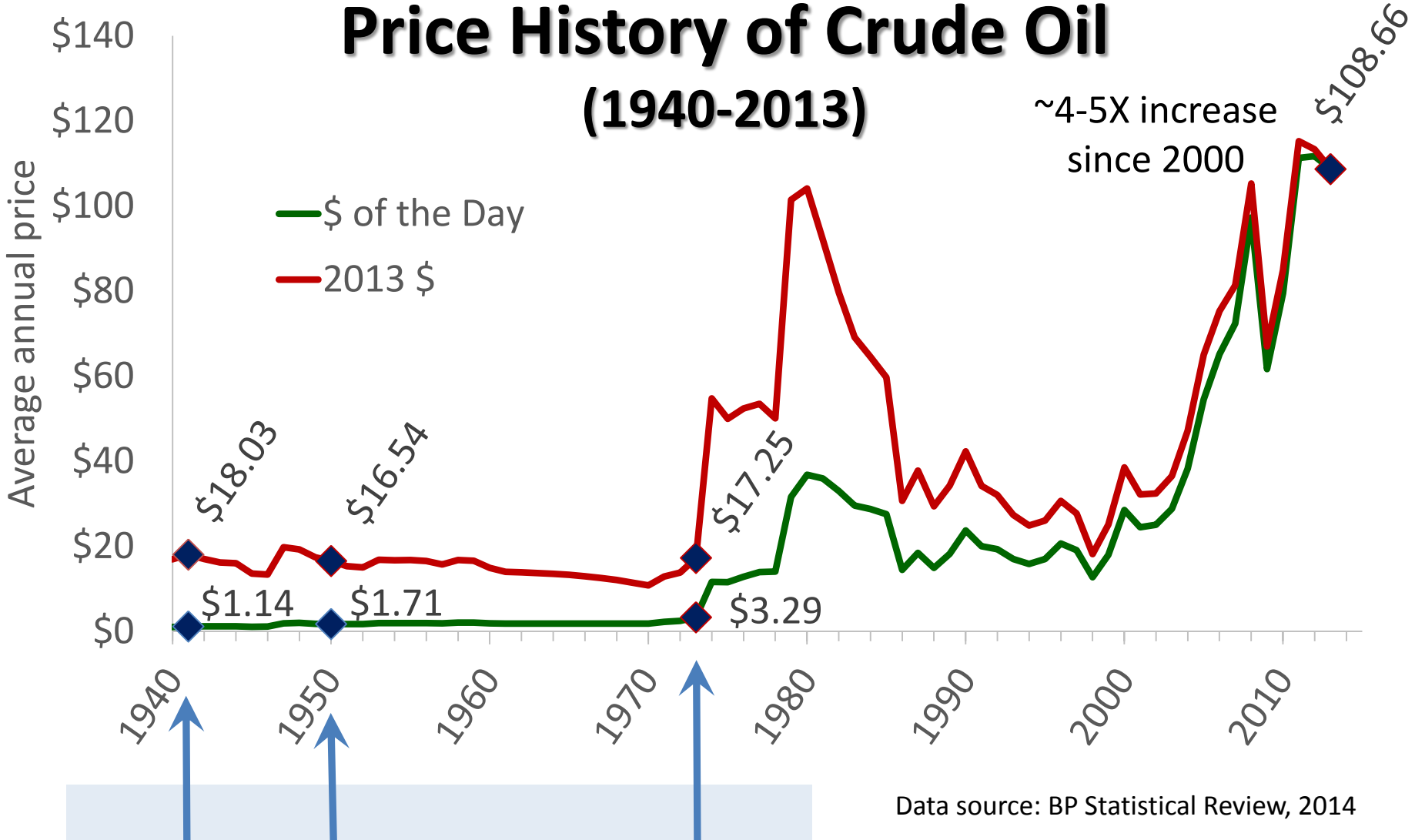
Image Credit: TemporaryChef.com

Price History of Crude Oil (1940-2013)



Data source: BP Statistical Review, 2014

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PET mimics

Functional equivalents to PET that are NOT derived from petroleum, and which have better environmental characteristics, are of significant technical and commercial interest!

Cover Art, **Green Chemistry** (RSC), **12**(10) 2010

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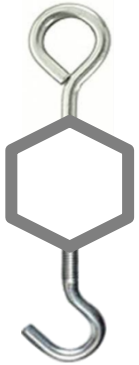
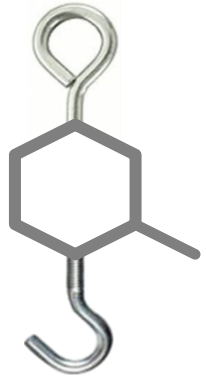
Plant-derived PET-mimics

Several lignin (plant) derived products are of interest as potential alternatives for Terephthalate.

Terephthalate



*p*HB



Vanillate

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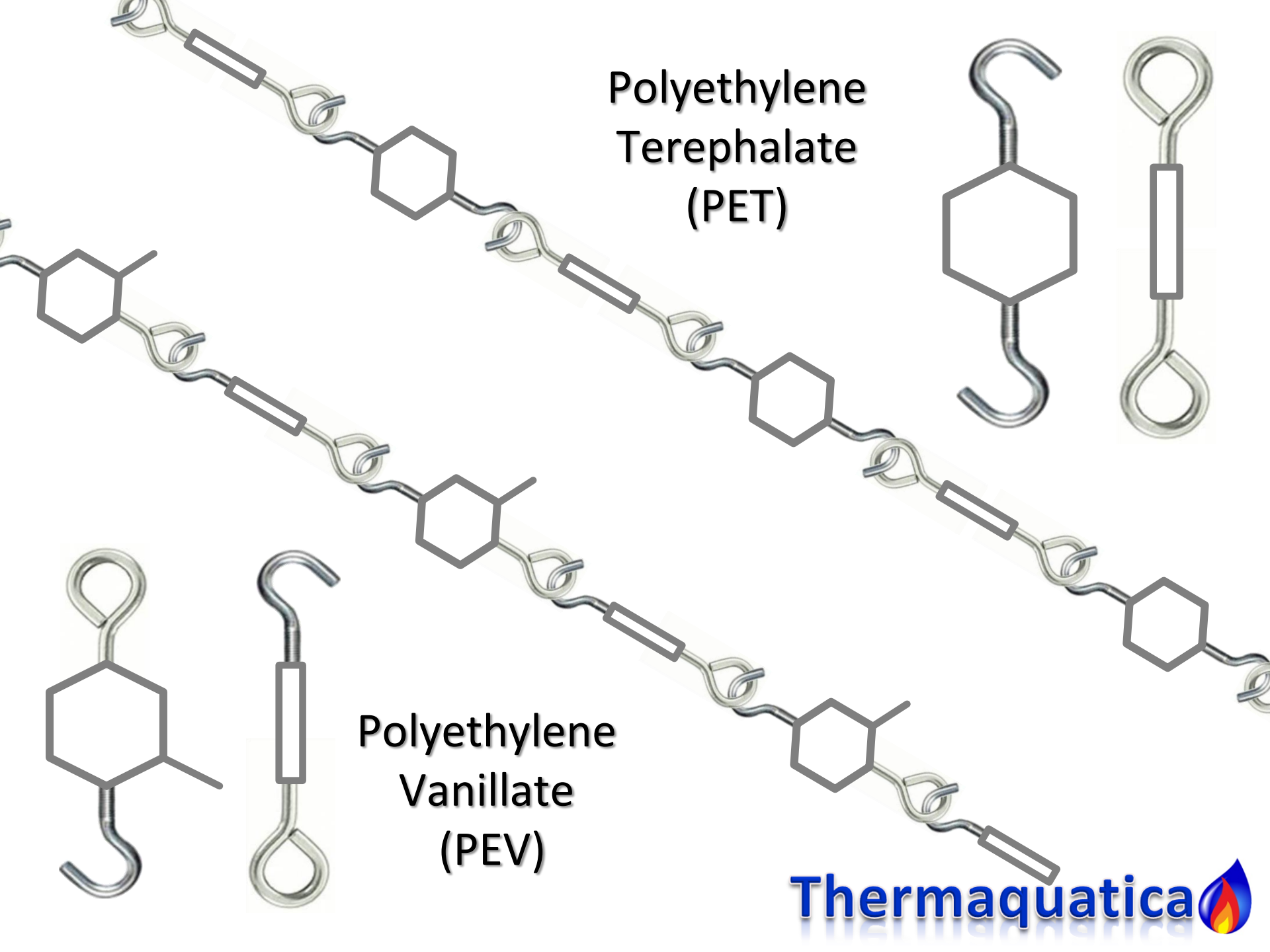
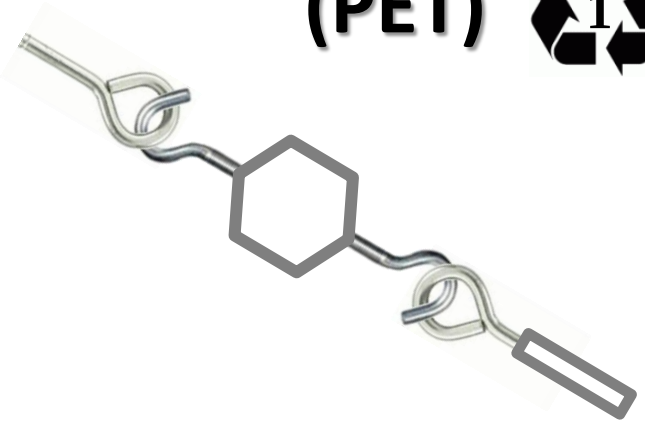
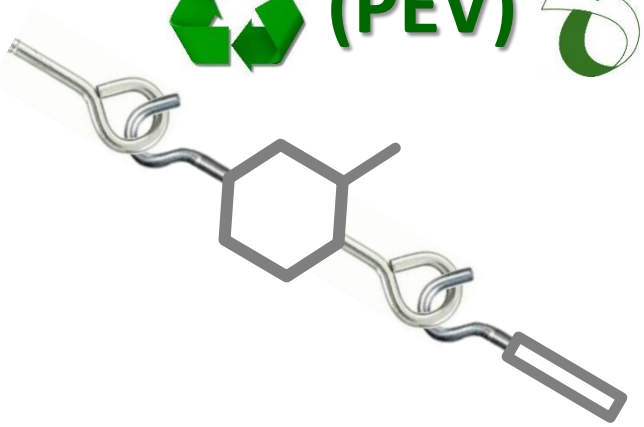

Polyethylene
Terephalate
(PET)
Polyethylene
Vanillate
(PEV)
Thermaquatica

Polyethylene Terephthalate (PET)



- T_g = 67 °C
- T_m = 265 °C
- NOT readily biodegradable

Polyethylene Vanillate (PEV)



- T_g = 55 °C (84 °C)
- T_m = 254 °C (276 °C)
- ***Biodegradable***

Source: Mialon et al., 2011
Lang and Kordsachia, 1981
Hirakawa 2011

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The Problem(s)

1. The price and availability of terephthalic acid are linked to the price of petroleum, which has risen sharply over the last decade and which is expected to remain high and volatile

2. Potentially attractive alternatives such as Vanillate are not available in large commercial quantities and are priced much higher than terephthalate

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Thermaquatica's Solution

Oxidative Hydrothermal Dissolution (OHD)

OHD is a novel, environmentally friendly technology, for the conversion of coal, biomass and other solid organic materials into low molecular weight, water soluble products, by a simple, direct process, utilizing only (high temperature) water, and oxygen.

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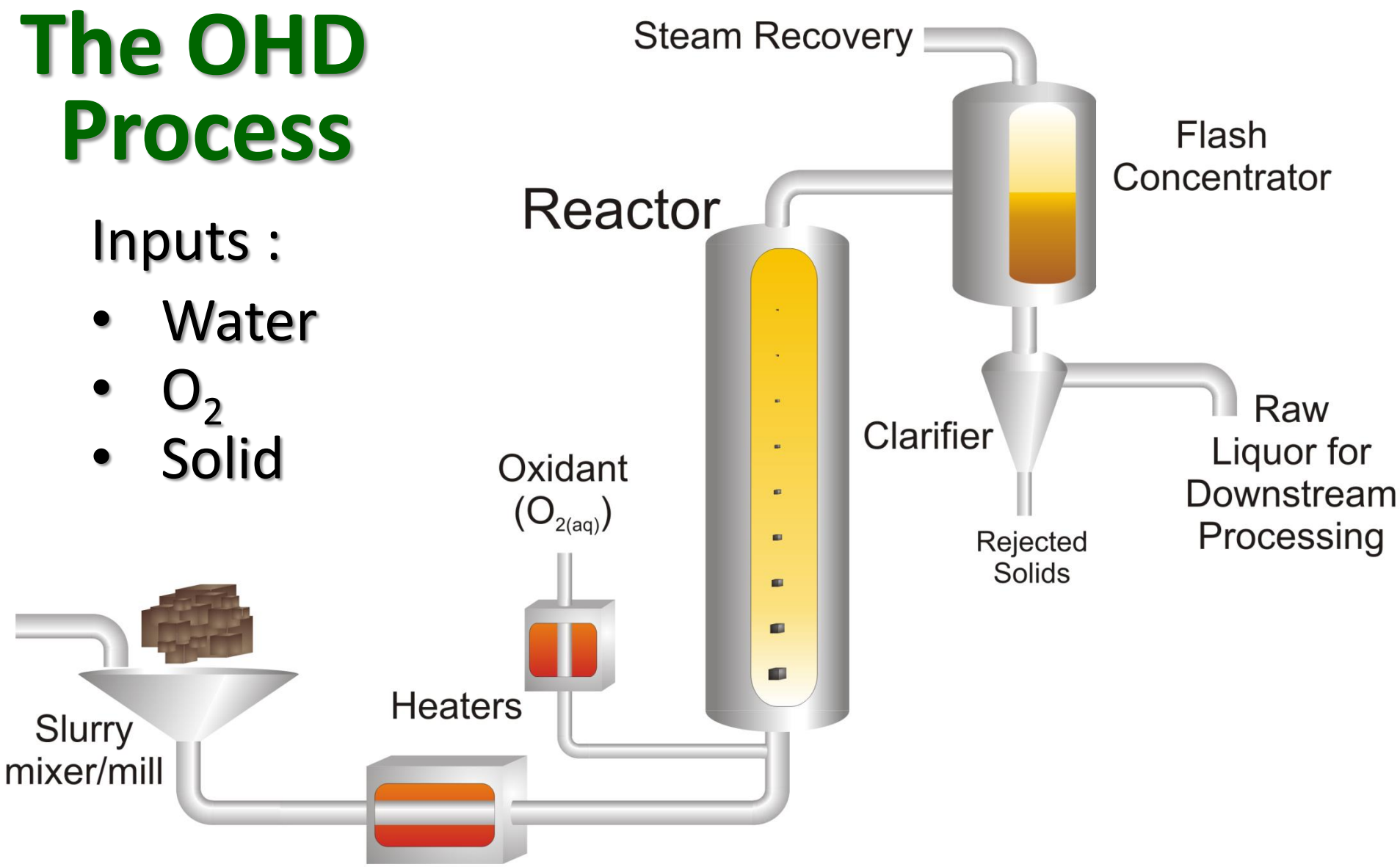
The OHD Process

Inputs :

- Water
- O_2
- Solid



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Oxidative Hydrothermal Dissolution is…

- **A novel approach to conversion of coal, biomass and other organic solids into low molecular weight products.**
- ***Simple and inherently environmentally friendly*.**
  - Produces little CO_2 CO_2 ***(Minimal GHG footprint!)***
  - No NO_x or SO_x or other problematic emissions
  - Requires no exotic solvents or catalysts
- **Effective and readily able to achieve high (complete) conversions of organic materials with excellent product recovery (70 - >90%).**
- **An effective route to volume production of Vanillate and *p*HB**

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WARNING
ROTATING PARTS

OHD Product from low-grade coal

- Conversion by OHD has been successfully demonstrated at PDU scale (kgs/hour).
- No scalability issues have been encountered to-date
- Product distributions obtained are consistent with lab-scale studies.

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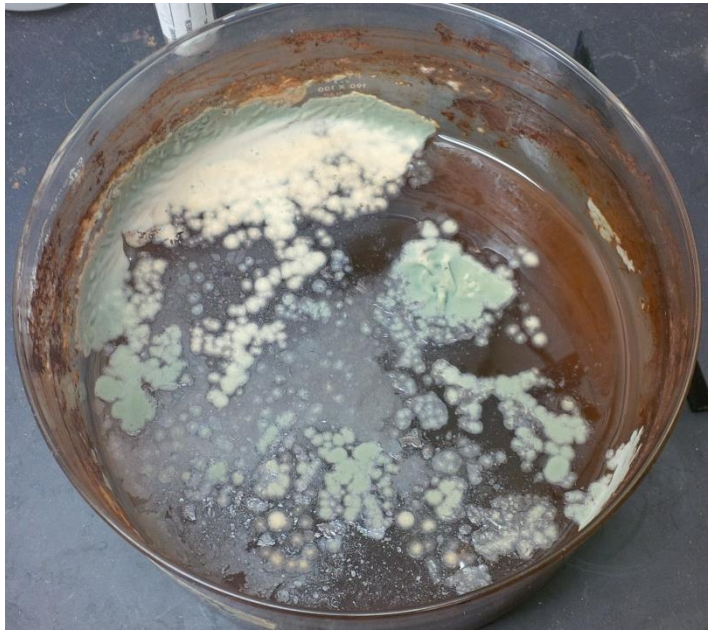
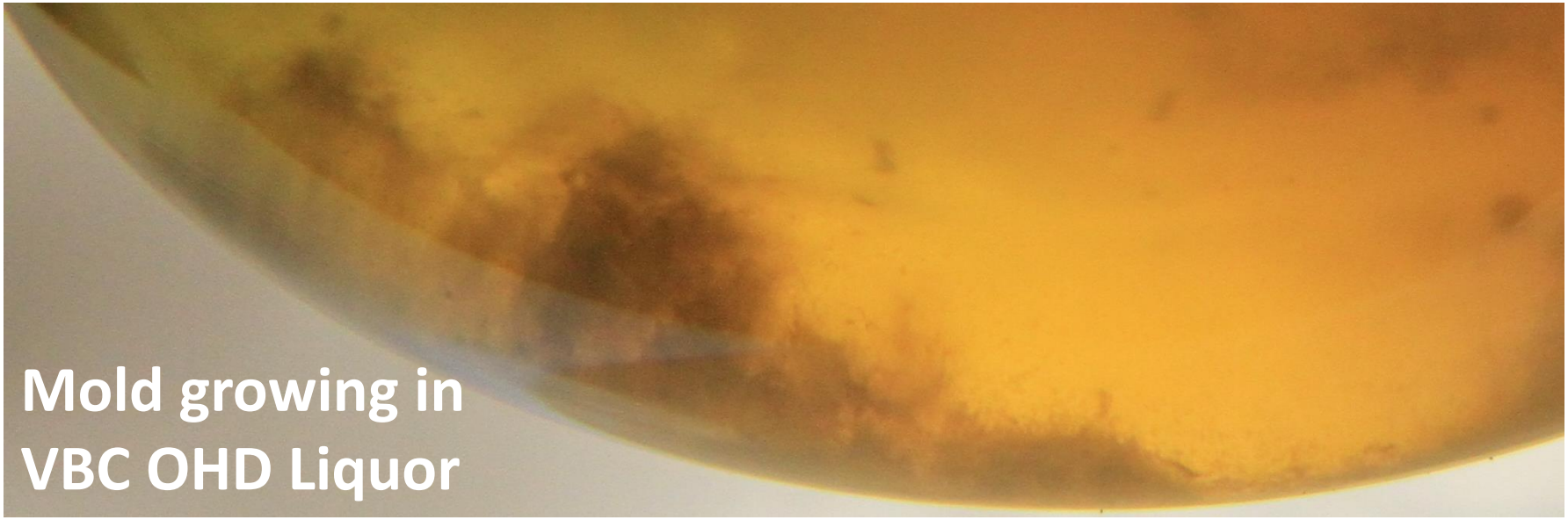
And on another note…

It has been observed that products from the OHD process are readily biodegradable…





Mold growing in
VBC OHD Liquor

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Development

- Initial idea ~2004
- Proof of concept and preliminary testing 2005-2008
- Initial patent filing 2009
- *Entrepreneurship training 2009-2010*
- Thermaquatica founded in late 2010
  - *(University spin-off, IP and sweat)*
- Started operations in 2011 (grant funded)
- Second round of patents filed 2012

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Development

- **PDU completed 2013**
- **Agreement signed with Greenpower ENERGY for development of Australian demonstration-scale (multi-ton) facility**
  - **Other deployment activities in negotiation**

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IP Status

- First Round of patents filed 2009
- Issued in U.S., Australia, South Africa and Russia.
  - Pending in multiple additional international jurisdictions.
- Second Round of patents filed in 2012
  - Total pending applications in >30 jurisdictions

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Acknowledgements

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Thanks for your time!

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The Common Moral Case for Injunctive Relief Against IP Infringement

Eric R. Claeys
George Mason University
Conference on Common Ground
October 9, 2014

Focus of concern

- There are tendencies to pick around the edges of the property in IP
- Especially in the law of remedies
- The main recent culprit: eBay, Inc. v. MercExchange, LLC
  - Non-practicing entities ("NPE's") don't deserve injunctions
  - Injunctions should be limited in hold-out cases

Focus of this talk

- I'll present a labor-based case for the property in patent and copyright,
- show how remedies
  - protect,
  - calibrate,
  - and implement labor-based property rights.
- Criticism of NPE is misguided.
  - The more appropriate concern is about IP rights that aren't deployed in any sense.
- Hold-out is a serious concern,
  - but doctrine must respect IP holders' interests in broad commercial control over their inventions or works.

Overview of this talk

- Issues in remedy law
- General overview of labor theory
- Labor theory as applied to IP
- Implications for IP remedies

Remedies

- *eBay*
- Factors relating to injunctive relief
  - P's irreparable injury
  - Adequacy of P's remedies of law
  - Balance of hardships
  - Effect on an injunction on the public interest
- These factors apply in copyright and patent alike.
  - See eBay, 547 U.S. at 392-93.

Recent criticisms of injunctions

- Pres. Obama: patentees who "don't actually produce anything themselves."
- J. Kennedy: "An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent." eBay, 547 U.S. at 396.
- Kennedy again: "When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest."

Caveat

- Remedies vindicate rights
- Remedy principles also specify rights
- The Goldilocks problem.
- Bad understandings of remedies can undermine the rights.
- Bad understandings of remedies can also frustrate others' free exercise of their rights.

Labor

- Labor means intelligent activity facilitating the survival or flourishing of someone in the community.
- In relation to property, labor justifies “use” of a resource for survival or flourishing.
- But “use” claims limit property as well.
  - “Use it or lose it.”
  - Laborers must respect others’ interests in using resources for their own survival or flourishing.

What labor's *not*

- Not "any effort."
  - It's not "labor" to reinvent the wheel.
- Not an entitlement to the use of the resource in perpetuity.
  - If you dig out a parking space in Chicago, you get the exclusive use of the spot only for the rest of the blizzard.
- Not a right to all monetary value associated with the resource.
  - Control over monetary value runs only when it aligns with rights to control rational use value.
  - Nationals can't charge neighbors for watching Nats games from their own lots.

The case for private property

- Moral labor rights justify usufructs.
- Every person in a community deserves equal opportunity to use all resources for his/her own benefit.
- Exclusive private property generates things more resources beneficial for survival or flourishing than equal-access usufructs would.
- Think: dorm-room fridge.

“Use” in private property

- Different resources fit this case differently.
  - Water versus land.
- For land and chattels, the law gives owners broad rights of exclusive control and enjoyment.
- These rights entitle owners to broad zones of discretion to determine and manage the uses of land and chattels.
- Many rights to veto others’ uses facilitate the owner’s core use.
- Right to direct the terms on which land is rented, leased, &c facilitate the owner’s underlying labor interests.

Property rights and property remedies

- Body rights: Can A grope B if A will pay all damages?
- Property rights create harder cases but still start from the same perspective.
- Property: Ordinarily, unconsented takings disrupt use.
- Remedy: Start with a presumption for an injunction,
  - relax it if B isn't using the property in any defensible sense,
  - or if there's a mistaken, good-faith, and de minimis taking that's expensive to undo.

Labor-based patent and copyright

- Patents and copyrights confer exclusive control.
- To facilitate invention and creation of inventions and works that
  - facilitate human flourishing
  - and wouldn't get produced in usufructuary systems of IP like trade secrecy or common law pre-publication copyright.

Exclusive control over inventions and works of authorship

- Inventors get exclusive use of their inventions
- Authors get exclusive use over power to copy their works of authorship.
- In copyright and patent, “exclusive use” means broad discretion how to deploy the intellectual work most advantageously during its term....
- … including discretion whether and on what terms to sell, license, give &c.

Consequence I: The starting presumption

- Ordinarily, lost opportunity to control terms of licensing is an invasion of rights of exclusive use.
- P faces irreparable harm
- P lacks adequate remedy at law.
- P presumptively suffers worse hardships than D does.

Consequence II: NPE's

- Ordinarily, it should make no difference whether a claimant wants to produce goods or license to others to use.
- A IP holder "uses" IP by producing tangible goods with it.
- But an IP holder also "uses" IP by sharing it with a producer for joint commercial advantage.
- Law shouldn't play favorites between manufacturing labor and licensing labor.
- Law should focus instead on total failure to assert or deploy the IP right.

Consequence III: Hold-outs

- Hold-out *is* a possible problem.
  - P's right to injunction can in some cases restrain D's free exercise of liberties to contract & use own property.
- But hold-out tests must
  - give IP holders benefit of the doubt that they're making some beneficial use of their IP
  - And avoid turning a blind eye to careless disregard of IP rights.
- Raises hard indirect-consequentialist problems and trade-offs.

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Oct 9
2014

My moral argument
in front of 300 web developers

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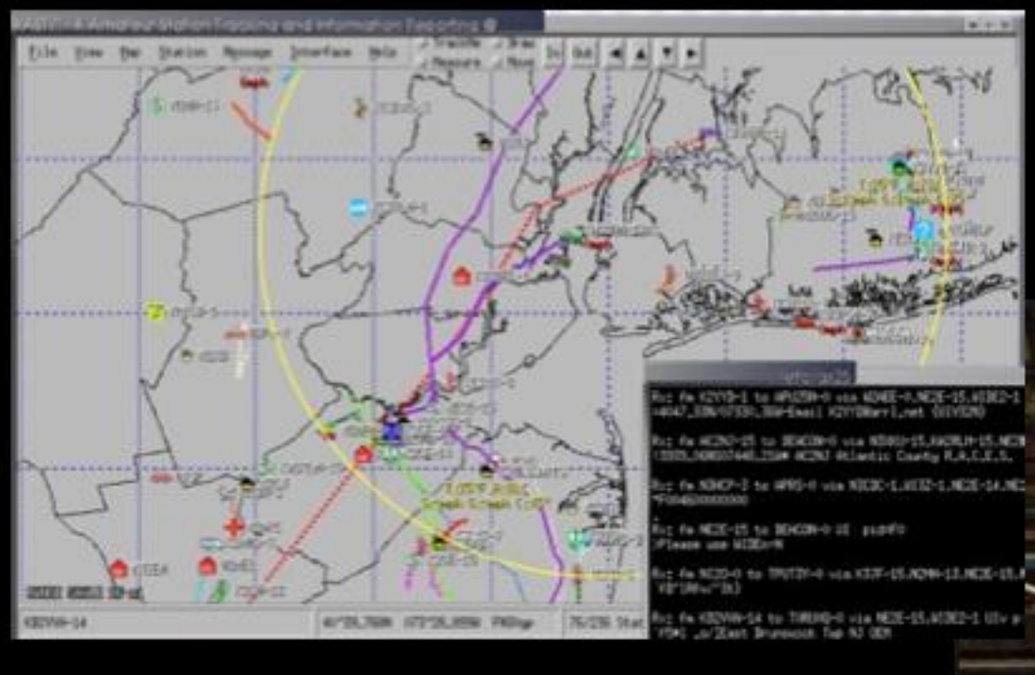

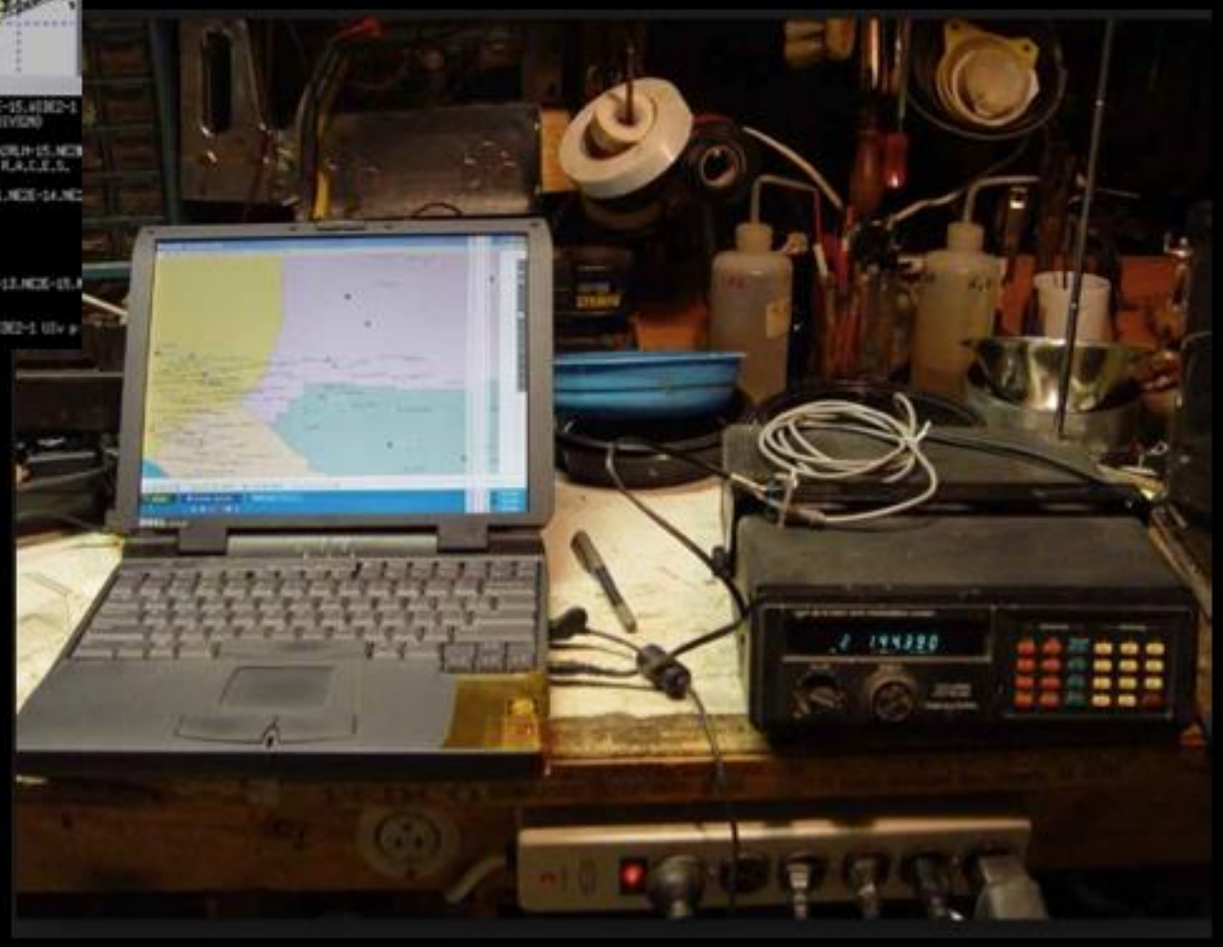

1950’s music business.

“Promotion”

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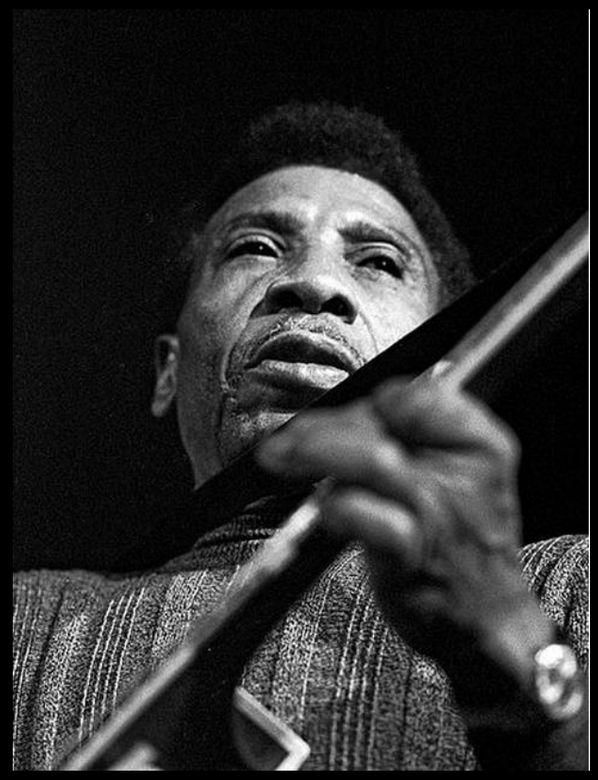

photo credit Heinrich Klaffs

photo credit Lars-Göran Lindgren

Sun Records

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Car Dealer

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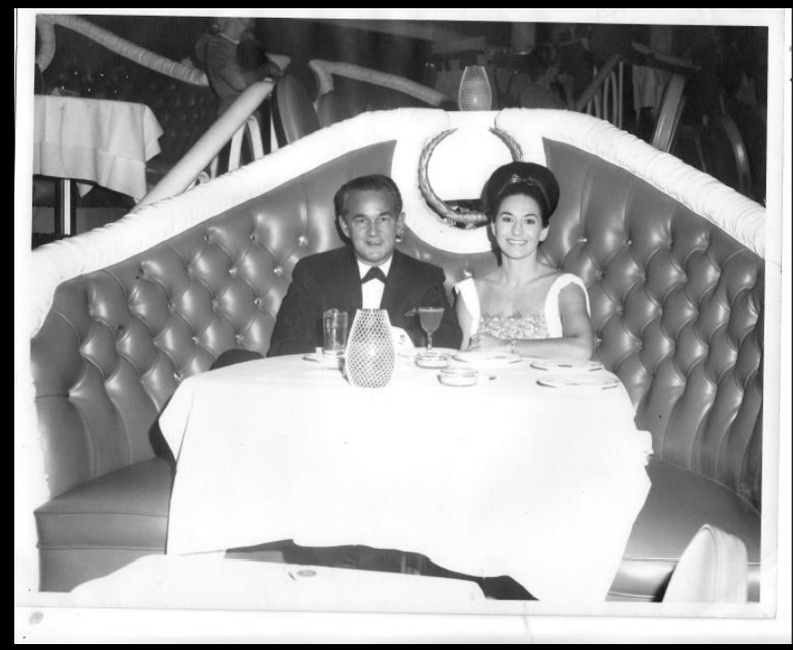

File sharing

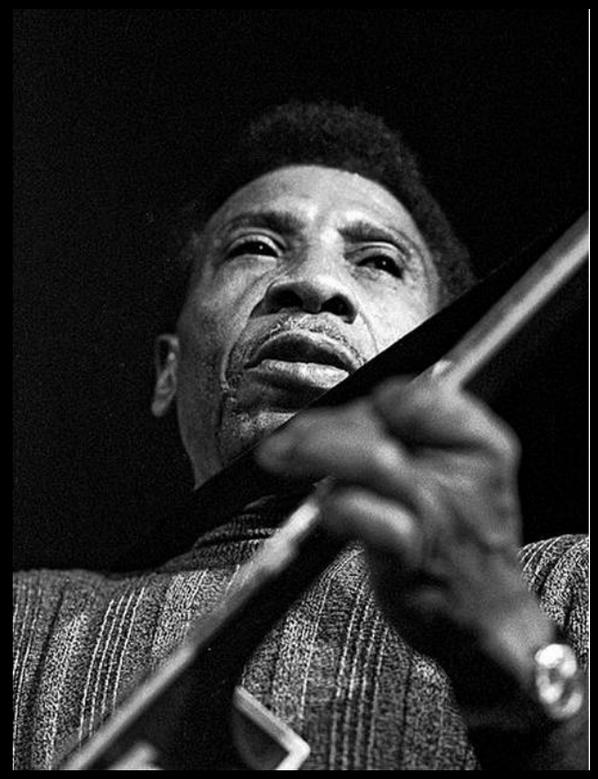

photo credit Heinrich Klaffs

~~“Promotion”~~

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photo credit Lars-Göran Lindgren

Risk/Revenue Sharing
Old Boss
Record labels
subsidized losers with winners money
100% capital risk content

New Boss
Google/Amazon/Itunes/Pandora/Spotify
winner take all
0% capital risk content

Deliberate plan to screw artists?

No of course not.

“Neither the music business
nor technology business is farsighted enough
to pull this off.”

File sharing as a regressive “pro corporate” activity

“Letter To Emily NPR All Songs Considered”

1. why do we pay for pipes ?(corporations-the man)
2. why do we pay for hardware? (corporations -the ma
3. why do we not pay for music? (hippy freak musician

Photo cc Frank Wolf

Disintermediation

Web 1.0

Funky home made band pages

“Triumph of the Band”

Wild Variation

Fear: Monopoly

Reintermediation

Web 2.0

Facebook band pages

“Triumph of the Platform”

Bounded Variation

Monopsony

The 3rd decade

What do artists like me want?

Redisintermediation?
Disreintermediation?
Post-reintermediation?

Post-Web?

Happy Flower Land?

Ubiquity means nothing

“Tyranny of Choice”

Apple

Loopholes and technicalities are not innovation

Today, [redacted] wrote [redacted] this rather insightful (or should that be inciteful? :p) message:

The history of the 20th century makes it clear, time and time again, that new media businesses are built by "tricky lawyers" helping their clients to plant a business in the lacunae and DMZs of copyright law. Broadcast radio, cable TV, jukeboxes, VCRs, MP3 players, are just some examples. In many of those cases, the legal rationales were far more outlandish than the DMCA rationales being invoked by Web 2.0 companies (in several cases, the lawyers lost the battle, but the businesses won the war).

sses are built on the work of creators, inventors, designers, artists ar

Technology changes

Principles remain the same

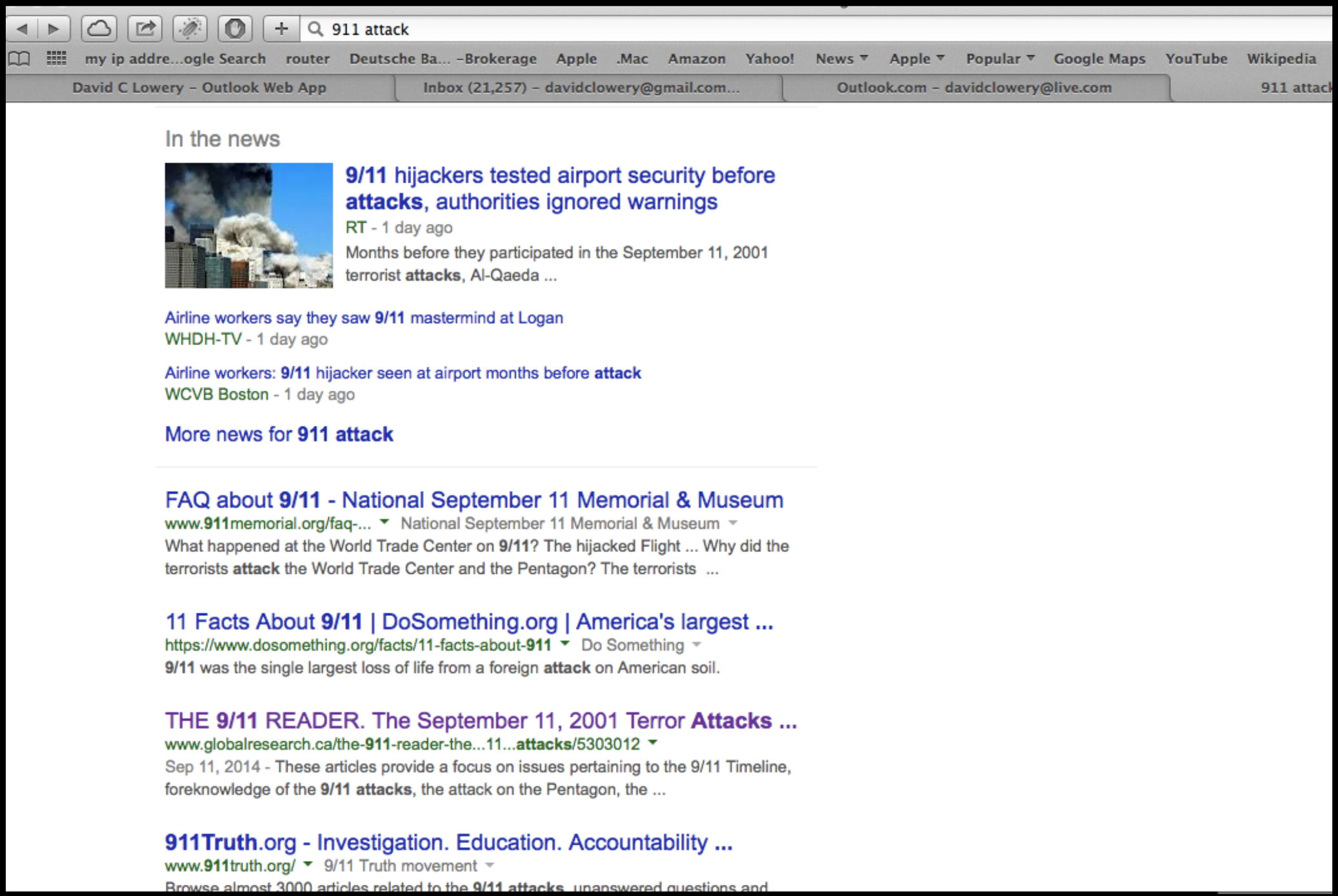
“Principles guide us through times of technological change. We don’t change principles to match technology.”
-East Bay Ray, Dead Kennedys

Paid Not Free.

Problems with Free:
Advertising supported
“Peak Ads”
Spying
The tyranny of page views
Commodification of content

Paid:
Users are not products
Profitable business models
Non-exploitative

Fix Search
More variety
More truth



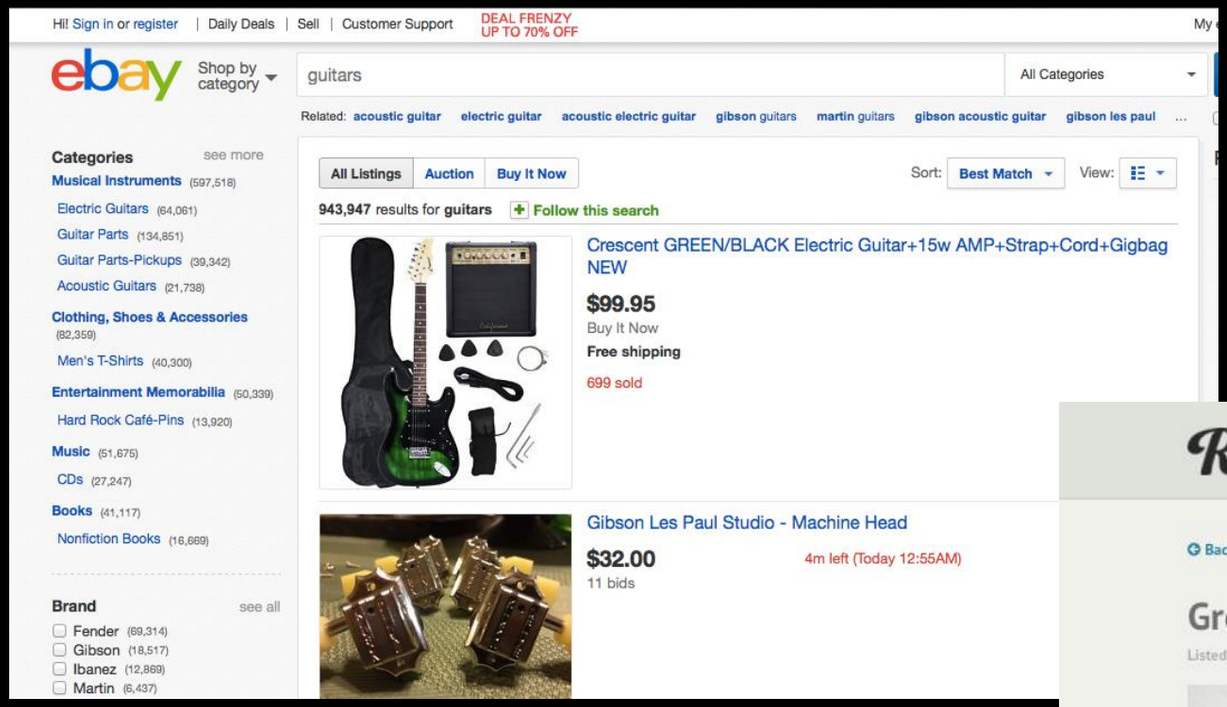
The default should be “opt in”

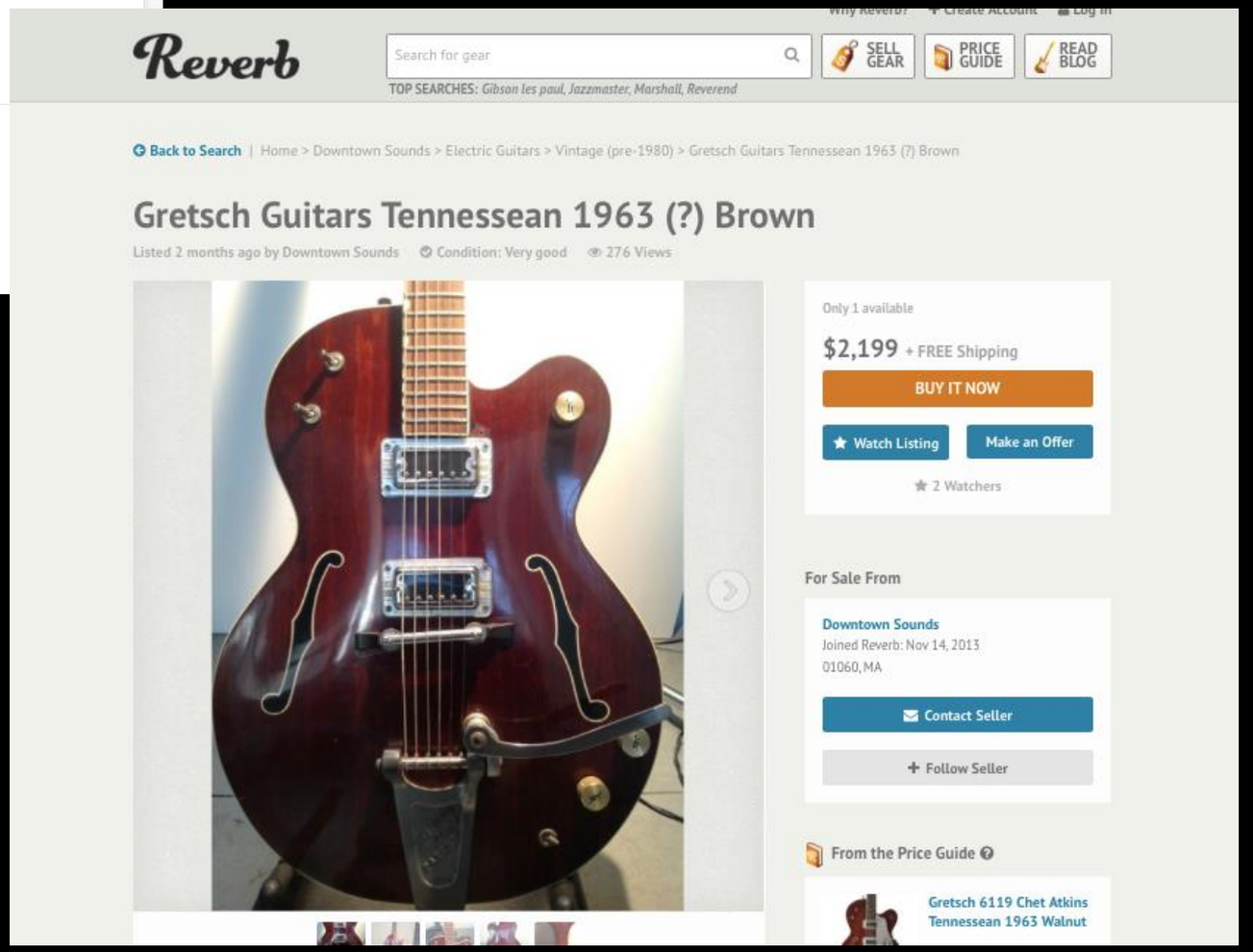
Don’t Change the TOS

Enhancement
not
Disruption

(The myth of disruptive tech)

If you must disrupt the disruptors





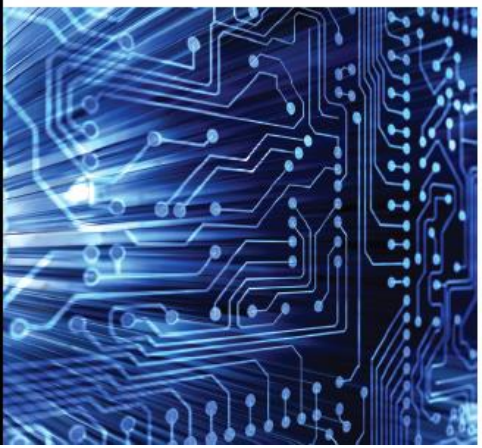
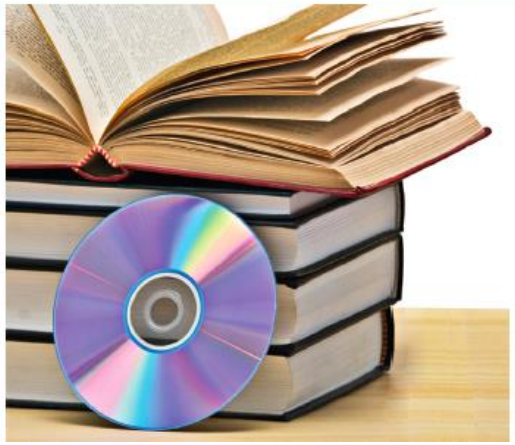
There is no internet

Closed Systems

If I assert my rights to control my song
will people die?
will the economy collapse?
will planes fall from the sky?

Does the public have a moral right
to my work?

CENTER FOR THE PROTECTION OF INTELLECTUAL PROPERTY

IP & Liberty

Mark F. Schultz,

George Mason Law, CPIP

Southern Illinois University School of Law

Property and Freedom

What is property?

A **domain of freedom**

to choose how to use an **asset**,

in accordance with the **owner's own plans**,

to secure the owner's needs and desires – from **survival to a fully flourishing life.**

Property & Liberty

- Property fosters economic independence
- Property enables a private sector
- Property supports political freedom

Property Fosters Economic Independence

Sacramento Bee/Bryan Patrick

For the past 140 years, tiny Scotia's fate has been inextricably linked to the fortunes of Pacific Lumber, long the North Coast's largest employer, landowner and community benefactor. But the futures of both are up in the air as Pacific Lumber goes through bankruptcy protection proceedings in Texas courts.

Company town on brink as timber firm struggles

By Todd Milbourn
BEE STAFF WRITER

SCOTIA – The workday begins in this old logging town the same way it has since the 1880s.

A shrieking whistle pierces the early morning quiet, calling lumberjacks, millwrights and engineers to another day sawing redwoods and Douglas fir.

The whistle is indiscriminate, a sort of townwide alarm clock, sounding through every home and building. It's a reassuring sound to residents of this company town.

But some worry about it going silent.

Over the past 140 years, no company has been more important to the economic fortunes of this region than Pacific Lumber. It has long been the North Coast's largest employer, landowner and community benefactor.

But all that history is up in the air with Pacific Lumber in bankruptcy protection.

To satisfy its creditors, the company is proposing a vast sale of its Northern California timberlands. It has reduced its once-formidable work force by more than half and shuttered mills in Carlotta and Fortuna.

The bankruptcy protection proceedings are playing out 2,100 miles away in courtrooms in Texas, home of Pacific Lumber's parent company, MAXXAM Inc.

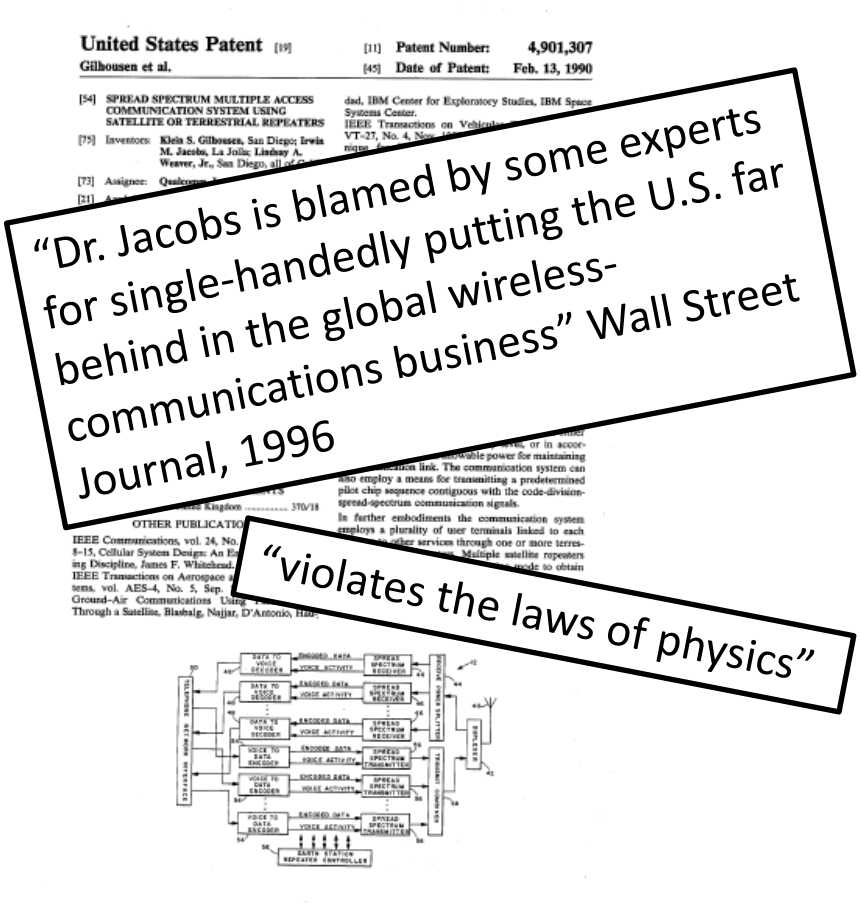
But up here, in communities tucked among majestic redwoods, residents are wrestling with controversy sparked by

▶ SCOTIA, back page, A20

Joe Rogers, left, and his son Grant represent two of the three generations of the family to have lived in Scotia. Joe works at Pacific Lumber.

Economic Independence

Property Fosters Economic Independence



Irwin Jacobs, Founder of Qualcomm, Inventor of CDMA

Property Enables Economic Independence

"All signs point to a colossal dud"

"insane running time"

"Avatar" Might Be The Longest, Biggest Flop Ever

"has Hollywood's most monstrous genius finally gone mad?"

James Cameron, Director of *Ti*tanic and *Avatar*

Property Enables the Creation of a Private Sector

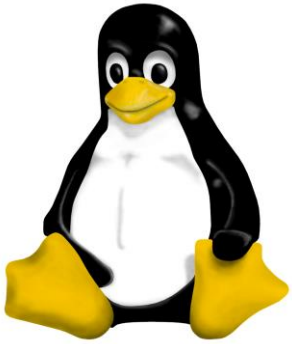
Property Enables the Creation of a Private Sector

Property Enables the Creation of a Private Sector

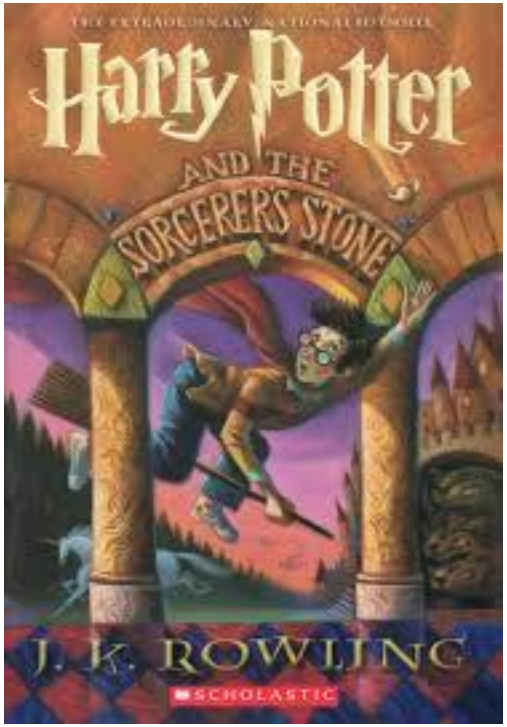
Property enables a zone of cooperation

Property Enables the Creation of a Private Sector

Property Enables the Creation of a Private Sector



Property Enables the Creation of a Private Sector

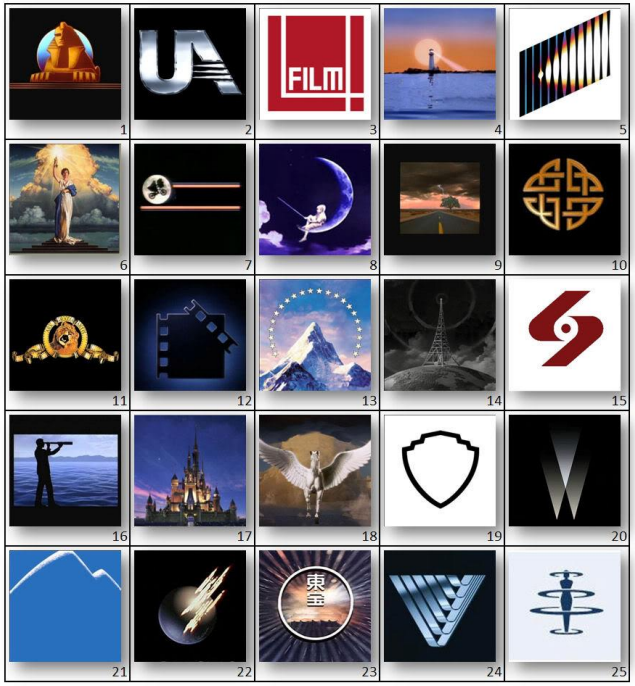


Property & Political Freedom

Property disperses power

Property & Political Freedom

vs.

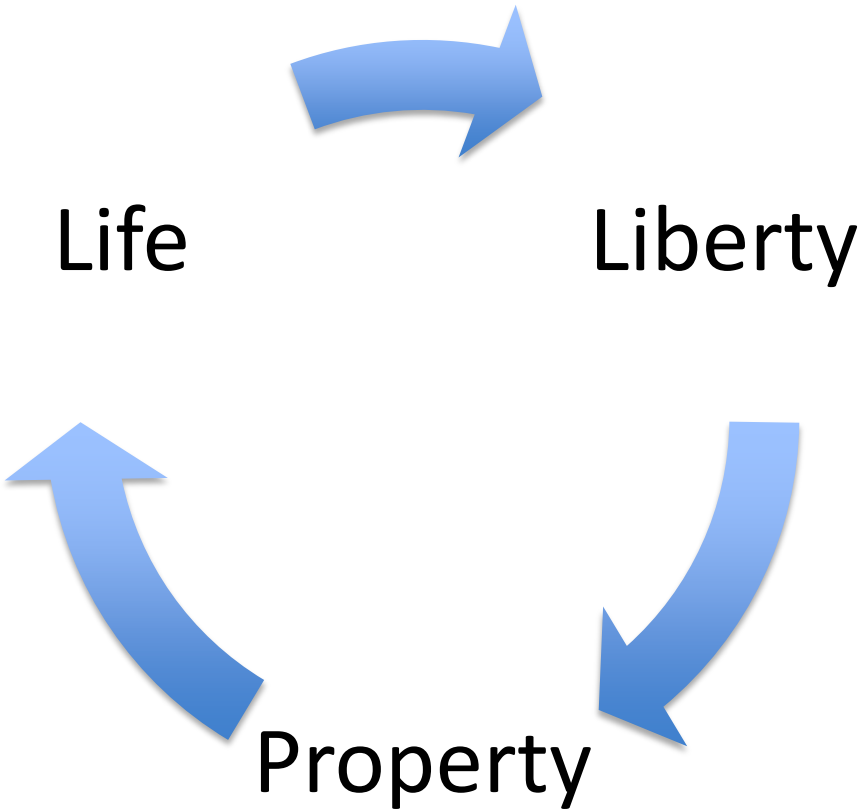


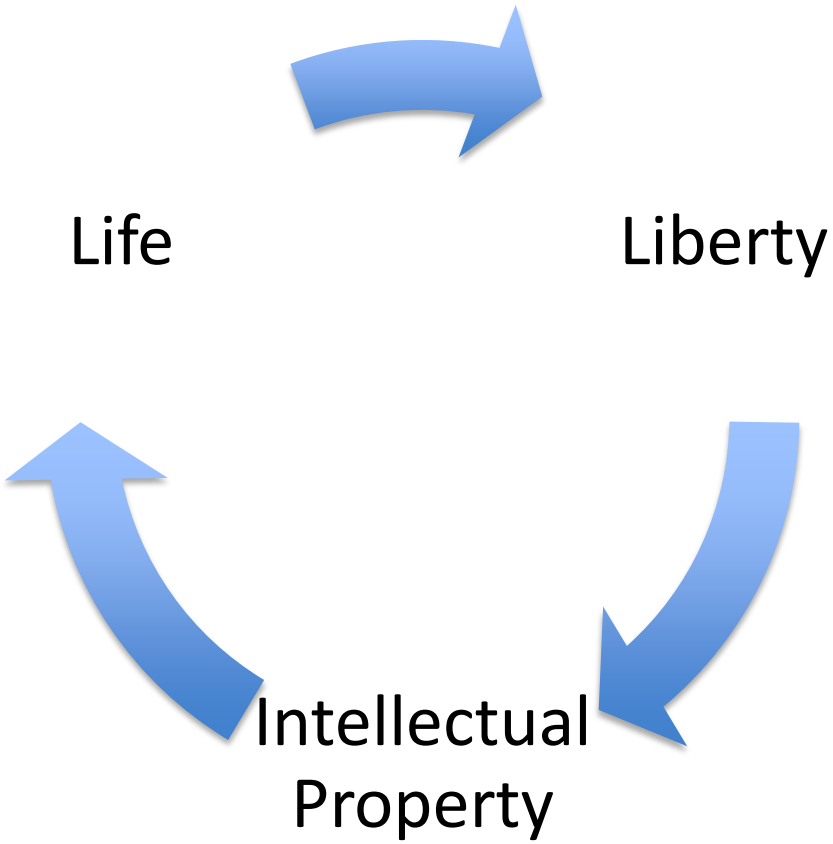
Property & Political Freedom

Property disperses power

Property & Political Freedom

ALLIANCE for Regenerative Medicine


Life
Liberty
Property


Life
Liberty
Intellectual Property

The mobile wireless ecosystem: Different roles of firms and industry growth

GMU CPIP
Common Ground: How Intellectual Property Unites Creators and Innovators

Oct 09, 2014

Dr. Kirti Gupta
Director of Economic Strategy
Qualcomm Inc.

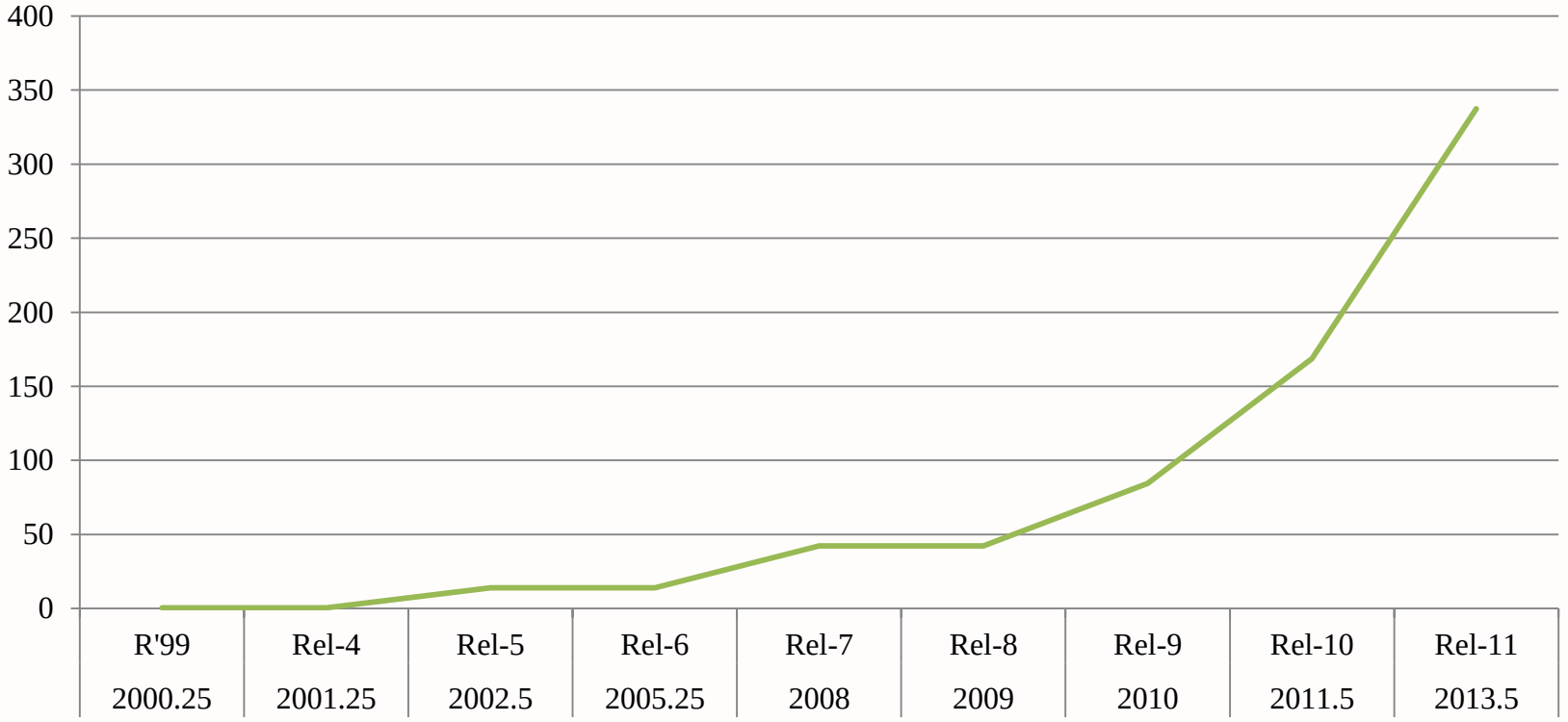
A ubiquitous revolution: how did it happen?

- What underlying developments caused this value chain to grow and enable all consumers to access mobile wireless technologies for multiple uses?

Efficient use of the scare resource: radio spectrum

- The main underlying constraint of a wireless network is the number of bits/s that can be transmitted through allocated spectrum
- Technology advances in wireless cellular technologies have experienced a breakthrough in the last two decades

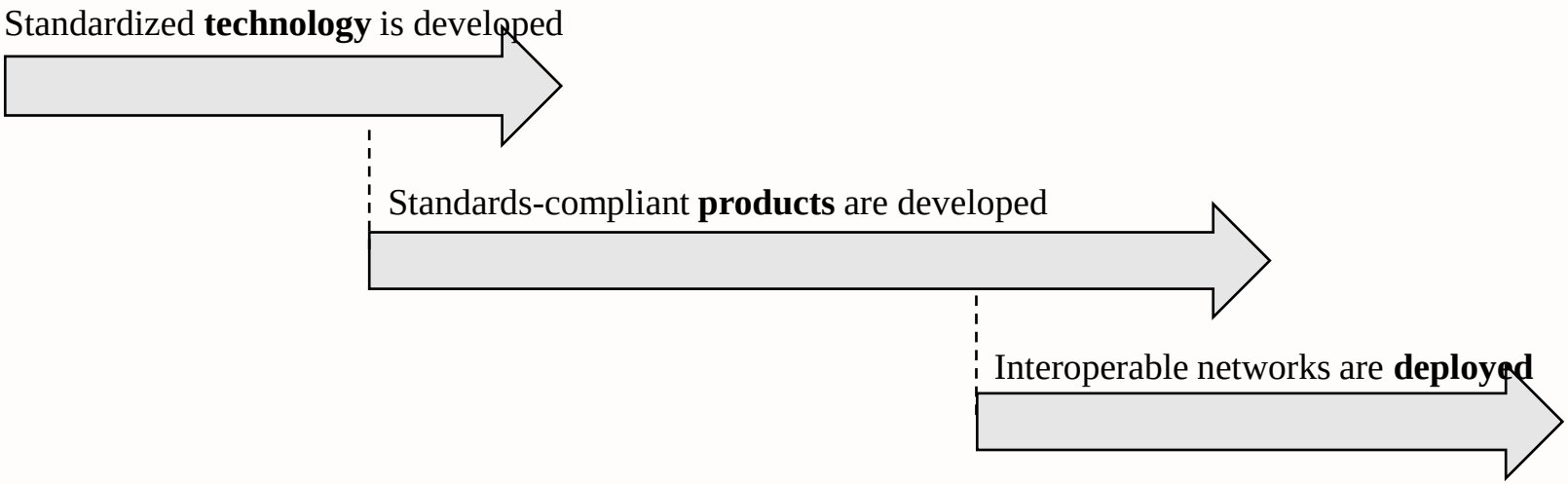
Example: 3G downlink peak-data-rates (in megabits per second)



The mobile wireless industry – development stages

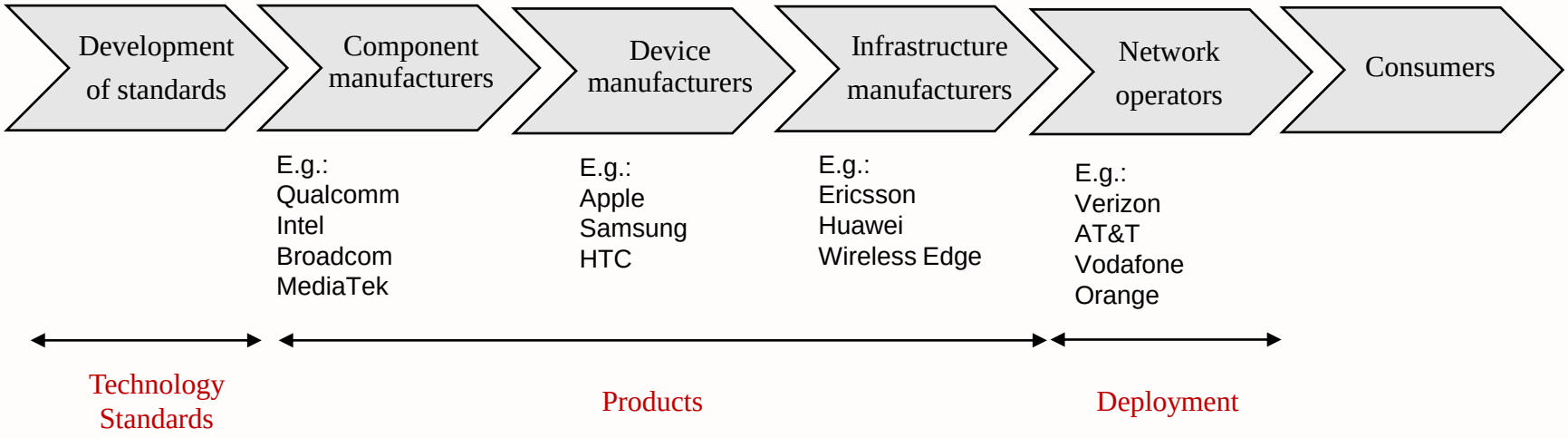
The stages of development in this industry include:

1. Development of **technology standards**
2. Development of **products** including components (e.g.: semiconductor chips enabling communications), devices (e.g.: smartphones and tablets), infrastructure (e.g.: high data-rate antennae, servers)
3. **Deployment** of networks by network operators (service providers)



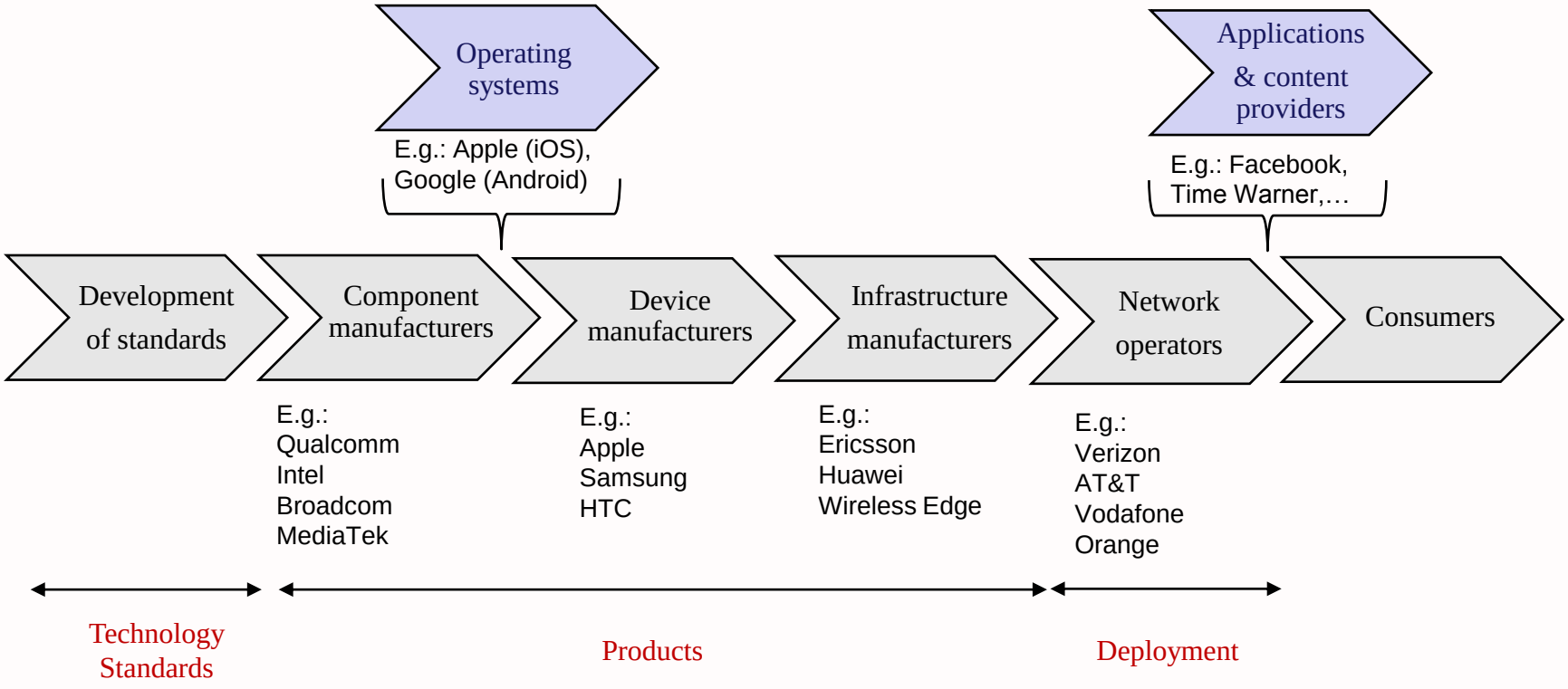
The “nature of the firm” in the mobile wireless industry (1)

- A rich industry value chain has spawned with advancing technology
- Firms specialize in specific segments of the value chain based on their comparative advantage



The “nature of the firm” in the mobile wireless industry (2)

- A rich industry value chain has spawned with advancing technology
- Firms specialize in specific segments based on their comparative advantage
- Late entrants, such as operating systems applications, content providers, were enabled due to high-data-rates



Data from 3GPP: 3G and 4G cellular standards

- **Partnership of six Standard Setting Organizations (SSOs)** spanning the globe, primary scope to **define the third- and fourth- generation (3G and 4G) wireless cellular standards** widely adopted world-wide. Large participation by all members of the mobile wireless ecosystem

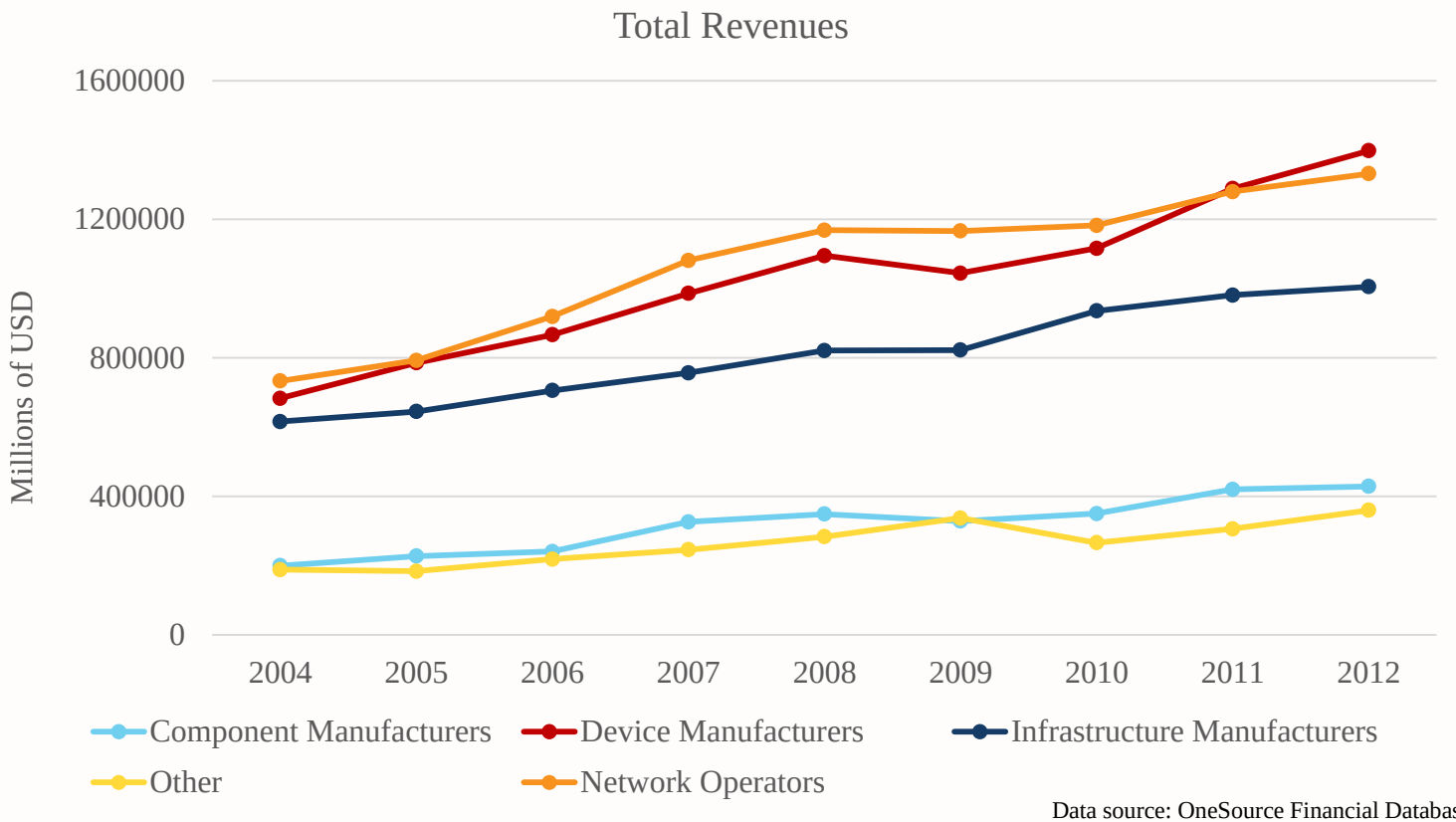
- We identified **518 unique member organizations from 2001-2014** spanning 43 countries*
  - 158 educational institutions, research institutions, other SSO's, or government agencies
  - 360 for-profit organizations with financial data, located financial data for **323 firms****

Relevant industry segments	No. of firms**
Component Manufacturers	61
Device Manufacturers	59
Infrastructure Manufacturers	107
Network Operators	63
Other	33

*Data source: www.3GPP.org
**Data source: OneSource Financial Database

Revenues by industry segment

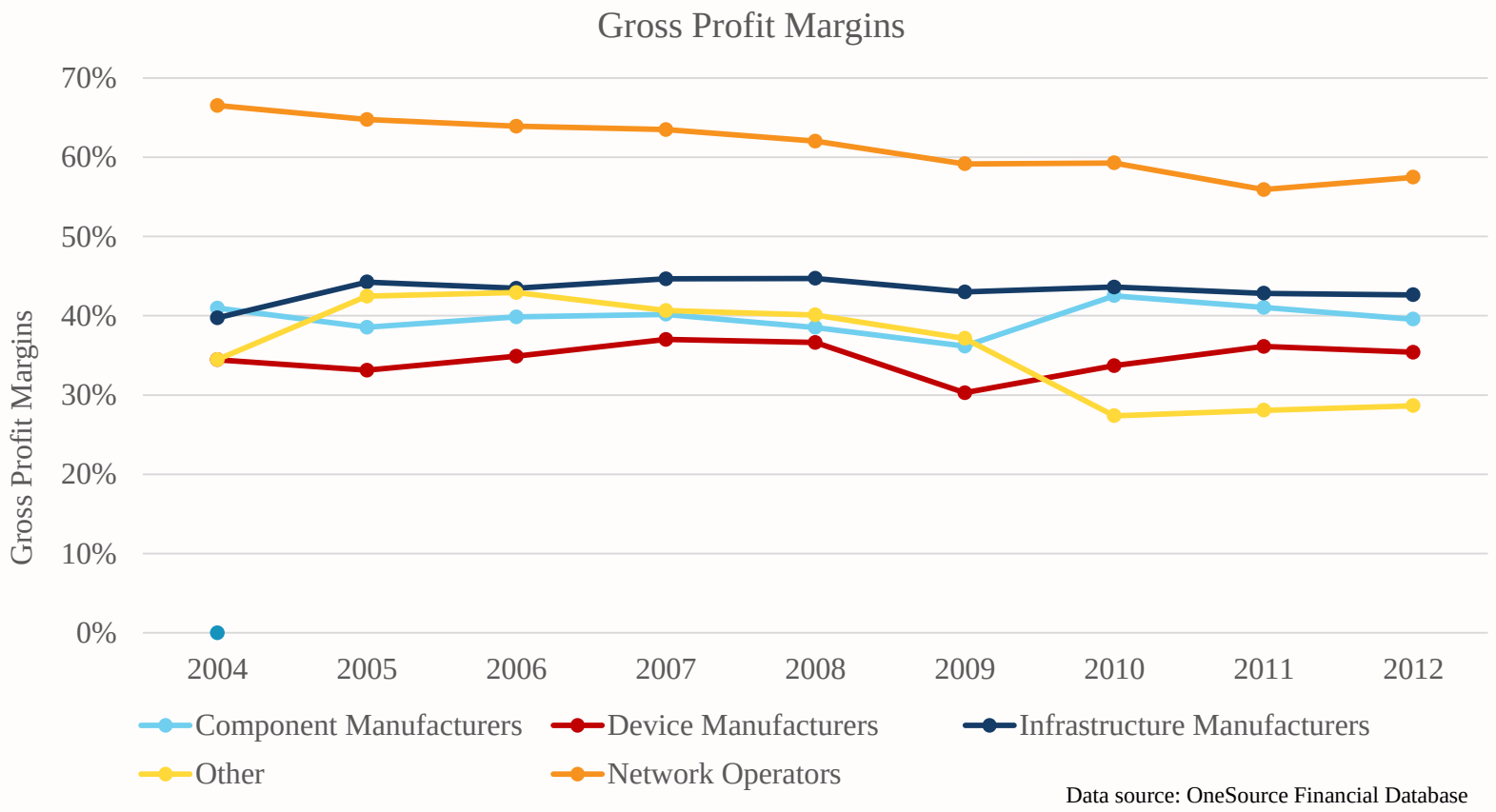
- Overall revenues rose for all the categories of firms in the value chain
  - CAGR (2004-2012): Network Operators (7%), Mobile Service Providers (4%), Infrastructure Manufacturers (5.6%), Device Manufacturers (8.3%), Component Manufacturers (8.8%)



Data source: OneSource Financial Database

Gross profit margins by industry segment

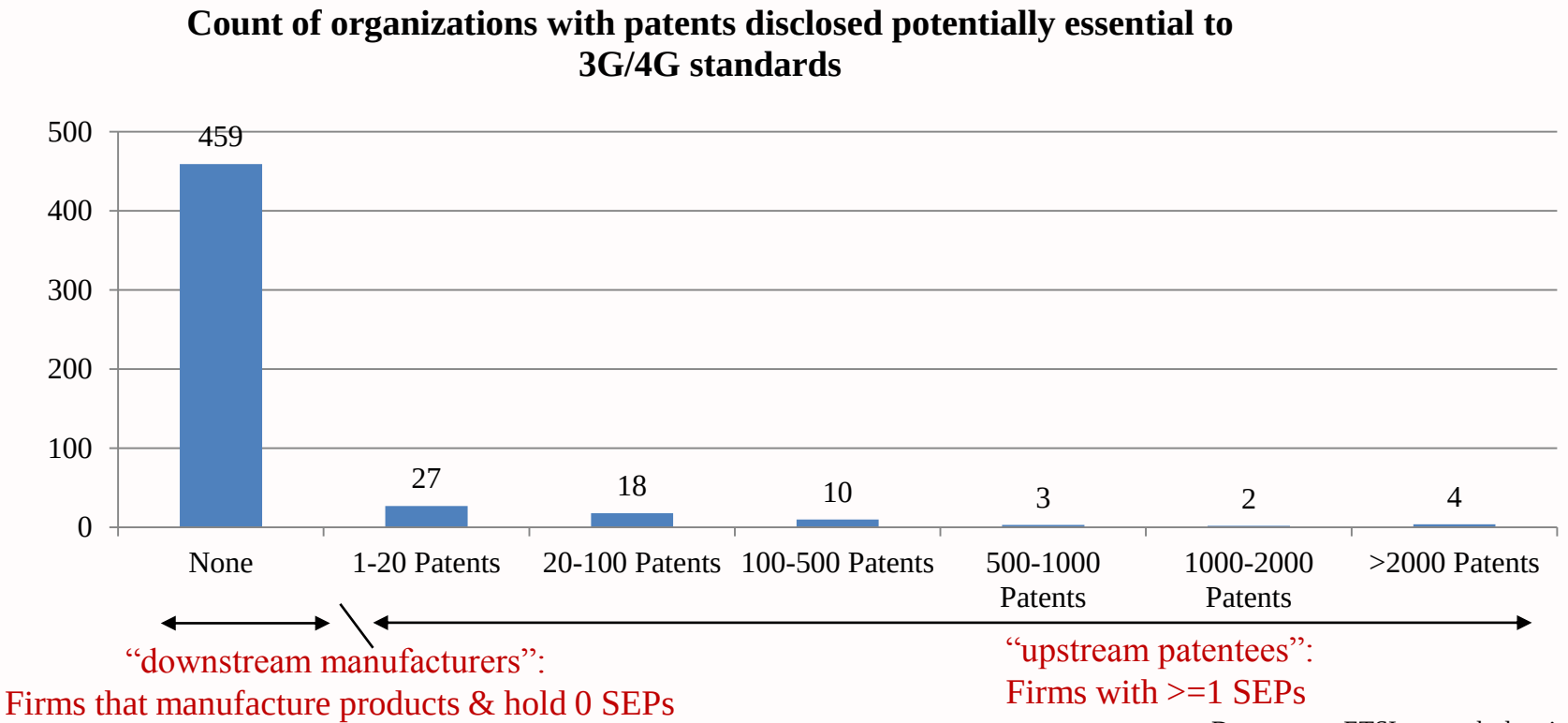
- Profit margins remained flat or declined for most categories of firms in the value chain
  - CAGR: Network Operators (-1.7%), Infrastructure Manufacturers (0.97%), Device Manufacturers (0.71%), Component Manufacturers (-0.18%)



Data source: OneSource Financial Database

Role of firms: Skewed distribution in R&D/patenting behavior

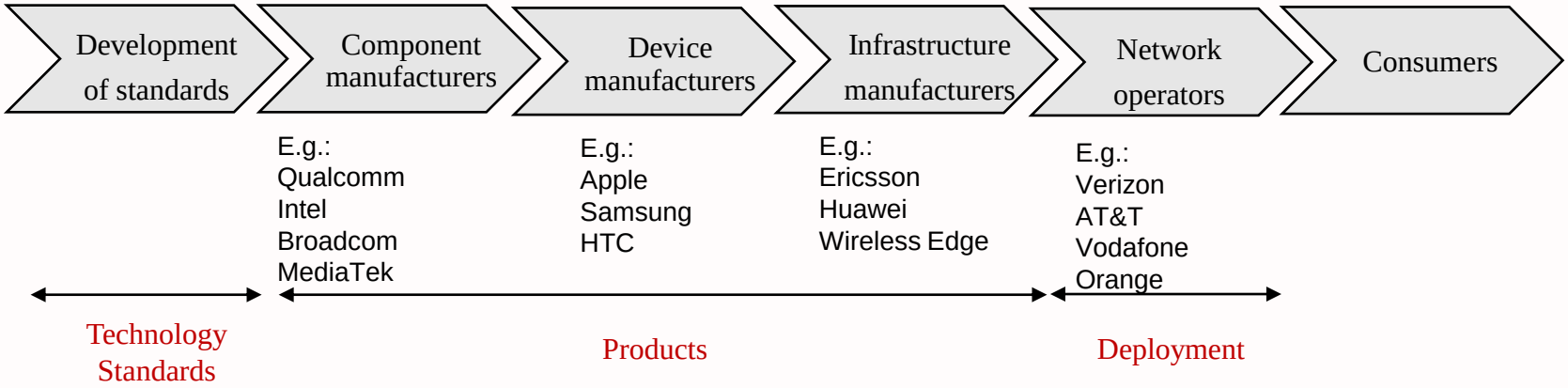
- Patents disclosed (to SSOs) as potentially essential to implement the technology standards are termed as "SEPs"
- The distribution of patents (and technology contributions) for 3G/4G technology standards is highly skewed, reflecting active R&D investment from a minority of organizations



Data source: ETSI patent declarations

The "nature of the firm" in the mobile wireless industry

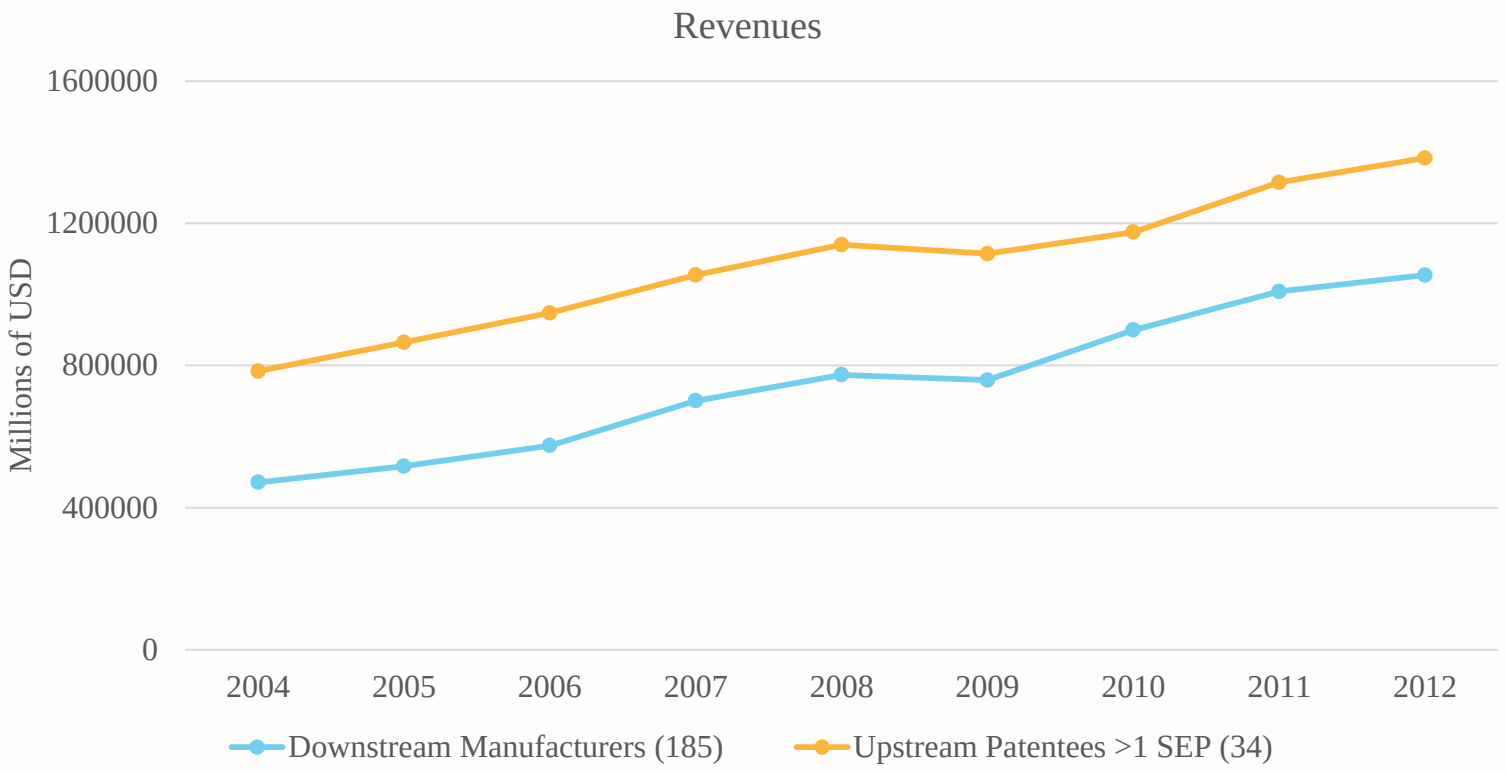
- Dividing the value chain based on firms that are "upstream patentees" for technology-standards, and firms that are "downstream manufacturers" of technology standards



Relevant industry segments	Total no. of firms**	No. upstream patentees (>=1 SEP)	No. downstream manufacturers (0 SEPs)
Component Manufacturers	61	7	54
Device Manufacturers	59	18	41
Infrastructure Manufacturers	107	9	98
Network Operators	63	7	0
Other	33	2	0

Revenues for patentees vs. manufacturers

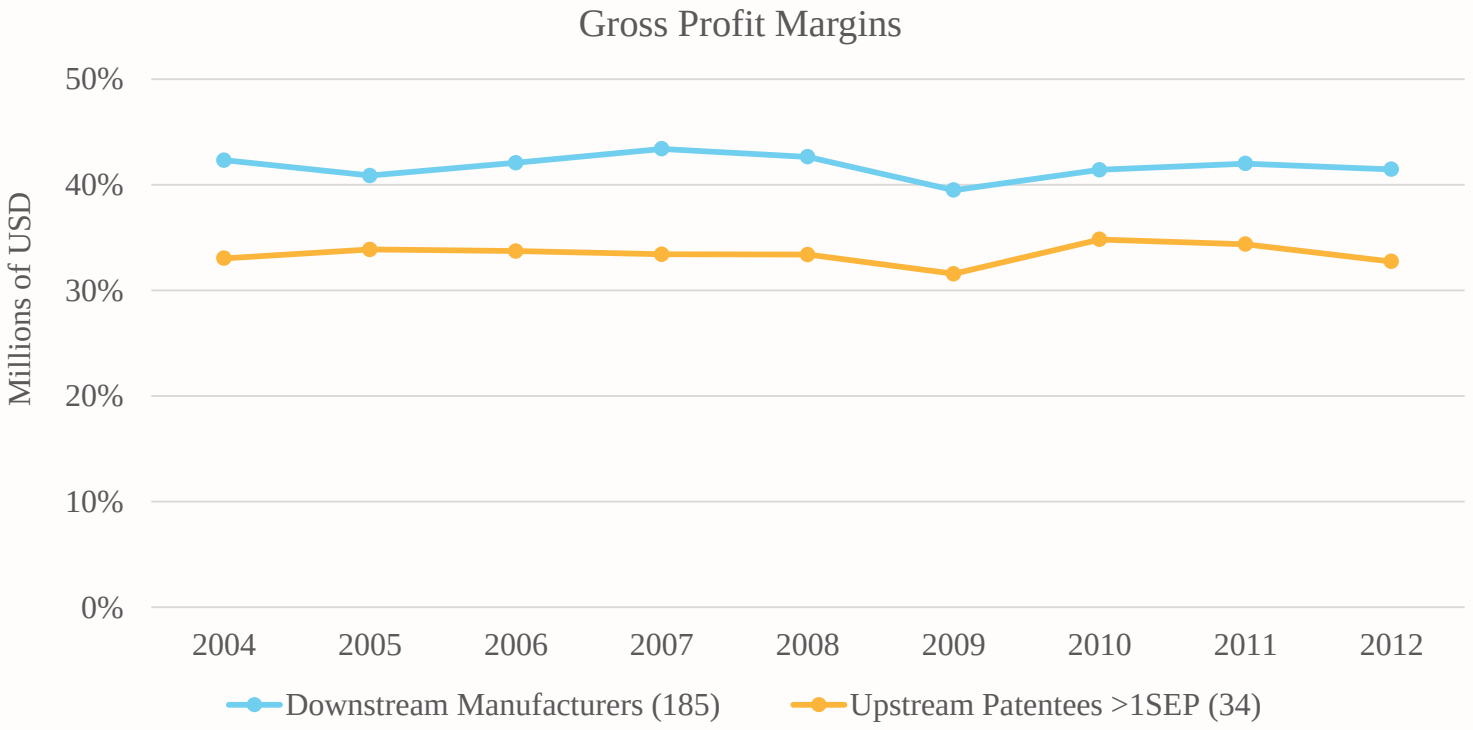
- Overall revenues rose both for patentees (innovators) & manufacturers (creators of products)
  - CAGR (2004-2012) for patentees (7.5%)
  - CAGR (2004-2012) for manufacturers (11%)



Data source: OneSource Financial Database

Gross profit margins for patentees vs. manufacturers

- Profit margins remained flat or declined both for patentees (innovators) & manufacturers (creators of products)
  - CAGR (2004-2012) for patentees (0%)
  - CAGR (2004-2012) for manufacturers (-0.1%)



Data source: OneSource Financial Database

Conclusion

- A complex industry value chain brings together innovators and creators of mobile wireless technologies
- The mobile wireless industry is enabled by developments in technology standards, that solved some fundamental technological barriers to achieve high-data-rates over wireless networks
- All categories of firms positioned in the value chain – patentees, manufacturers of various products, and service providers – have enjoyed a share of rising revenues
- Flat profit margins suggest a competitive industry, and do not reflect one category of firms' (patentees, manufacturers of various products, or service providers) margins rising and another's falling

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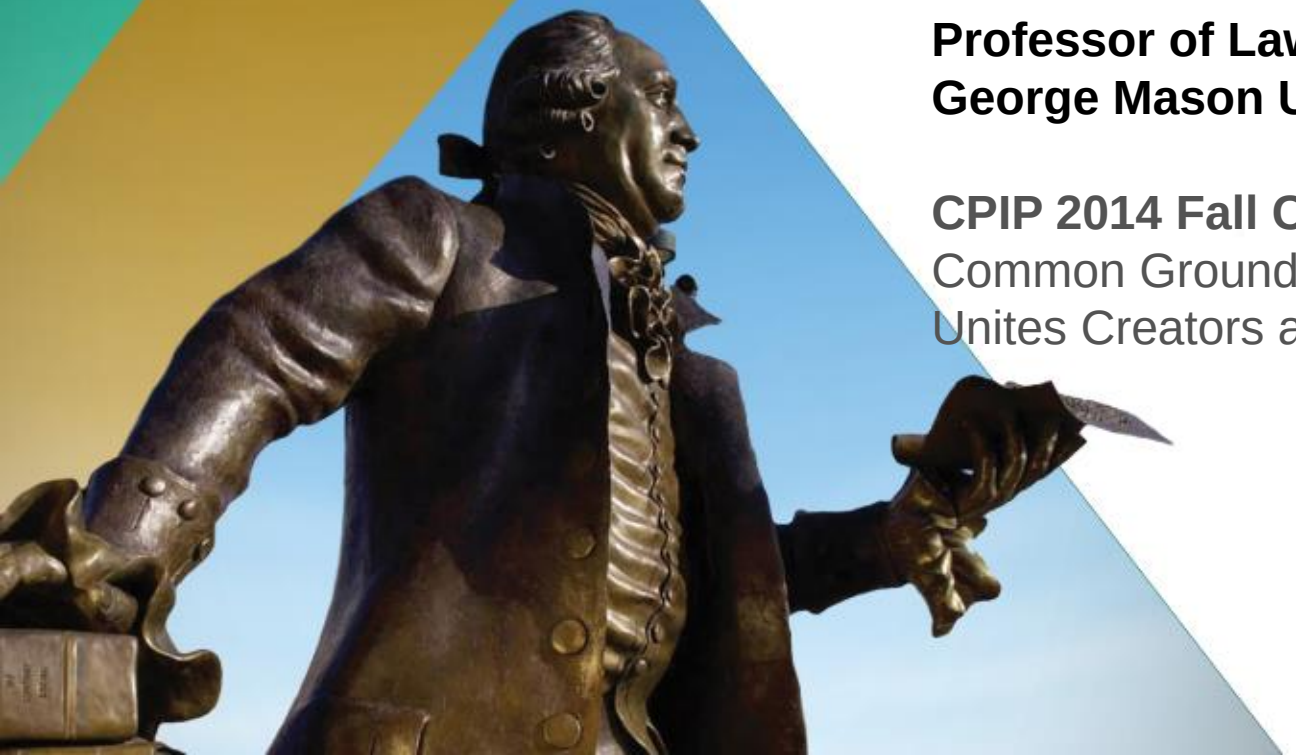
LAW & ECONOMICS CENTER

LEGAL & ECONOMIC ANALYSIS 40 Years PUBLIC POLICY IMPACT

Opening Pandora's Box: A Coasian 37' View of Performing Rights Organizations in 2014

BRUCE H. KOBAYASHI
Professor of Law
George Mason University Law School

CPIP 2014 Fall Conference
Common Ground: How Intellectual Property Unites Creators and Innovators.



Coase and Theory of the Firm (1937)

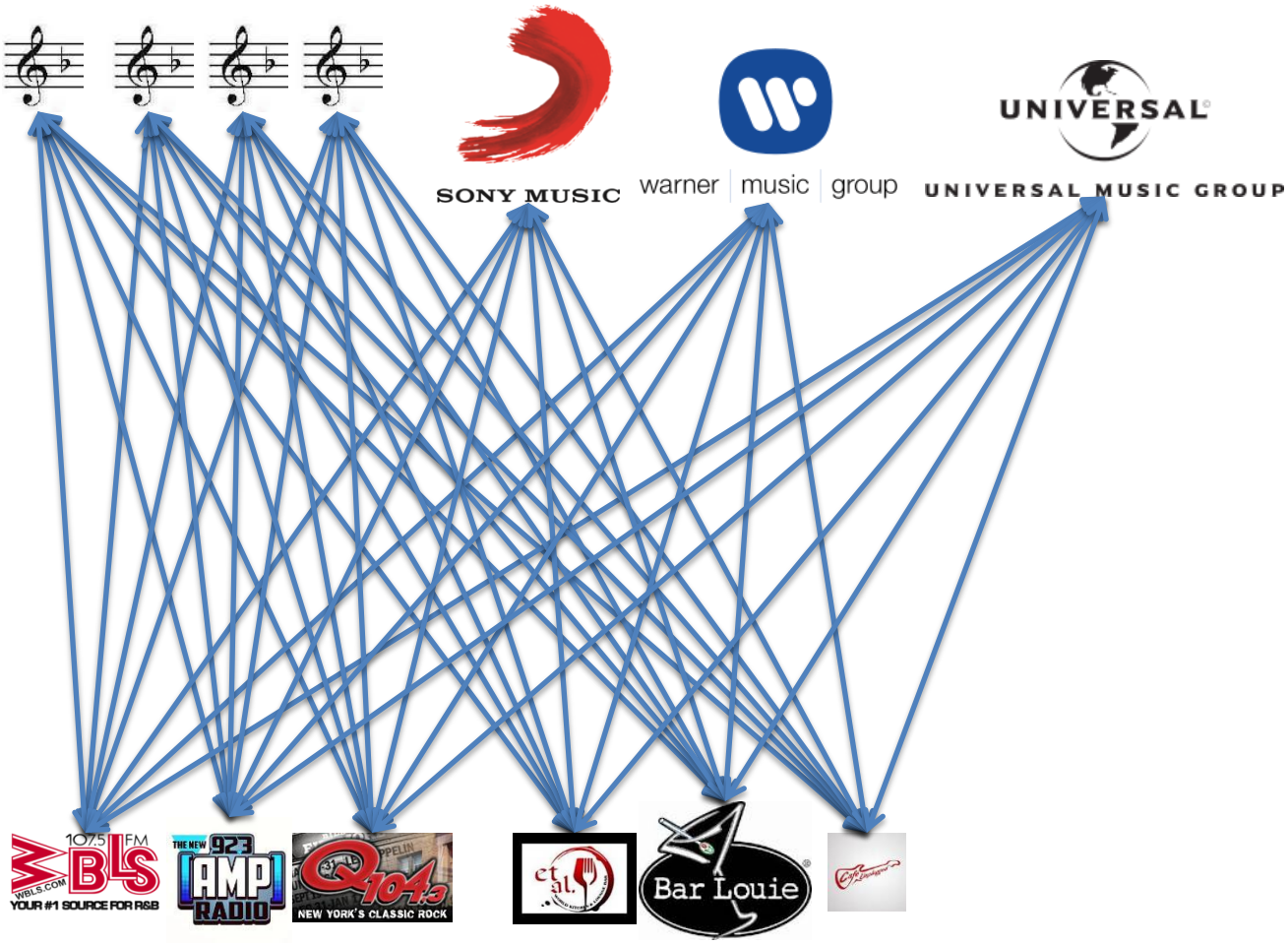
- Organizing exchange through an organization will occur in order to economize on the costs of market transactions
  - The costs of discovering market prices
  - The costs of negotiating a contract for each exchange transaction
- Theory extended used to analyze the make/buy decision and to study vertical integration (see generally, Klein, Crawford & Alchian (1978); Williamson (1971); Hart and Moore (2008); Sen (2007) (explaining the rise of the singer/songwriter))
- Theory extended and used to analyze hybrid organizations, e.g., franchising (Rubin 1978)

Performing Rights Organizations as Coasian 37' Organizations

- BMI, ASCAP, SESAC
- Organizations are "a market response to copyright problems caused by high transactions costs. Number of users of copyrighted music makes individual negotiations with individual copyright holders to acquire performance rights infeasible." (Landes and Posner (1989))

Performing Rights Organizations as Coasian 37' Organizations

- BMI, ASCAP, SESAC
- Organizations are "a market response to copyright problems caused by high transactions costs. Number of users of copyrighted music makes individual negotiations with individual copyright holders to acquire performance rights infeasible." (Landes and Posner (1989))
- PROs eliminate the costs of individual market transactions with blanket licenses to entire repertoire.
- Are responsible for distributing license fees net of costs to songwriters or publisher that holds the copyright to the musical work


SONY MUSIC
warner music group
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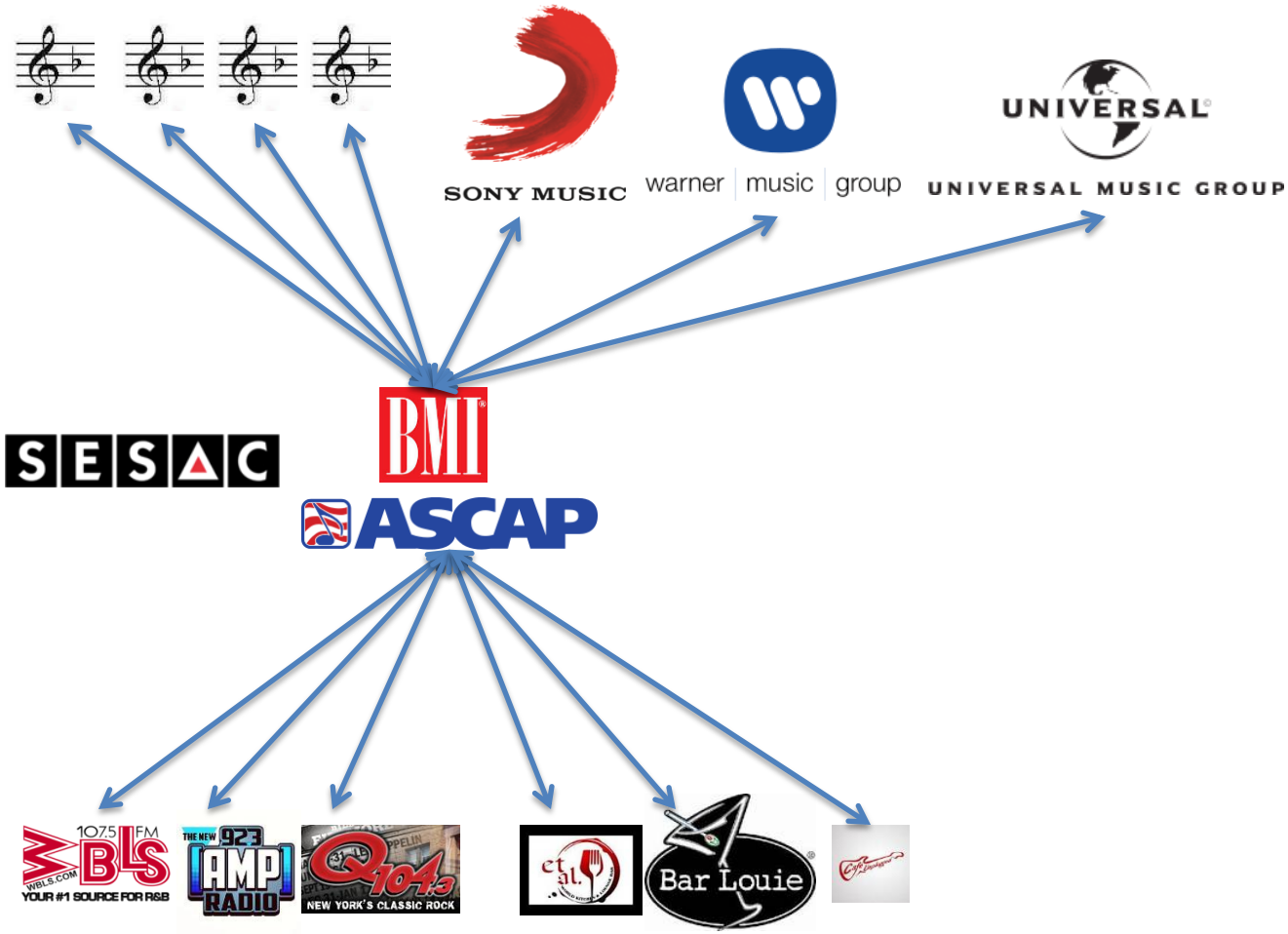
1075 FM
WBLS.COM
BLS
YOUR #1 SOURCE FOR R&B
THE NEW 92.3
AMP RADIO
Q104.3
NEW YORK'S CLASSIC ROCK
et al.
Bar Louie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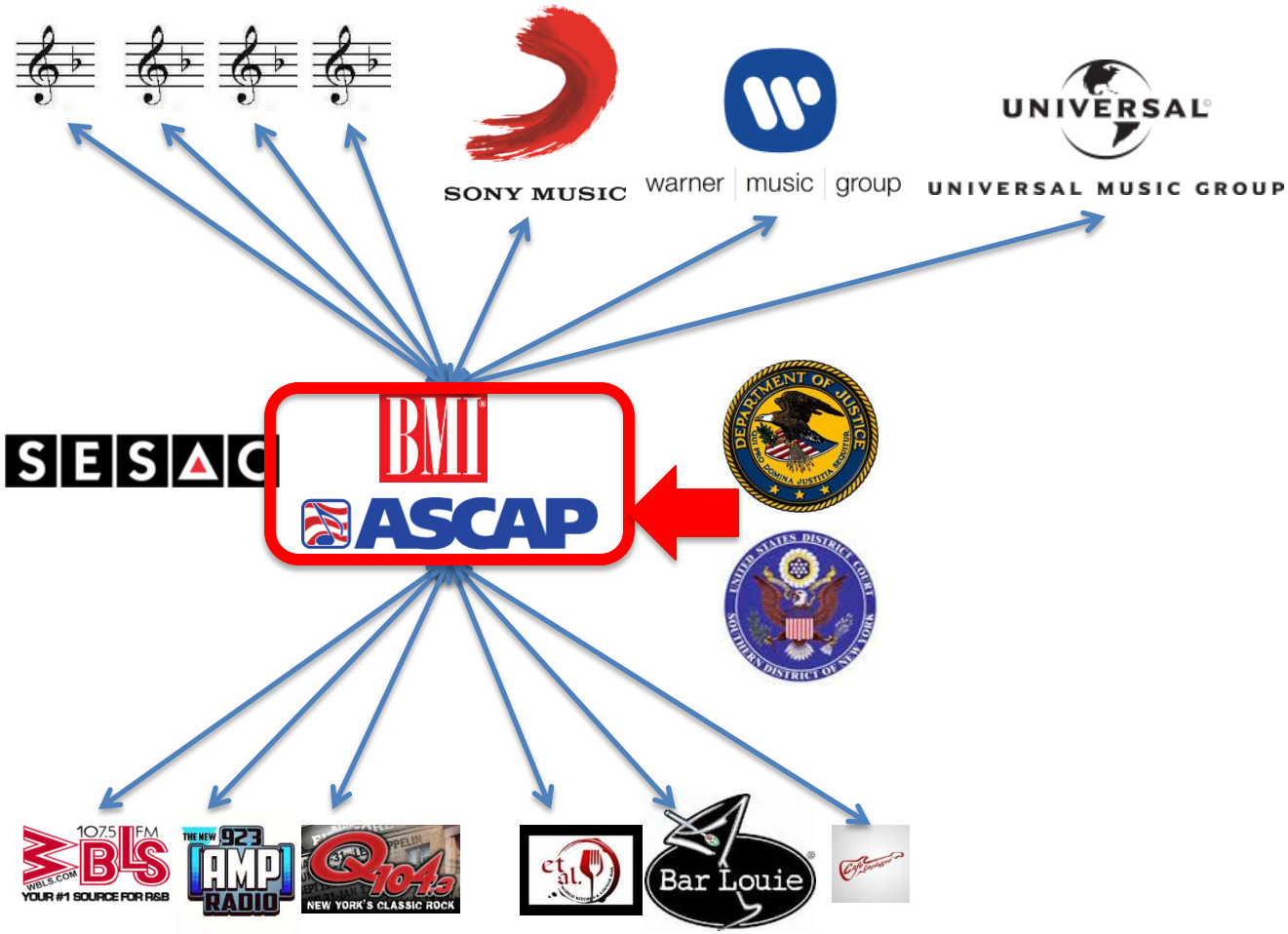
Performance Rights Organizations (not involving digital audio transmission) in U.S.

- License and collect performance royalties for publishers and songwriters
- Do not collect songwriters/publishers mechanical royalties (some are collected by organizations such as the Harry Fox Agency)
- Do not collect digital performance royalties (collected in the U.S. by SoundExchange)
- In other countries a single copyright collectives collects multiple performance royalties (for composition and sound recording) or performance and mechanical royalties.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et al.
Bar Louie

Antitrust and Consent Decrees

- Antitrust Decrees entered into in 1941 with BMI and ASCAP (but not SESAC) oversee the rates charged:
  - Require that ASCAP and BMI to license all similarly situated users of music under the same rates and standards
  - Rate Court oversight (currently SDNY) to determine reasonable rates when voluntarily negotiations between PRO and music licensee do not result in an agreement
- Last modified in 2001 (ASCAP) and 1994 (BMI)
- Congressional Hearings and DOJ Consent Decree Review
  - Allow ASCAP and BMI to expand beyond current business model and license rights other than rights to public performance
  - Replace rate courts with mandatory arbitration
  - Allow ASCAP and BMI to allow rights holders to withdraw rights for some types of users

Digital Performance Right in Sound Recordings Act of 1995 (DPRA)

- 17 U.S.C. §§106(6), 114-5
- Owners of copyright in sound recordings have an exclusive right to public performance by means of a digital audio transmission
  - Non subscription broadcast transmissions (e.g., terrestrial radio stations) exempt
  - Non-interactive internet transmissions required to pay a statutory license established by the Copyright Royalty Board (Pandora, Web Radio, Satellite Radio), administered by Sound Exchange
  - Interactive Internet transmission services must negotiate a license agreement with the copyright holder (YouTube)
- Payments are in addition to those paid for public performance or the musical composition


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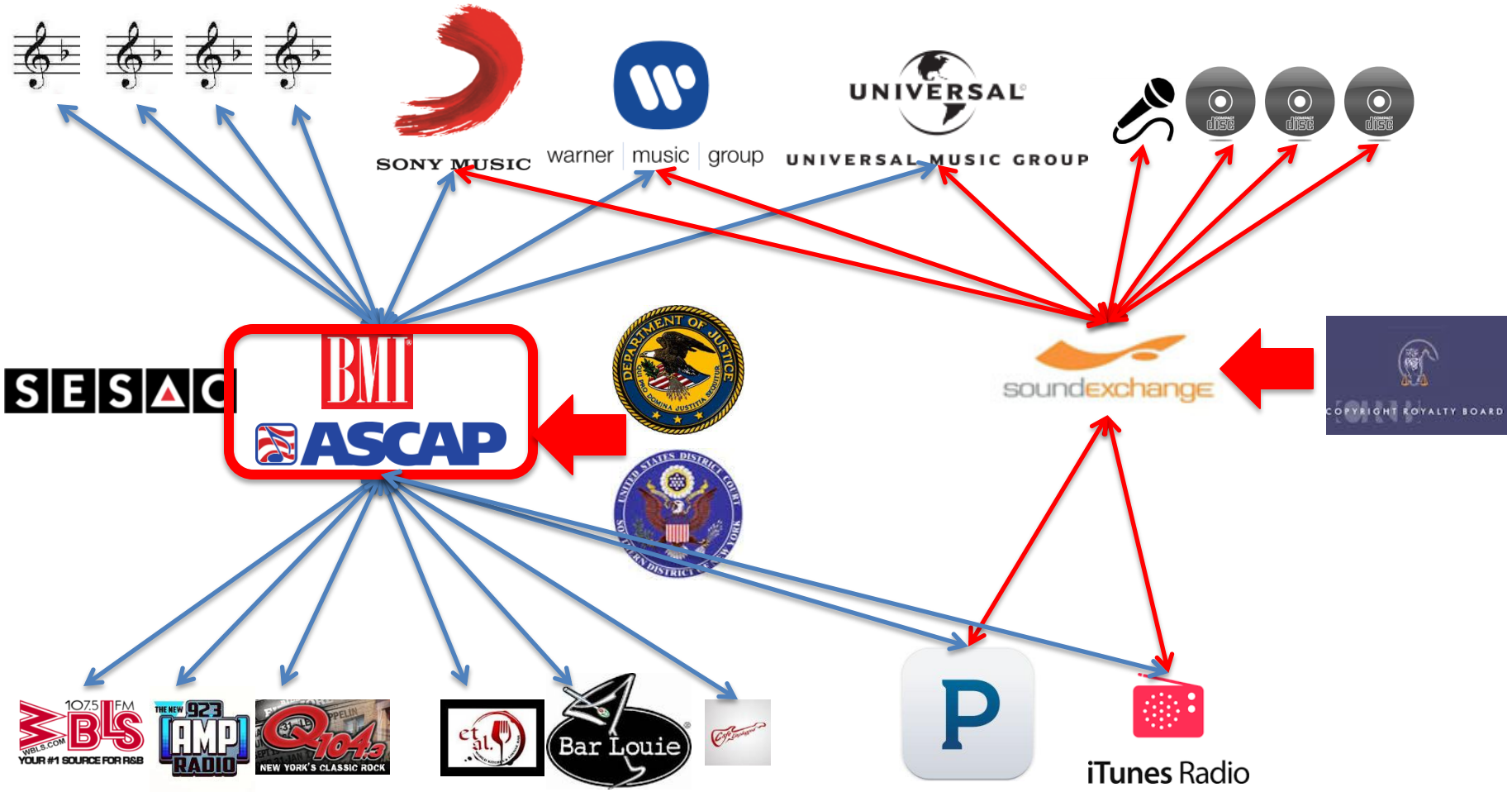
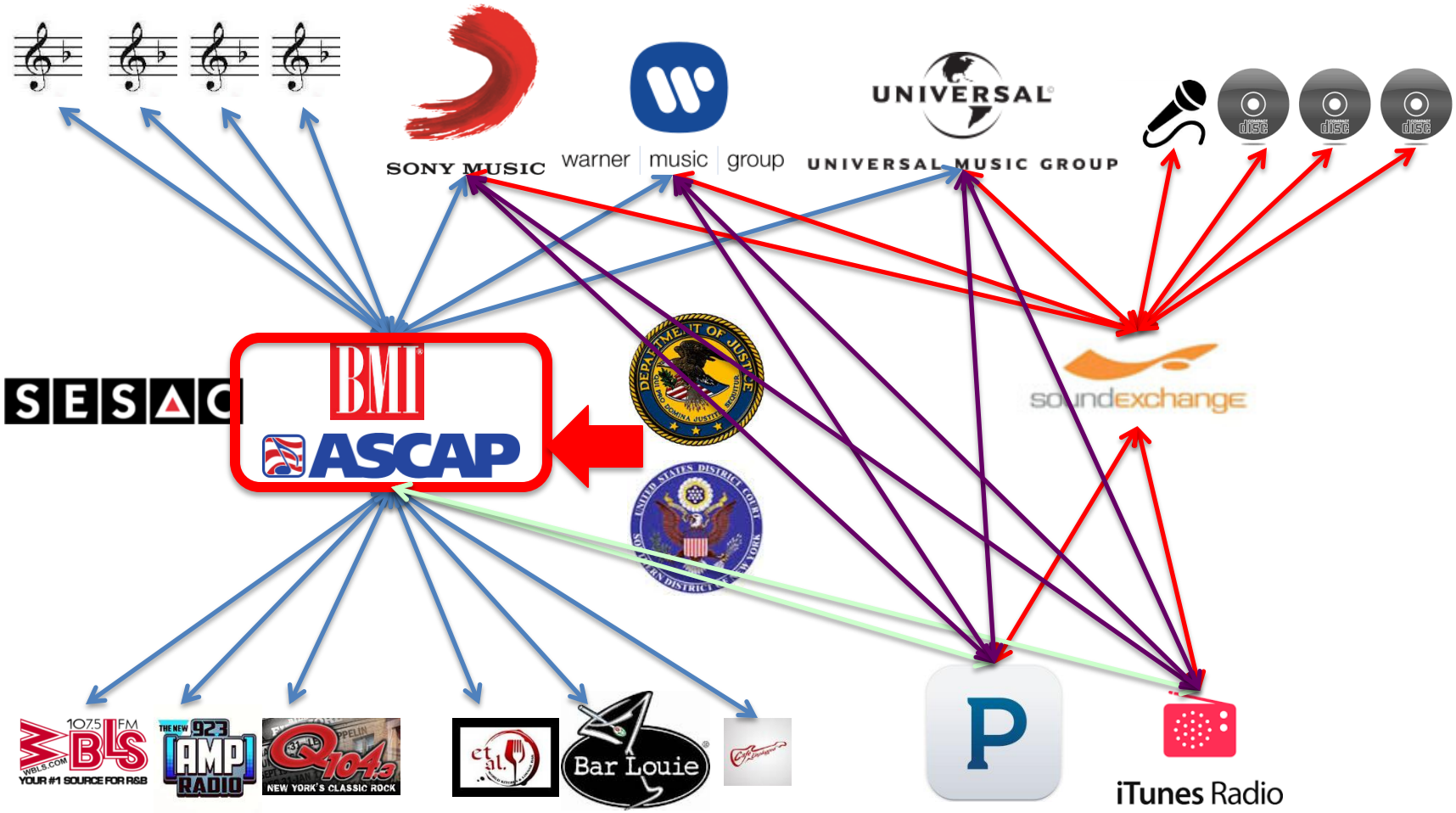

SONY MUSIC
warner music group
UNIVERSAL MUSIC GROUP
SESAC
BMI
ASCAP
soundexchange
COPYRIGHT ROYALTY BOARD
iTunes Radio
Bar Louie

Withdrawal of Digital Rights from BMI/ASCAP

- EMI announces intent to withdrawal from ASCAP in 2010
- Compendium modification by ASCAP to allow partial withdrawals of performance rights from ASCAP
- EMI, Sony and UMPG announce intention to withdraw of new media rights from ASCAP
- Direct negotiations with large new media entites (including non-interactive services such as Pandora and iTunes radio)
- Rate Court holds that partial withdrawals are not allowed under modified consent decrees
  - Pandora v. ASCAP
  - Pandora v. BMI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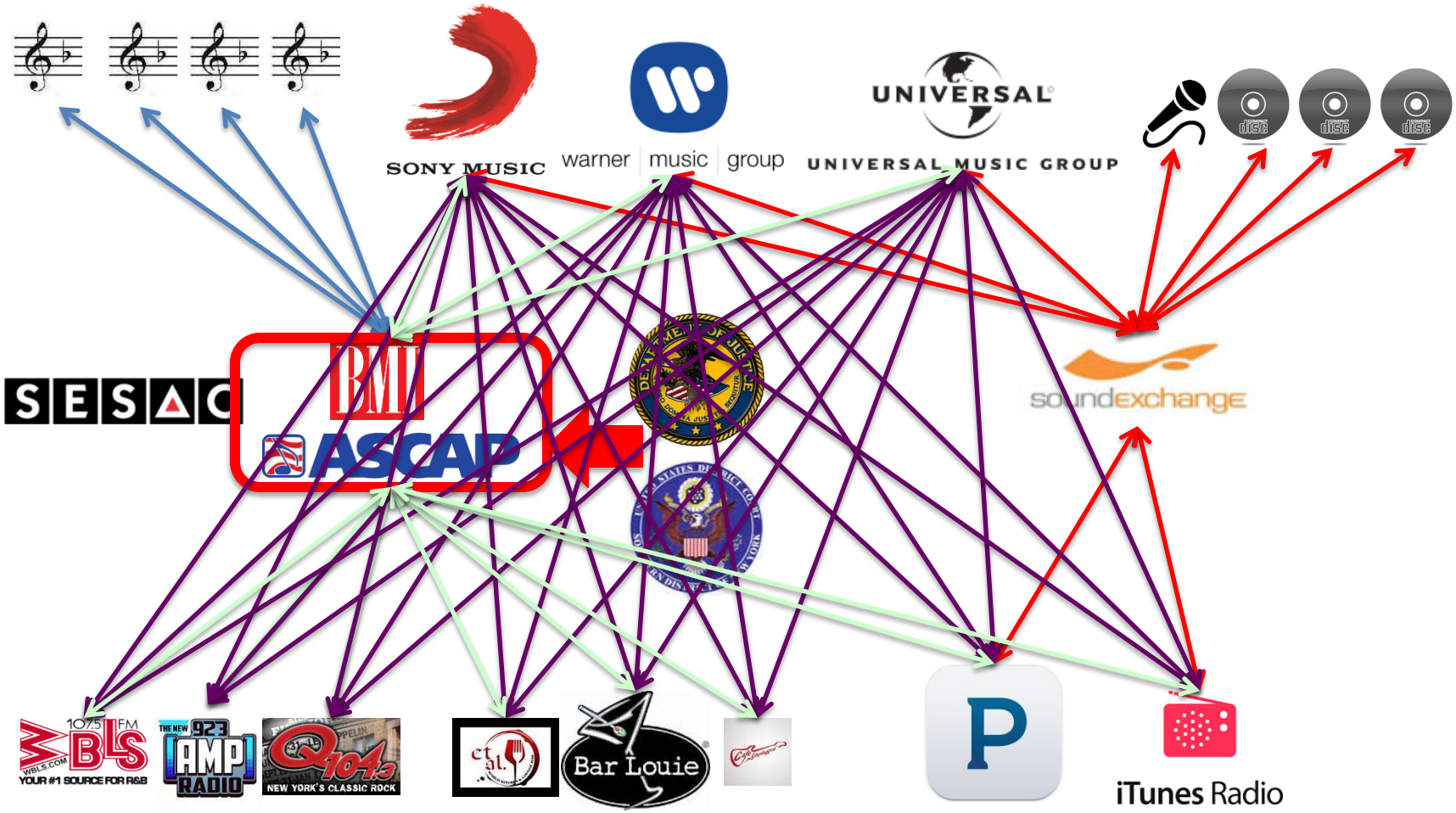
soundexchange
Bar Louie
iTunes Radio

Coase 1937 and the Rate Court's Hobson's Choice

- Technological change and changes to the copyright laws has changed the nature of transactions costs that determined the nature of the PROs
- One would expect PROs to adapt to these changes, or face obsolescence when that copyright holders choose to use alternative mechanisms to appropriate the royalties from public performances.
- Indeed, this is what we have observed, with integrated music publisher (owning copyrights to performances and sound recordings) attempting to withdraw their digital rights from both ASCAP and BMI.
- The rate court's creation of a Hobson's choice in an attempt to continue the application of the antitrust consent decrees will:
  - Speed the demise of traditional PROs
  - Raise transactions costs for the traditional users of works that remain in ASCAP and BMI
  - Prevent use of potentially more efficient alternative to price determination through consent decree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STICKS & STONES:
HOW NAME CALLING MISSES THE COMPLEXITY OF LICENSING-BASED BUSINESS MODELS

Kristen Osenga
University of Richmond
School of Law

October 2014

OVERVIEW

A (very very) quick review of alleged “patent troll” behavior

Looking behind the label

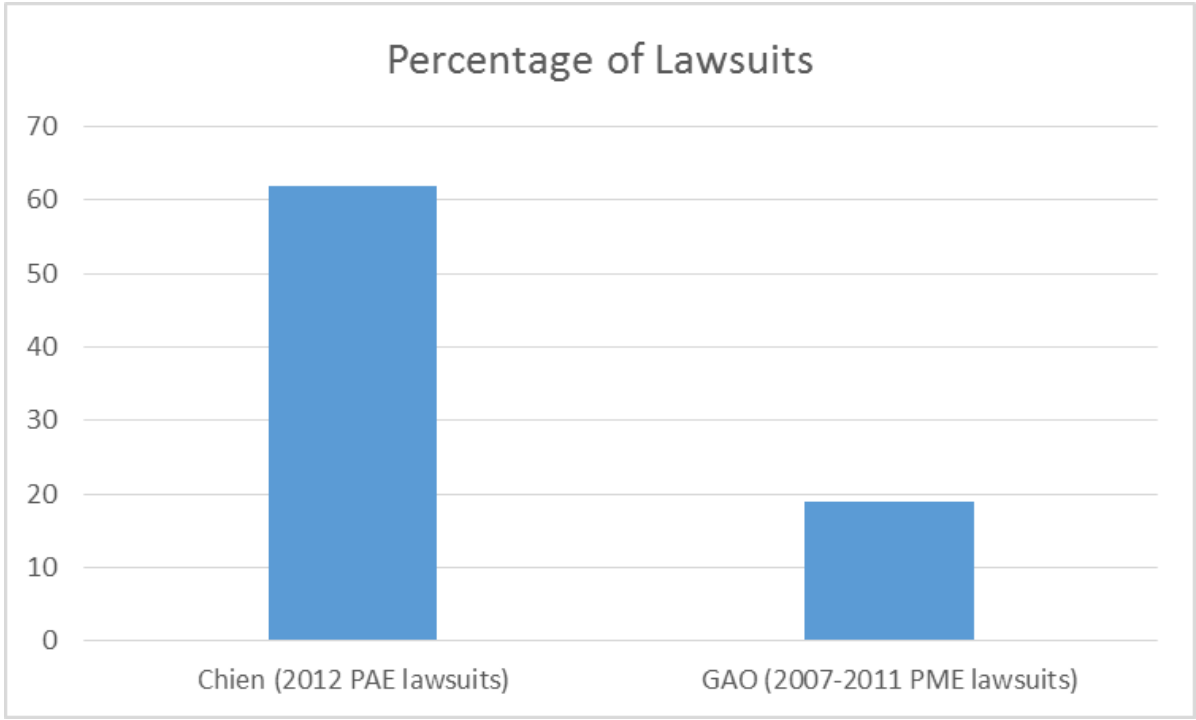
- A deeper view of “licensed-based business models”
- What we can learn by looking at various licensed-based business models

How the name calling obscures the complexity of license-based business models

"PATENT TROLLS"

Problem of definition

- Leads to problems in scope
- Ignores the real issues



LOOKING BEHIND THE LABEL

What if we peer behind the curtain and look at what some of these license-based business models are actually doing (and not doing)?

A DEEPER VIEW OF LICENSED-BASED BUSINESS MODELS

Different types of licensed-based business models

- How they become licensed-based businesses
  - What did they start as?
  - What caused the change in business model?
- What they do as licensed-based businesses
  - Solely licensing
  - Licensing and developing
  - Licensing, developing, and producing

FORMERLY MANUFACTURING ENTITIES

Case study of a few firms that have been labeled “patent trolls” or share characteristics with those that have

- How did they become licensed-based businesses?
  - Used to be manufacturing companies
  - Something happened
- What they do as licensed-based businesses
  - Still developing inventive & innovative technology
  - Still supporting innovative technology
  - Still manufacturing some innovative technology

FORMERLY MANUFACTURING ENTITIES

What can we learn by studying these licensed-based businesses?

- Formerly manufacturing entities commercialize patented technology
  - As a manufacturer, as an intermediary
- Formerly manufacturing entities are better intermediaries
  - Know the risks and costs of commercializing
- Formerly manufacturing entities were (and often still are) part of an industry
  - Business ethos & cultural norms
  - Repercussions for abusive behaviors
- Formerly manufacturing entities are not “hiding beneath a bridge, hoping to trap the unwary”

NAME CALLING OBSCURES COMPLEXITY

License-based business models are more complex than can be connoted by a single term, especially one as pejorative as “patent troll”

- Even within one type of license-based business model (formerly manufacturing entities), differences abound
- Examining the background and behavior of license-based businesses is revealing
  - Many positive aspects
  - Concerns that are driving policy discussions are not present
- Licensing has been part of patent law and commercialization for centuries
  - Licensing is one type of commercialization
  - Formerly manufacturing entities in particularly may excel at licensing (and therefore commercialization)
  - Reform that takes aim solely due to a licensing-based business model is likely to harm, not incentivize, invention & innovation

THE MOVIE STUDIO AS AN ECONOMIC ACTOR

GEORGE MASON UNIVERSITY
CENTER FOR THE PROTECTION OF INTELLECTUAL PROPERTY

BEN SHEFFNER
VP, LEGAL AFFAIRS
OCTOBER 9, 2014

WHAT IS A MOVIE STUDIO?

Old model: the "studio system" (1920s-1950s)

- Studios employed the talent
  - "contract players": actors, writers, etc. under long-term contracts
- Vertical integration: studios owned the theaters
  - *Paramount* decree (1948)

New system: star-driven (1950s-present)

- Independent production companies
- Dominated by freelancers
- Others deal directly with the consumer
  - Exhibitors, MVPDs, digital platforms, etc.
- But studio still performs crucial roles

WHAT'S THE POINT OF A MOVIE STUDIO?

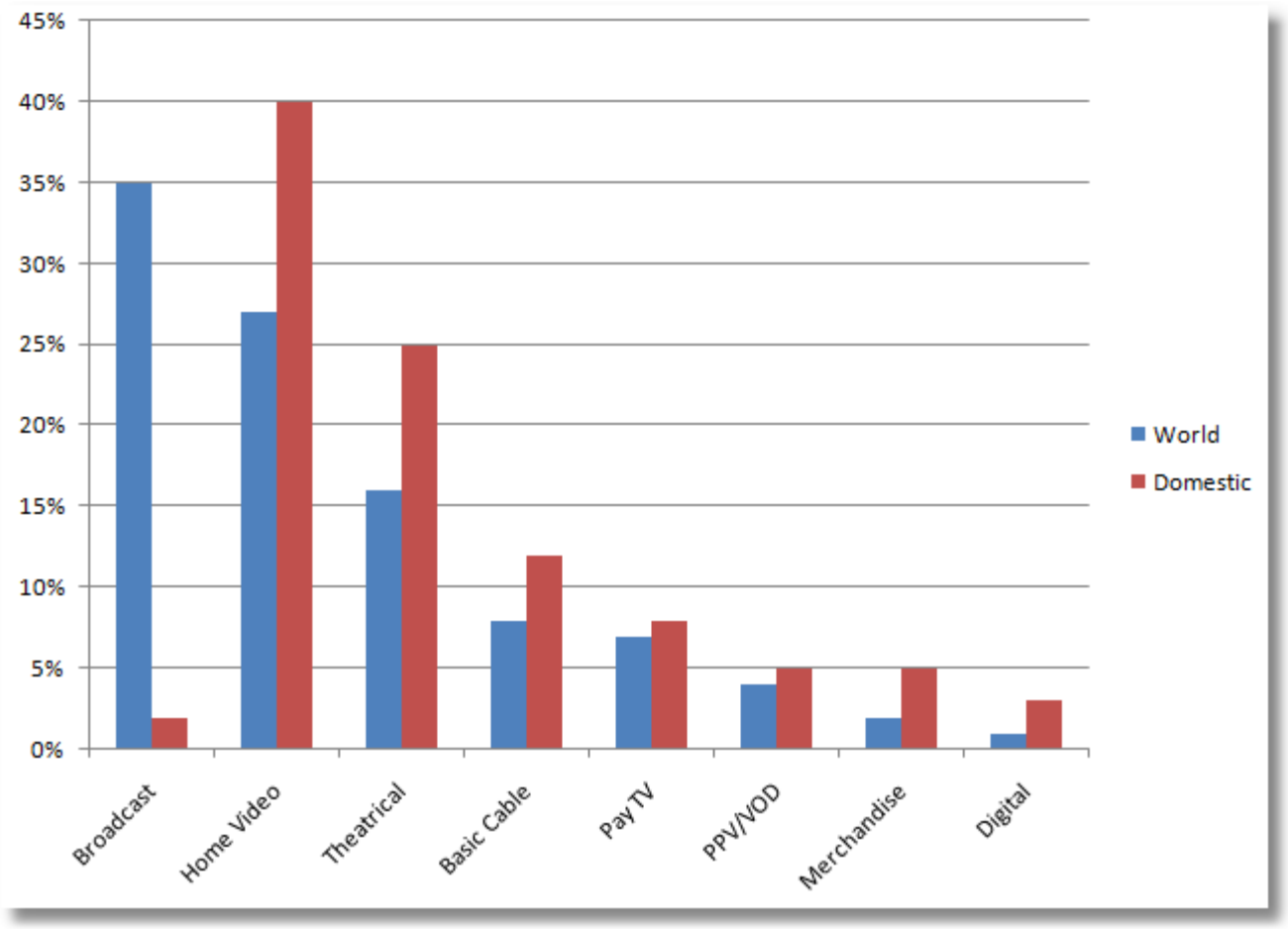
The principle asset of a modern studio nowadays, aside from its library of movie titles and other intellectual properties, is its human capital, which includes executives with the negotiating skills, judgment, charm, and goodwill within the industry to get the top stars, make favorable production deal, and profitably organize the release of movies.

-- Edward Jay Epstein, The Hollywood Economist (Release 2.0, 2012)

MAIN FUNCTIONS OF A MOVIE STUDIO

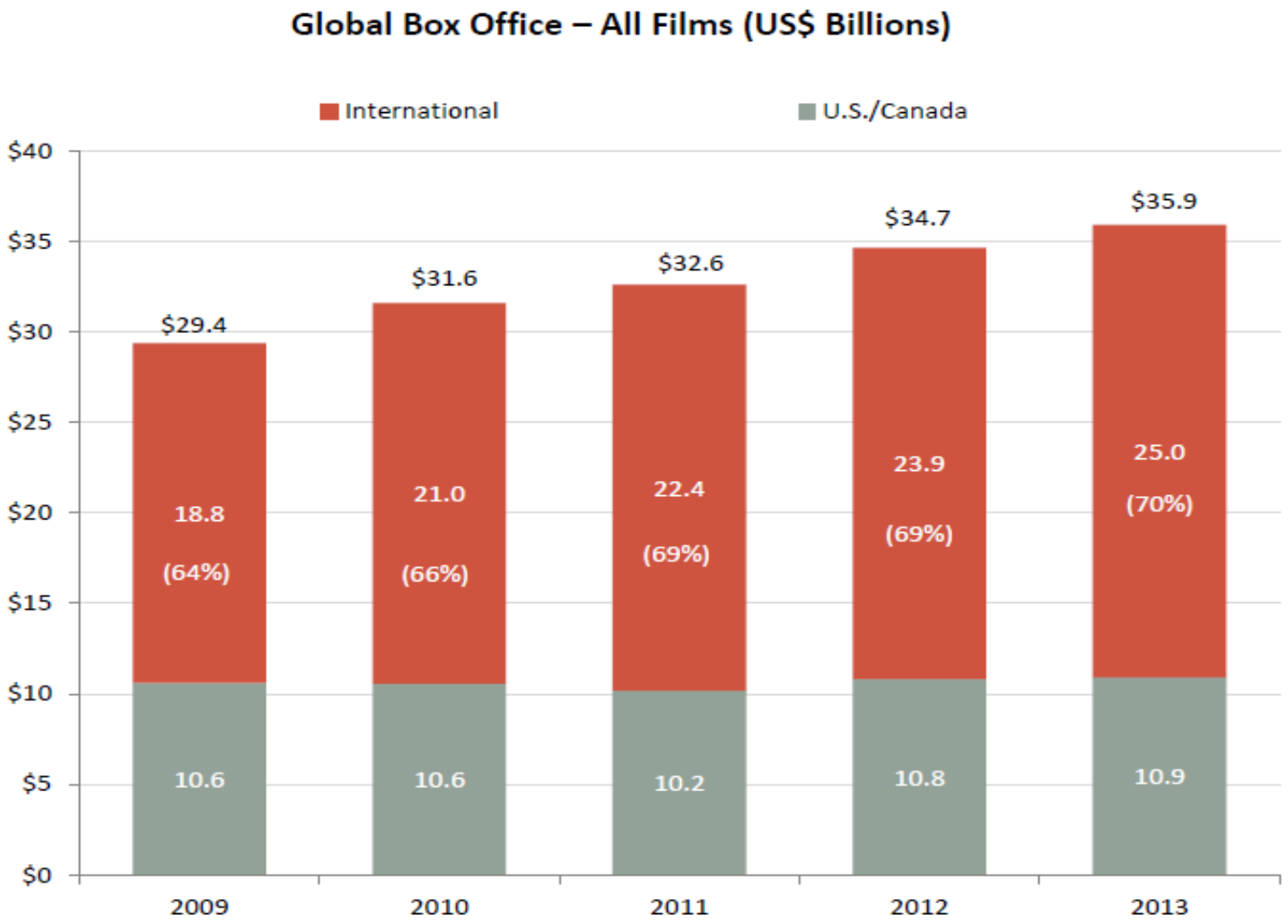
- **Assemble Financing**
  - Self finance
  - Investment from hedge funds
  - Foreign pre-sales
    - Contracts as collateral for bank loans
  - Tax incentives
  - Average “major studio film” released between 2004 and 2008 cost on average $137 million to produce, market and distribute globally
- **Help assemble team**
  - Writer, director, actors, etc.
- **Marketing**
  - HUGELY important
  - Average $36 million per film
- **Distribution**
  - Relationships with exhibitors, TV networks, online platforms, etc.

DISTRIBUTION: Revenue Sources



Credit: Professor William Greene, NYU Business School

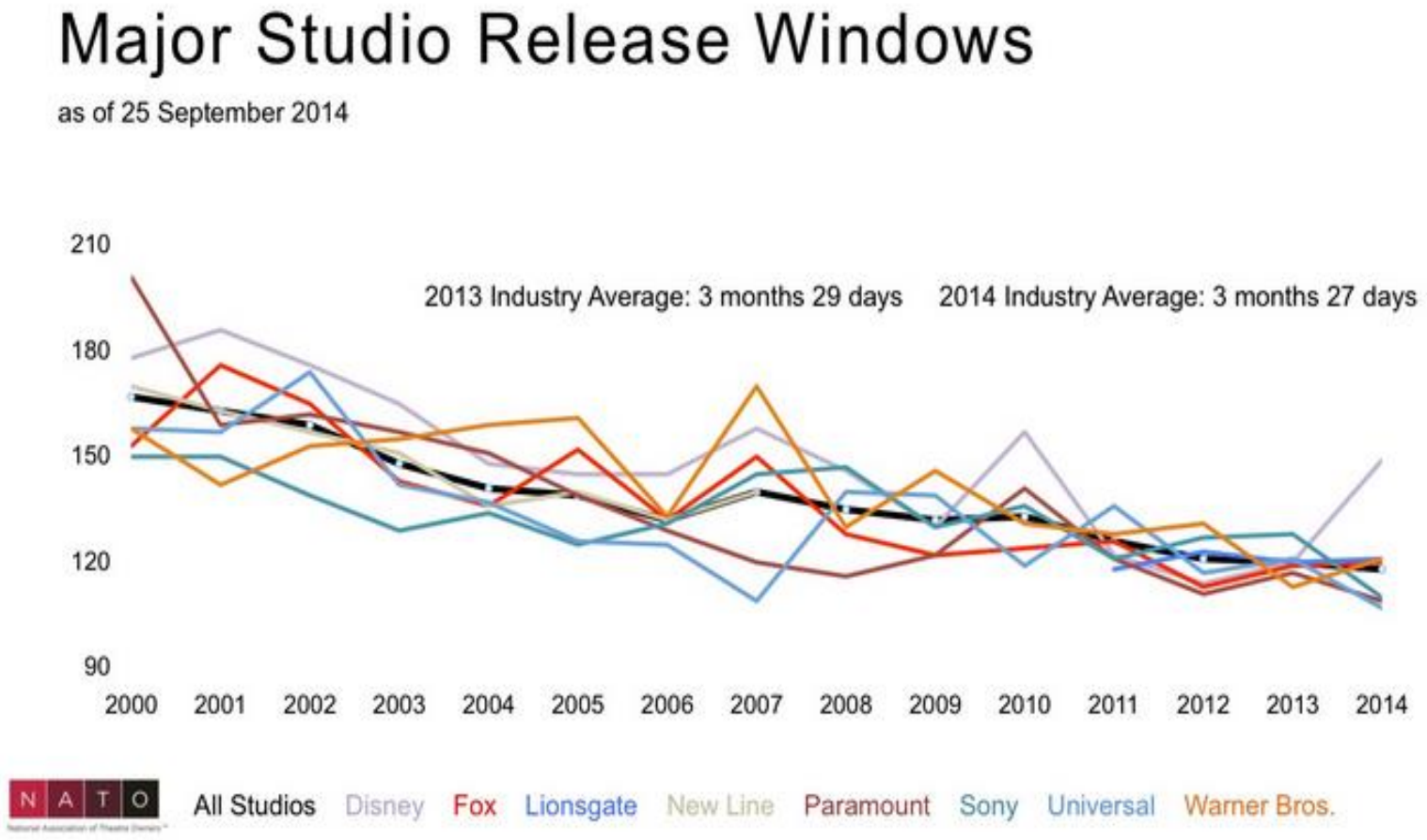
WHO GOES TO SEE MOVIES?



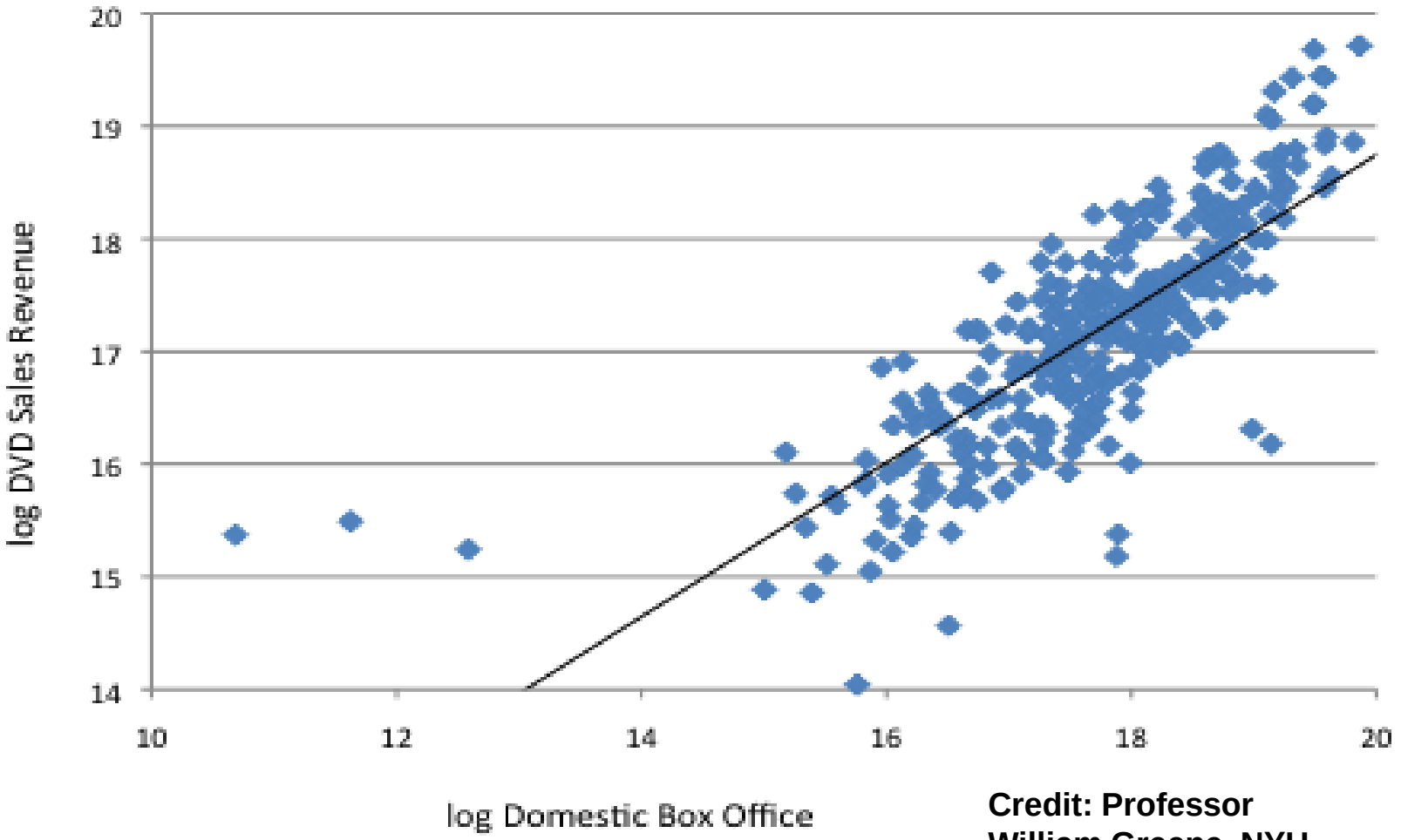
THE WINDOWING SYSTEM

- Theatrical
- Airlines
- Home video
- Pay per view
- Pay TV
- Free TV

THE EVER-SHRINKING WINDOW



WHY WINDOWS STILL MATTER



Credit: Professor William Greene, NYU Business School

Brian Camelio

Founder/CEO of ArtistShare, Inc.

artistShare®

where the fans make it happen

artistShare®

where the fans make it happen

- Founded in 2000
- Holds US Patent 7,885,887
- Additional patents pending

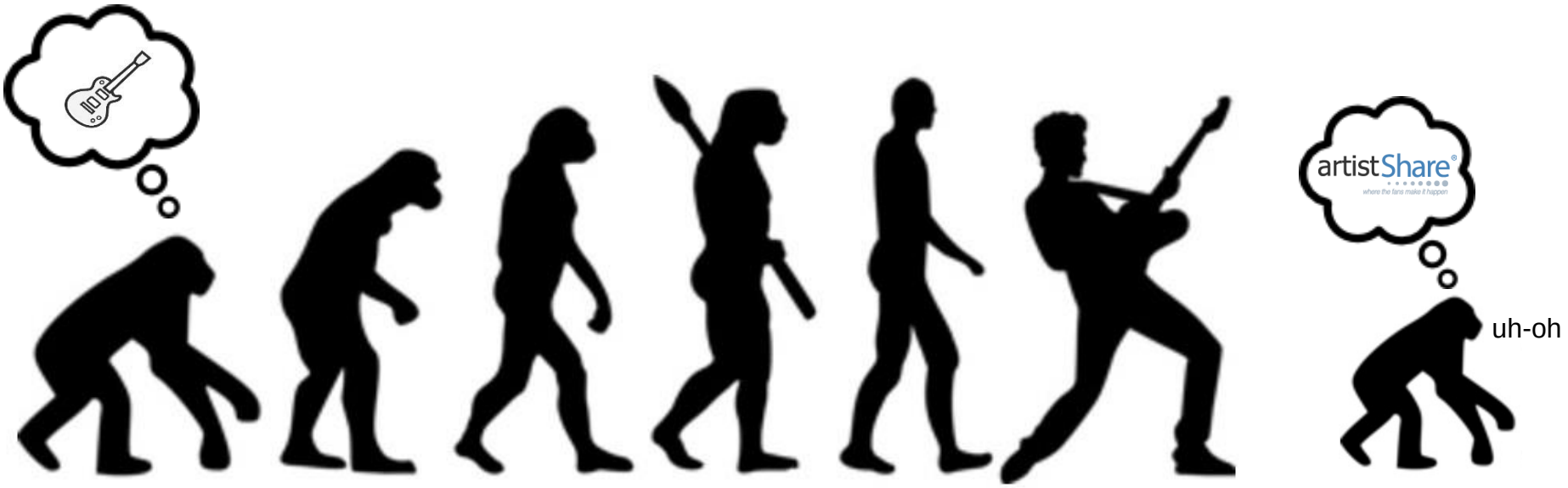
My History

(and why it matters)

artistShare®

where the fans make it happen

“Intellectual property secures bold risk-taking”



AGE 8
1973
PAPER BOY
CAR WASHER
MY FIRST GUITAR

AGE 11
1976
PAPER BOY
MY FIRST GIG
FORMED A BAND

AGE 21
1986
BARTENDER
BEHAVIORAL TEST SUBJECT
EARNING DEGREE
REGULAR PERFORMANCES

AGE 25
1990
CHICKEN WING DELIVERY MAN
HOUSE PAINTER/LANDSCAPER
GIGS AND MOVE TO JAPAN
FIRST ORCHESTRAL PIECE

AGE 30
1995
BARTENDER
ADJUNCT FACULTY NEW SCHOOL
MUSIC TECH AUTHOR
MOVE TO NYC/PERFORMER

AGE 34
1999
SELF TAUGHT PROGRAMMER
ADJUNCT FACULTY NEW SCHOOL
TV COMPOSER
PERFORMER, PRODUCER

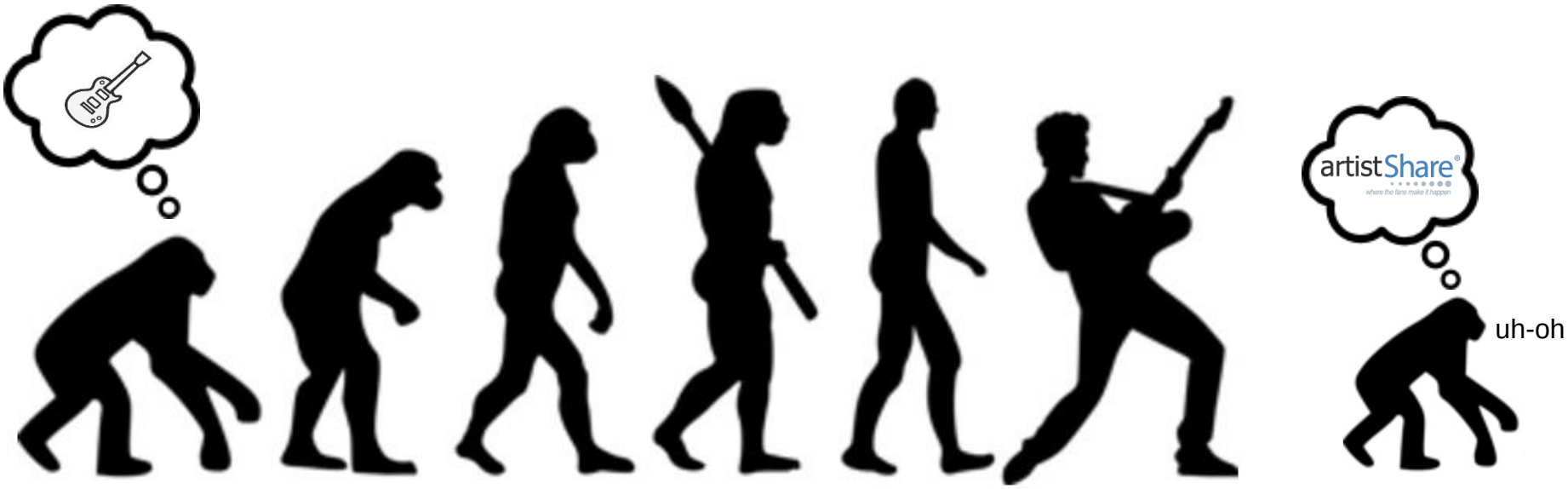
AGE 35
2000
INVENTOR / BUSINESS OWNER

artistShare®
where the fans make it happen

What Happened Next?

- The climate - Napster, file-sharing and digital downloading exploding
- Realized that anything that can be digitized runs risk of being fully devalued – technology made sharing too easy and there was no way to protect it
- Friends and collegues at the time were (and still are) some of the most revered artists of their generation
- Concerned about how great music and art would continue to be created and funded
- Saw an opportunity to turn the problem into a solution – the value of the creative process
- Formulated and designed the systems and model for ArtistShare
- Filed for patent and trademark to protect my investment
- Bootstrapped with my entire savings and built it all myself

Wait. You did what?



uh-oh

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TV COMPOSER
PERFORMER, PRODUCER

26
YRS

AGE 35
2000
INVENTOR / BUSINESS OWNER

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Oh yeah? And then what?

- Launched first project October 15, 2003
- ArtistShare became the Internet's first “fan-funding” website for creative projects
- ArtistShare's first project won a Grammy Award
  - The first recording in history to win a Grammy without being available in retail stores
- 9 Grammy Awards and 18 nominations to date – all fan-funded
- Pioneered the industry that in 2006 was coined “crowdfunding”
- Paved the way for all other crowdfunding sites to follow
- In February, 2011 US Patent 7,885,887 was granted to ArtistShare
- In October, 2013 ArtistShare celebrated its 10 year anniversary

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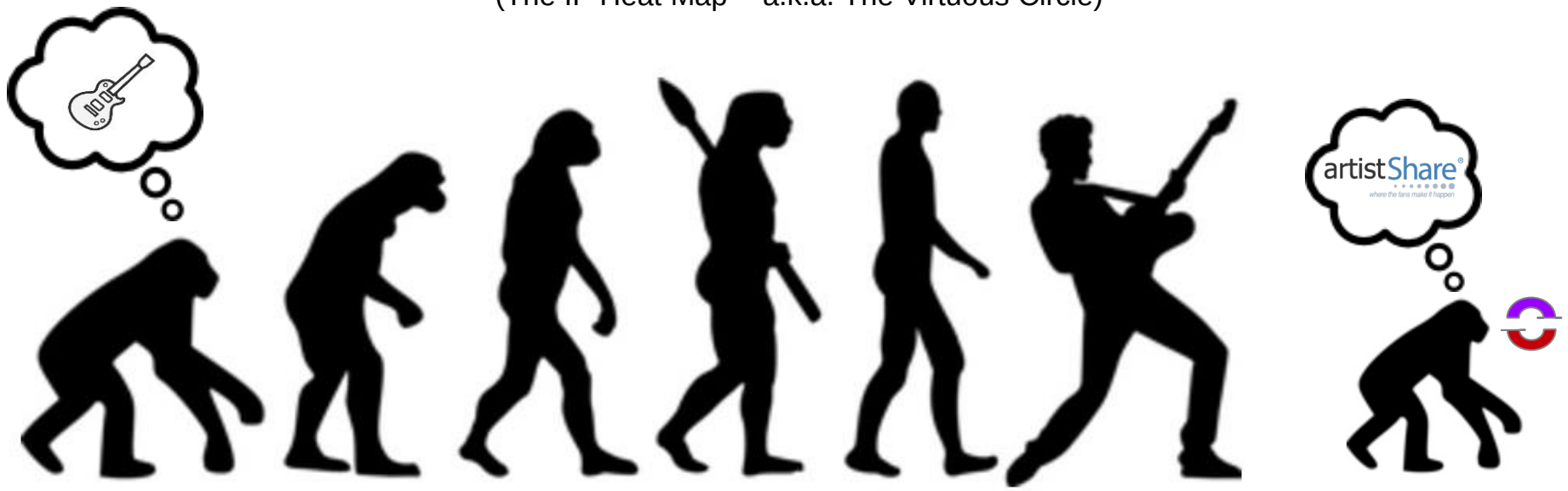
My relationship with IP as an Artist and Innovator

(The IP Heat Map - a.k.a. The Virtuous Circle)



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- BEHAVIORAL TEST
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- MOVE TO NYC/PERFORMER

AGE 34
1999

- SELF TAUGHT PROGRAMMER
- ADJUNCT FACULTY NEW [illegible]
- [illegible] COMPOSER
- PERFORMER, PRODUCER

AGE 35
2000

- INVENTOR / BUSINESS OWNER

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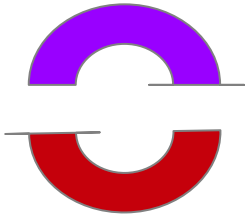
Without creative and technical Intellectual property protection
I would not have been able to any of this



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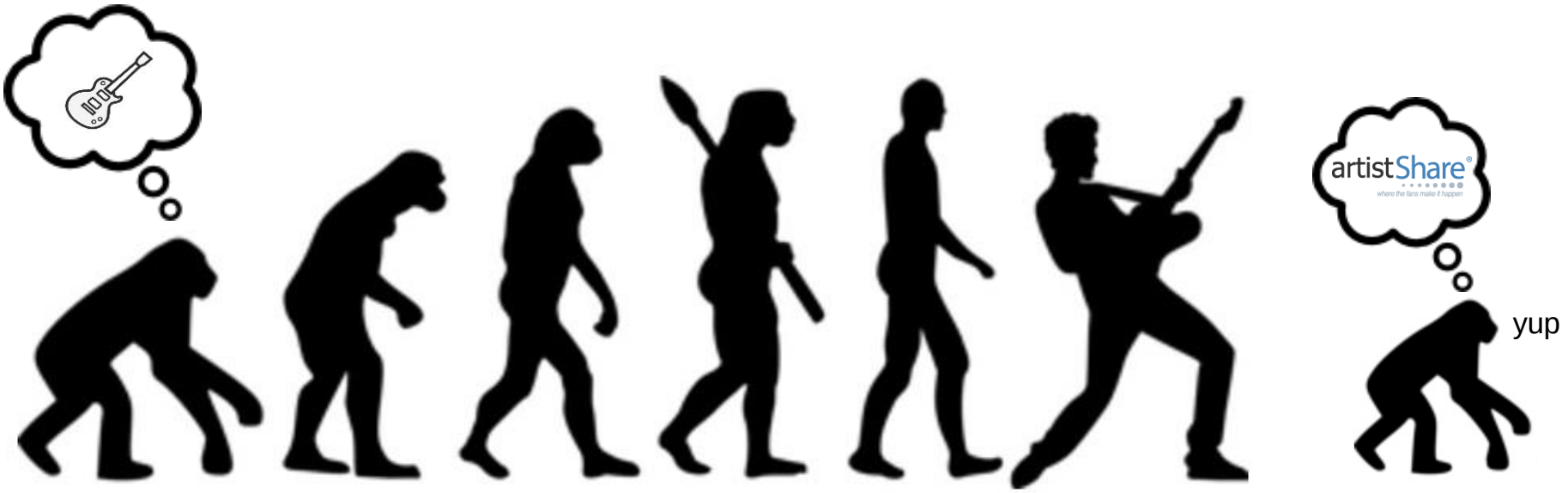
IP Protection was crucial every step of the way



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In Conclusion

- Creative industries and innovation industries are NOT inevitably and irreconcilably in conflict
- The creative arts and innovation are the same thing
- **What creates obstacles are people and companies who do not respect the other's rights and/or try to circumvent them**
- *“The true story of innovation and creativity is a virtuous circle”*

artistShare®
where the fans make it happen

AMETHYST – Walpole, Mass. 1976

Treasure Island cast party + clam bake

Thank you!

Lessons From a Technology Startup Experience in Navigating and Using the Changing U.S. Patent System

Ron D. Katznelson, Ph.D.

The founder

CPIP's 2014 Fall Conference, October 9-10, 2014

George Mason University School of Law

Introduction and content

- I am an inventor (23 US patents), a technology entrepreneur, and an advocate of the U.S. patent system
- My prior startup's use of the U.S. patent system's unique continuation application features to avoid distress liquidation and remain in business and succeed
- Lessons and the role of continuations and Requests for Continued Examination (RCEs) in achieving patent protection generally

Broadband Innovations, Inc.
- A recovery startup that had a second lease on life thanks to the U.S. patent system

- Series A funding in 1994; strategic investor: Ameritech (Baby Bell headquartered in Chicago)
- Developed multichannel CATV point-of-entry subscriber access control system using patented broadband digital RF synthesis technology
- Series B and C funding led by Motorola
- Product launch and field trials in 1997
- Due to industry market shifts in 1998, digital setops were preferred over subscriber point-of-entry devices – BI's business model collapsed
- In 1999 BI was at a crossroad: close shop and liquidate, or exploit its technology in other settings

Broadband Innovations, Inc. - A recovery startup that had a second lease on life thanks to the U.S. patent system (Contd.)

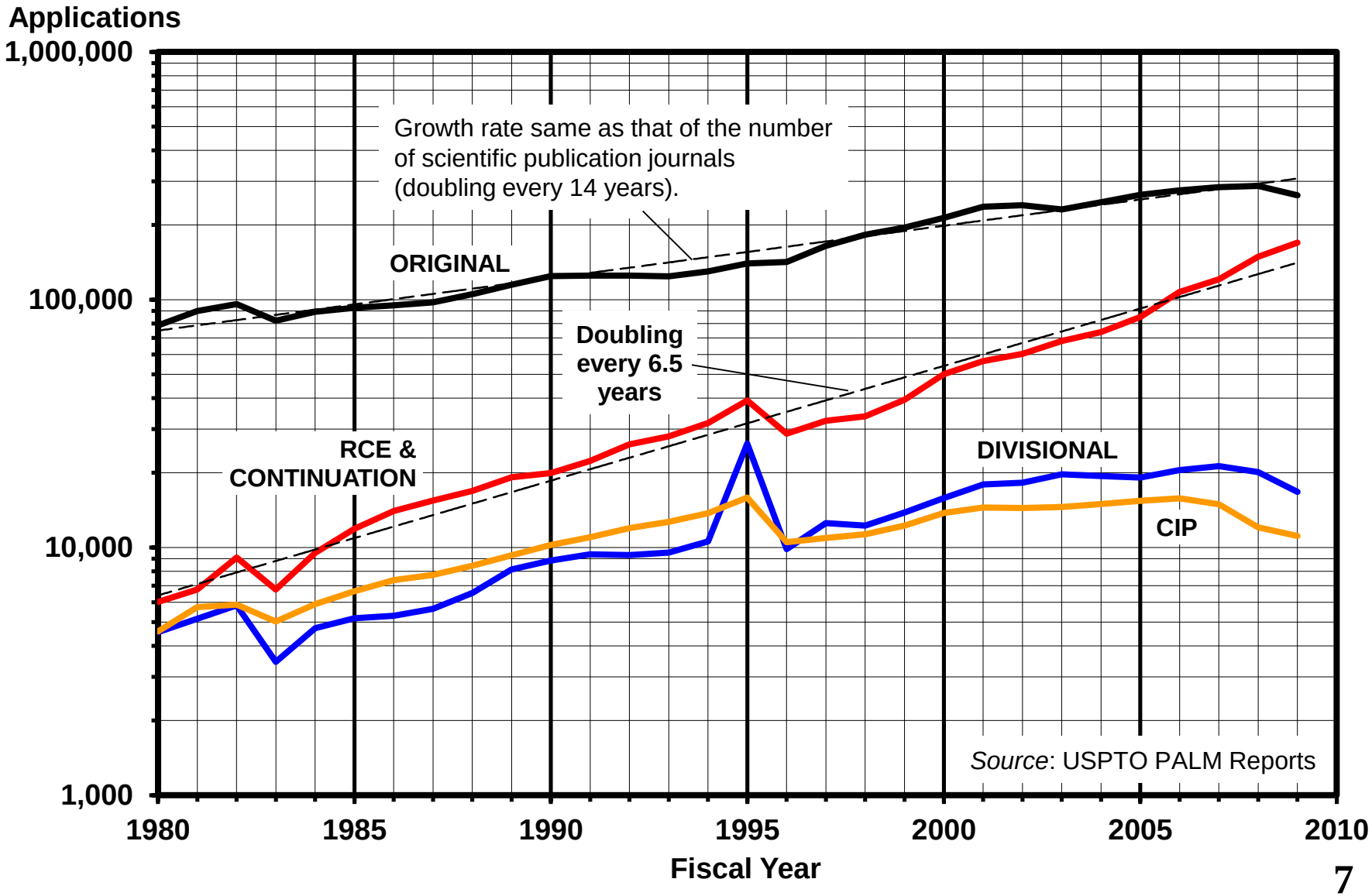
- BI adopted in 1999 a new business plan exploiting its multichannel digital RF synthesis technology in CATV ***headend transmission***; became OEM module supplier
- Robust use of patent ***continuations and CIPs was essential*** for this "new lease on life"
  - Extensive earlier patent disclosures covering multiple technology components enabled support for new ***continuation*** claims directed at multichannel modulation for QAM digital video and DOCSIS transmission
  - 2004-2005: DOCSIS 3.0 specification setting. BI prevailed over competitors – CableLabs® adopted BI's Specs for DRFI
- In 2005: Company was acquired by Motorola

Important lessons on essential features of the U.S. patent system

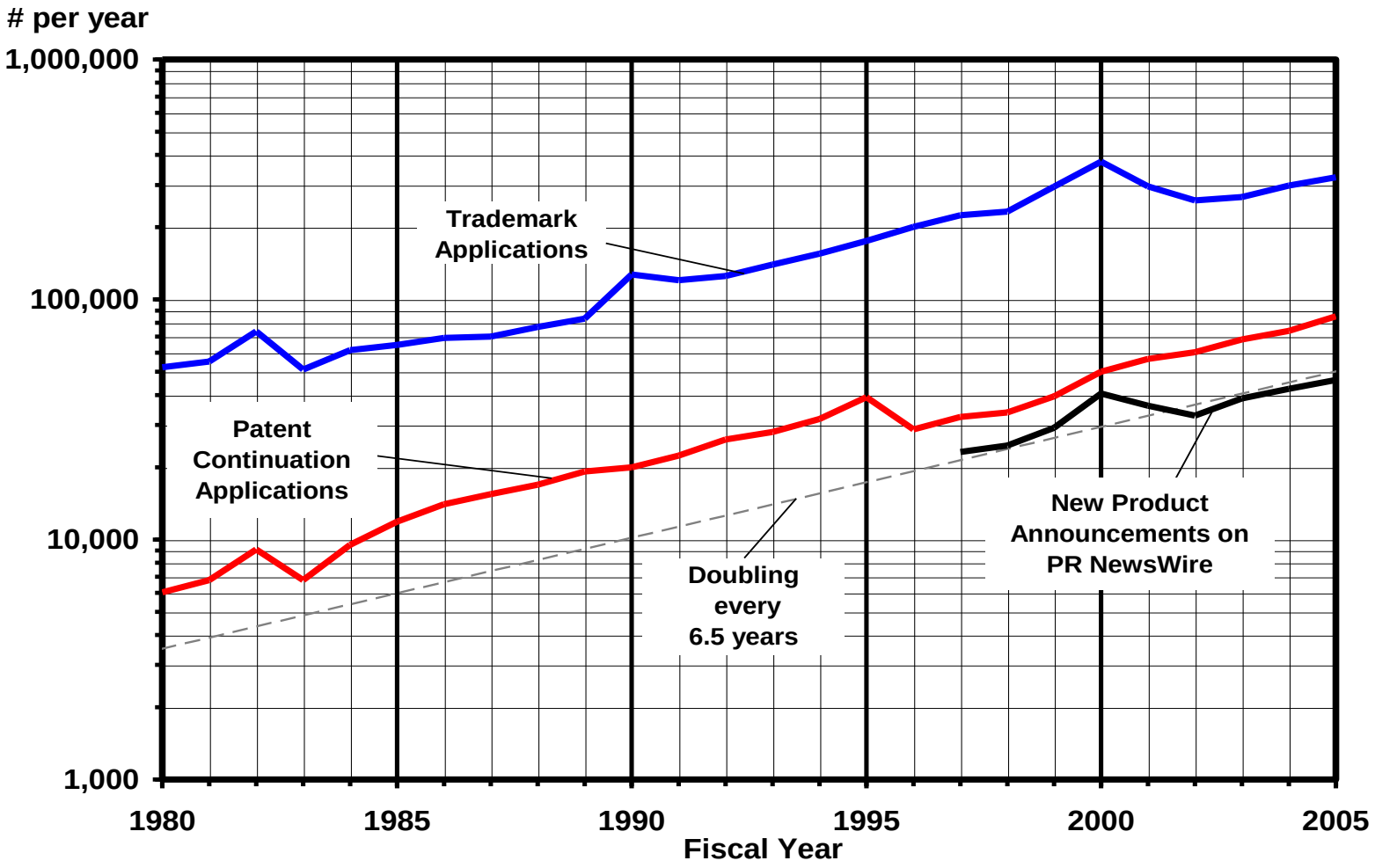
- Shortening technology lifecycles require agile patent protection, claim matching, flexible business models
- Shifts in claim construction law also contribute to patent claim scope erosion, as court decisions show
- BI's ability to stay in business and prevent large investor losses was largely due to the agility of the U.S. patent system, facilitating the appropriation of equivalent returns from inventions
- Continuations proved critical for patent protection
  - No continuations allowed in most foreign countries
  - BI's foreign patents with original claims proved worthless
- Importance of vacating USPTO's 2007 draconian continuation limiting rules

CRITICAL ROLE OF CONTINUATIONS IN PRESERVING THE *QUID PRO QUO* OF THE U.S. PATENT SYSTEM

Continuations/CPA/RCEs have been filed at *progressively* higher rate over last decades



Continuations are mostly filed to better match claims to *new products in the market*

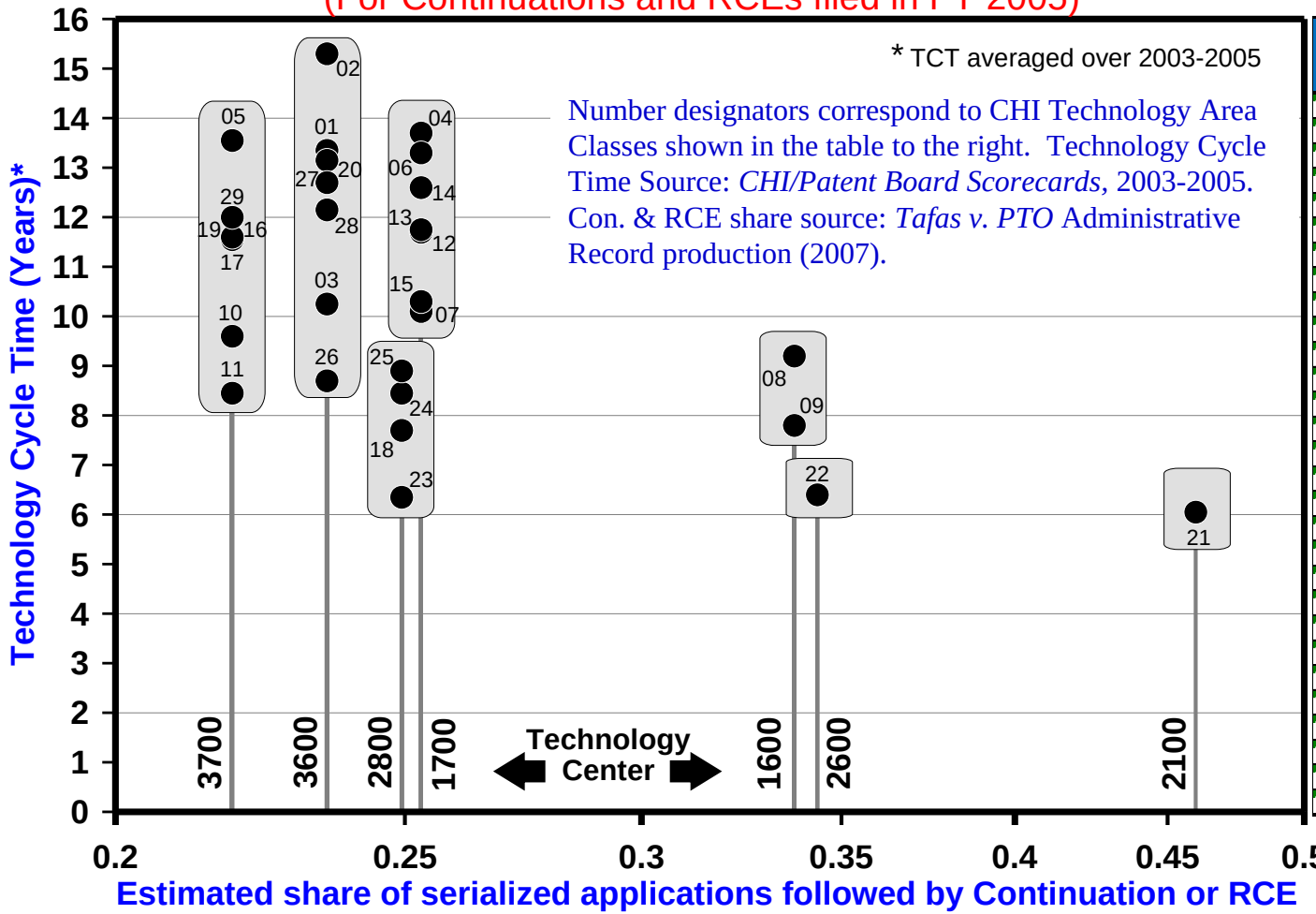


Source: Ron D. Katznelson, Patent Continuations, Product Lifecycle Contraction and the Patent Scope Erosion – A New Insight Into Patenting Trends, *SCIPLA Spring Seminar*, Laguna Niguel, CA, (June 8 - 10, 2007), available at http://bitly.com/Patenting-Trends

Continuations & RCEs have higher share in applications of technologies with shorter lifecycle

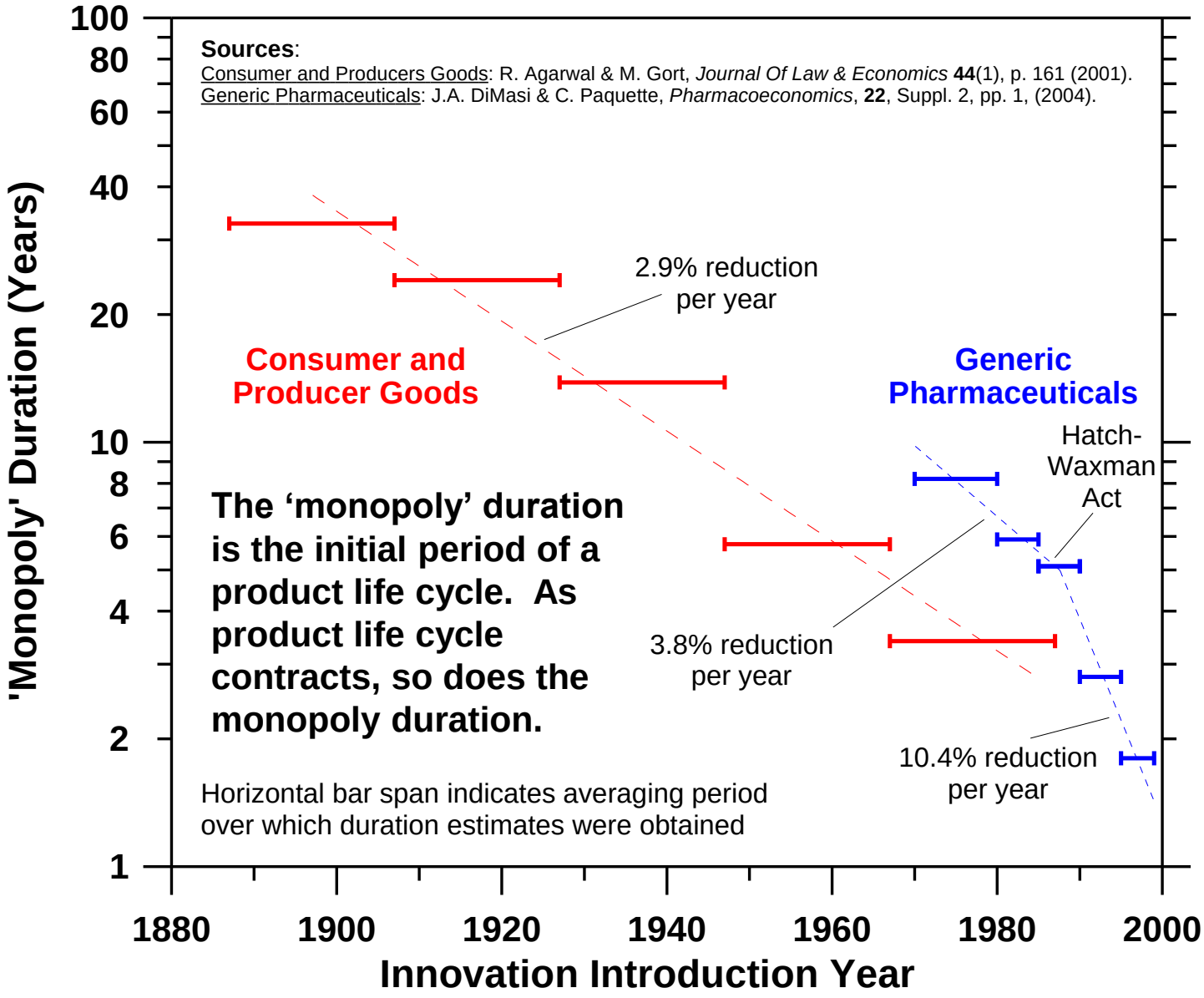
Continued Prosecution and Technology Lifecycle by USPTO Technology Center

(For Continuations and RCEs filed in FY 2005)



TA Class	Technology Class Name	Art Unit or Work Group	TC
01	Agriculture	3640	3600
02	Oil & Gas, Mining	3670, 1790	3600
03	Power Generation & Dist	3681	3600
04	Food & Tobacco	1794, 1791	1700
05	Textiles & Apparel	3765, 1794	3700
06	Wood & Paper	1791	1700
07	Chemicals		1700
08	Pharmaceuticals		1600
09	Biotechnology		1600
10	Medical Equipment	37D	3700
11	Medical Electronics	37E	3700
12	Plastics, Polym & Rubber	1791, 1796	1700
13	Glass, Clay & Cement	1791	1700
14	Primary Metals	1793	1700
15	Fabricated Metals	1793	1700
16	Industrial Mach & Tools	37C	3700
17	Industrial Process Equip	37C	3700
18	Office Equip & Cameras	2854, 2862, 2882	2800
19	Heating, Vent, Refriger	37I	3700
20	Misc Machinery	3680	3600
21	Computers & Peripherals		2100
22	Telecommunications		2600
23	Semiconduct & Electronic		2800
24	Measurement & Control Eq	2855-8, 2877	2800
25	Electrical Appl & Compon	2830	2800
26	Motor Vehicles & Parts	3610	3600
27	Aerospace & Parts	3644	3600
28	Other Transport		3600
29	Misc Manufacturing		3700

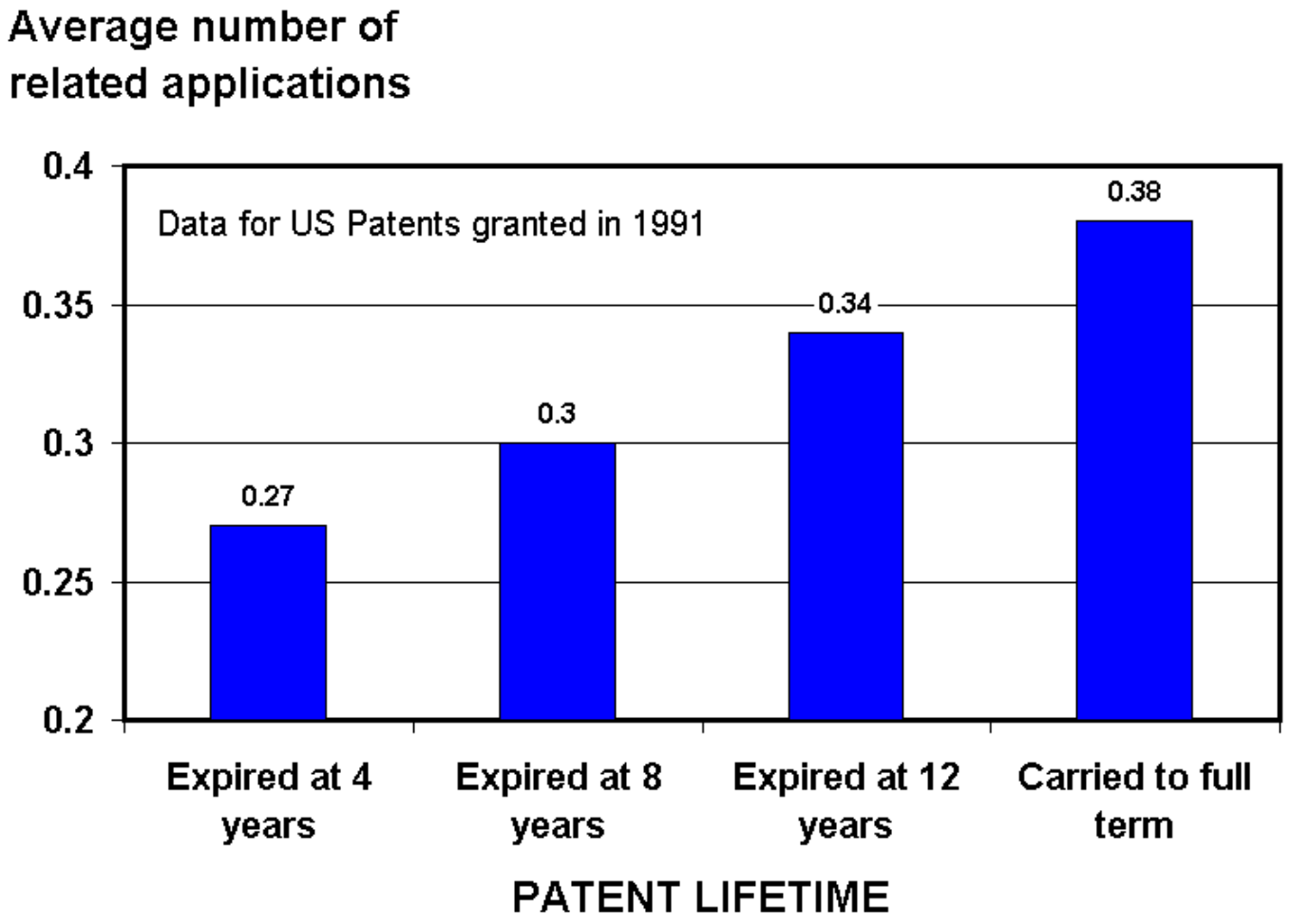
Technology lifecycle *progressively* contracts over the years



Continuations filing *growth rate* exceeds that of original applications because:

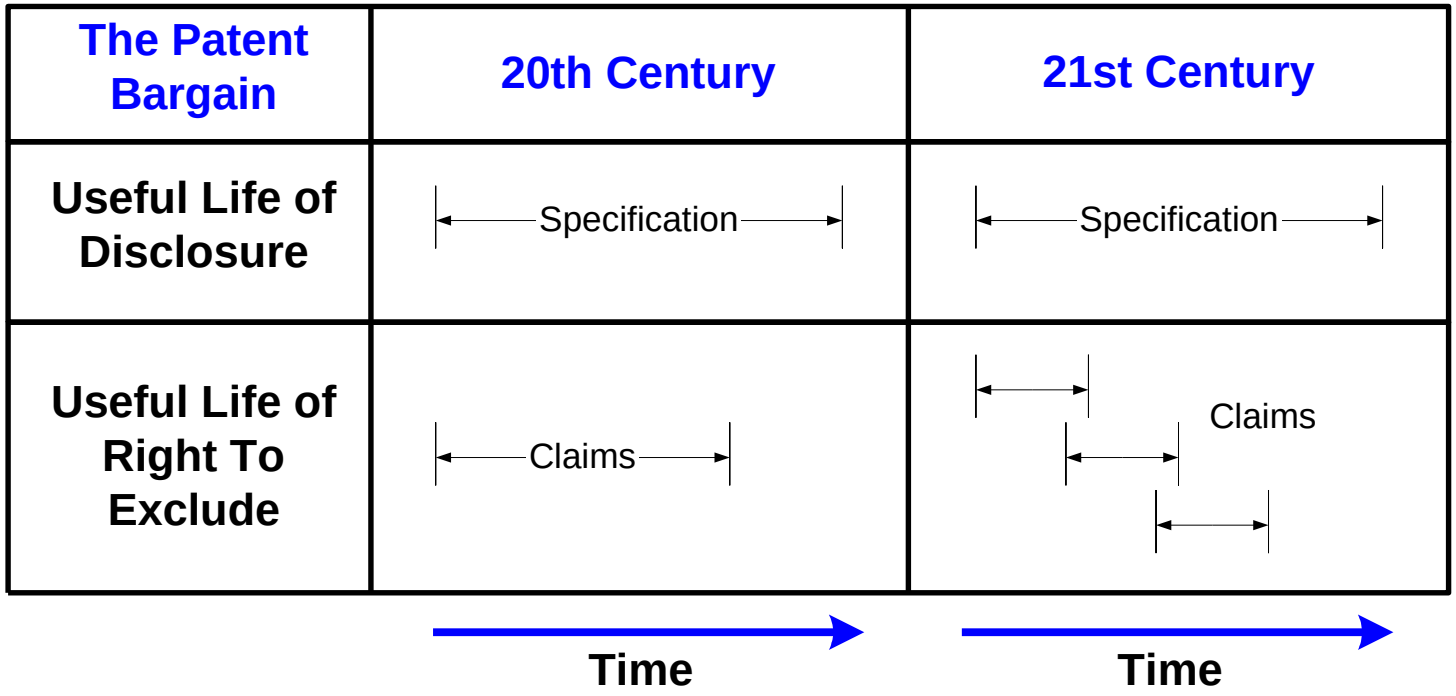
- Continuations do not teach or disclose new matter - their higher arrival rate relates to demand *for updated claim protection*
- Historical product life cycle reduction and the exponential growth in new product introductions necessitate new or amended patent claims in *progressively growing fraction* of inventions.
- Continuations are essential for appropriating equivalent returns from inventions
- Continuations are unique to the US patent system, producing the most relevant claims

US Patents Issued From Continuations and CIPs Have Longer Lifetimes



Source: K.A. Moore, Worthless Patents, *Berkeley Technology Law Journal*. **20**(4), p.1521, (Fall 2005) (Table 6).

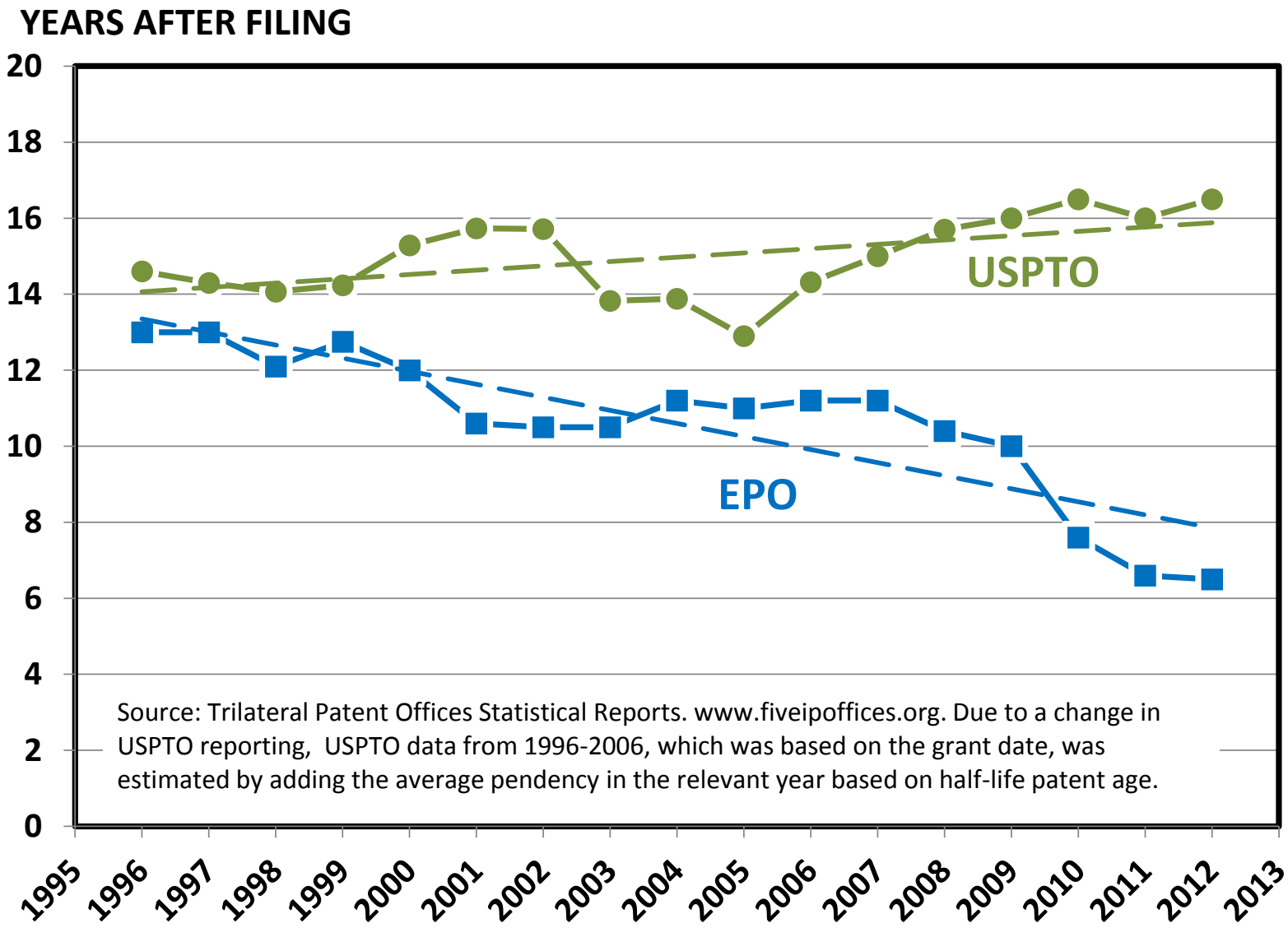
Matching the *Quid* to the *Quo* of the Patent Bargain



- Shrinking product lifecycles and accelerated claim obsolescence increasingly require that grants of exclusive rights under the patent bargain be made in installments - Continuations and CIPs
- A patent system that disallows growing use of Cons/CIPs would be doomed to fail its patent bargain role in the 21st century

Maintenance half-life of U.S. and European Patents

- the median age of patents upon failure to renew



Conclusions

- One reason for its superiority in the world is the U.S. patent system's facilitation of temporal bifurcation of claiming exclusive rights from the initial disclosure step from which such rights arise
- Continuations' and RCE's growth is *an economic reality of the shortening technology lifecycle and claim scope erosion*
- Unfortunately, some patent antagonists, including at the USPTO, have not abandoned their goal to curb RCEs and continuations filings

Thank You

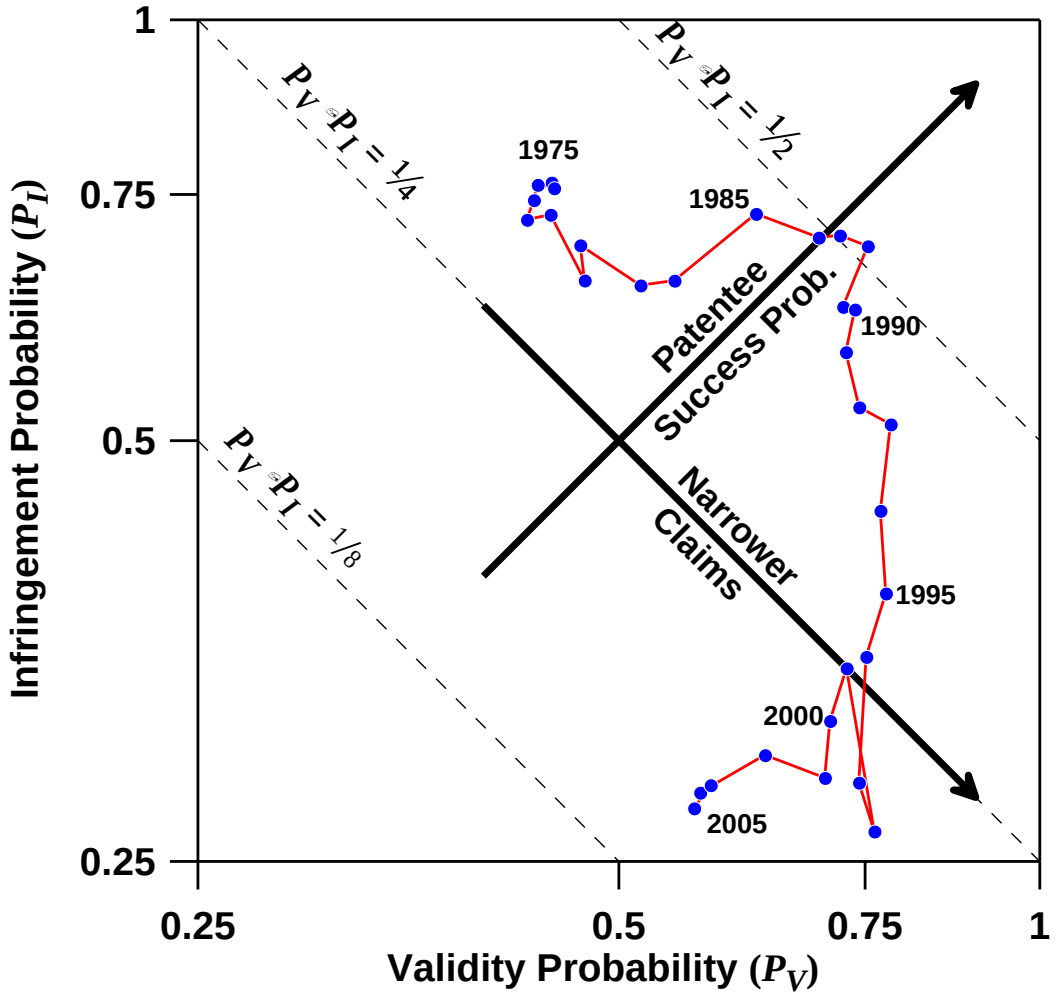
Ron Katznelson

ron@bileveltech.com

Supplemental slides

The Patent Claim Scope Erosion

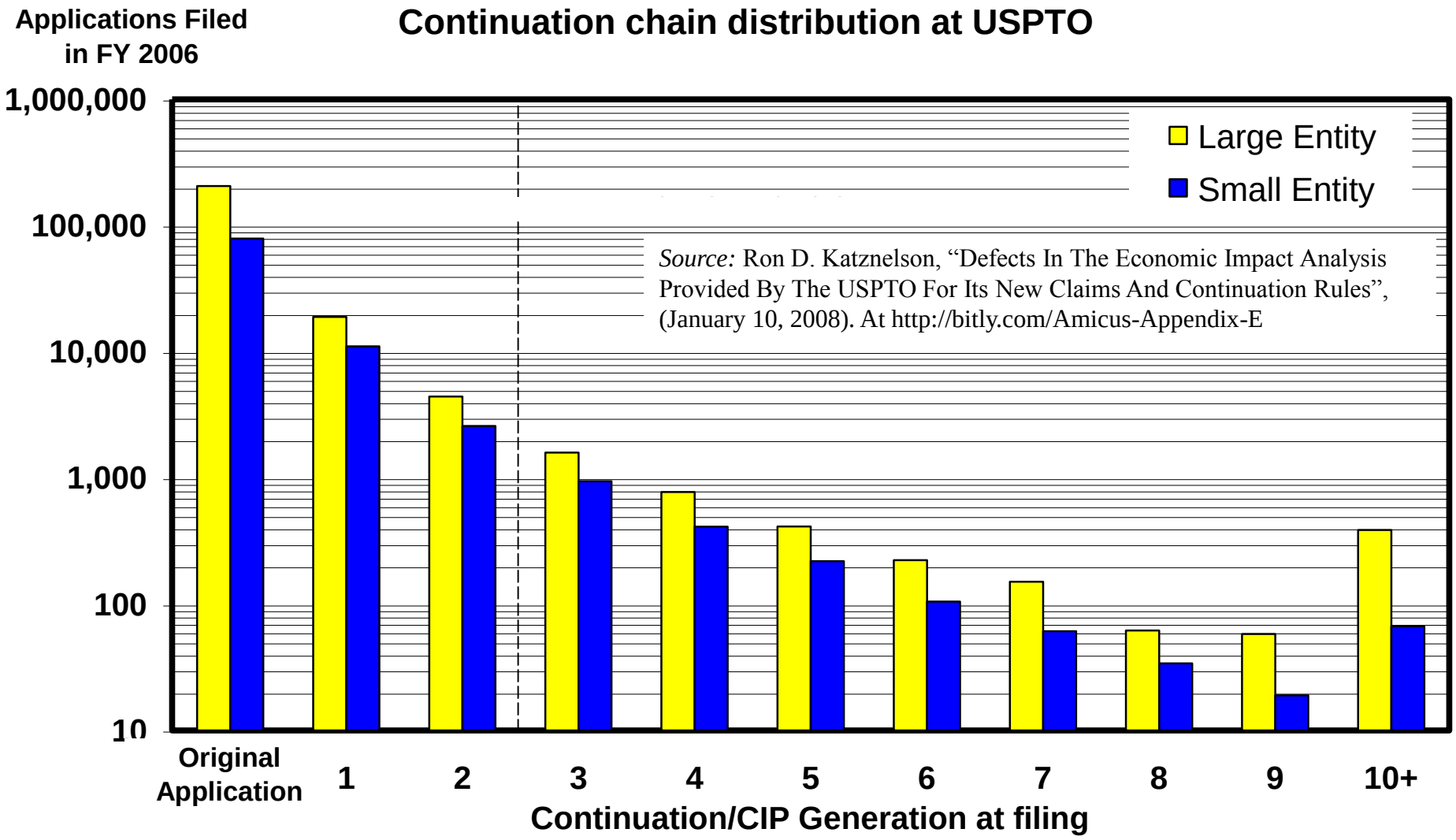
Patent Decision Trends in Federal District Courts



- Adjudicated claims were of gradually diminishing scope relative to alleged infringing activities and the accumulating prior art record.
- Notwithstanding litigation selection effects, the adjudicated claims narrowing trend is reflective generally of the patent base as a whole.

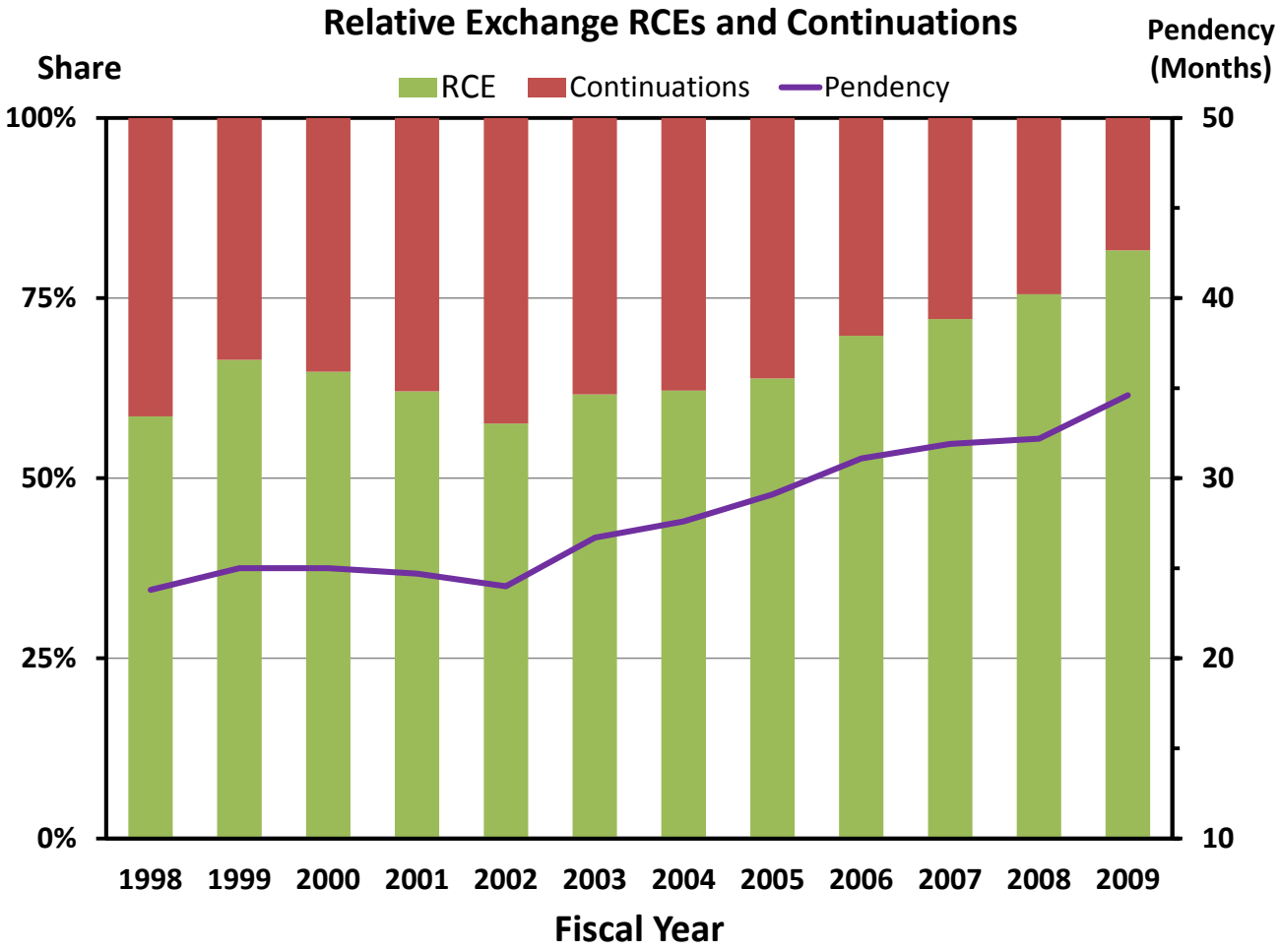
Source: Ron D. Katznelson, Patent Continuations, Product Lifecycle Contraction and the Patent Scope Erosion – A New Insight Into Patenting Trends, *SCIPLA Spring Seminar*, Laguna Niguel, CA, (June 8 - 10, 2007), available at http://ssrn.com/abstract=1001508.

Priority Generation in Continuation Applications



RCEs displacement of continuations is highly correlated with pendency

As pendency increases, RCEs are necessarily filed in later product introduction phases, enabling applicants to absorb into RCEs a greater fraction of product-specific claim changes that would otherwise necessitate a continuation.



Creators, Innovators, and Appropriation

CPIP Annual Conference

October 9, 2014

Sean M. O'Connor

Assistant Dean for Law, Business & Technology
Professor of Law
University of Washington School of Law
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Overview

1. "Creators vs. innovators" is a false dichotomy; "creators" *are* "innovators" (and there is overlap among "artists" and "entrepreneurs")
2. Creators and innovators need appropriation mechanisms; use of different mechanisms does not change the underlying need
3. Issue is that both want "free" inputs but proprietary outputs

“Creators vs. Innovators”

- What is a “creator” that is not also an “innovator”?
- “Artists” can be derivative or replicative, just as can be entrepreneurs
- But “creator” is not co-extensive with “artist” just as “innovator” is not co-extensive with “entrepreneur”
- Both use “genius and skill” to come up with new concepts to push the boundaries of human experience
- Further, in many cases artists are becoming entrepreneurs and vice versa
- But, even if there is a distinction, both need some means of supporting themselves *and* the the practical completion or realization of their ideas

Appropriation Mechanisms

- Not just patents, or even other formal IP, but also any means of gaining control or exclusivity over valuable assets (e.g., data exclusivity of first generic exclusivity under Hatch-Waxman)
- Investment often relies on presence of *some* appropriation mechanism—otherwise may be no return on investment
- Flaw in much current empirical research on innovation and creativity is that it focuses on only one mechanism at a time (and perhaps not the most widely used one for a particular kind of innovation or creativity): e.g., studies focused on patents: when they don't find patents as "necessary," they conclude that appropriation generally is not necessary

Inputs and Outputs

- Real issue is that of “inputs” and “outputs”
- Example: “appropriation art”
  - Relies on works of others to fashion new works
  - Must be “transformative” to fall under copyright “fair use”
- Mash-ups and remixes similar
- But innovative code and business models generally relies on prior code and business models as well
- What application is written completely “from scratch”—and even if one were, would you use it (would it be reliable)?

Inputs and Outputs

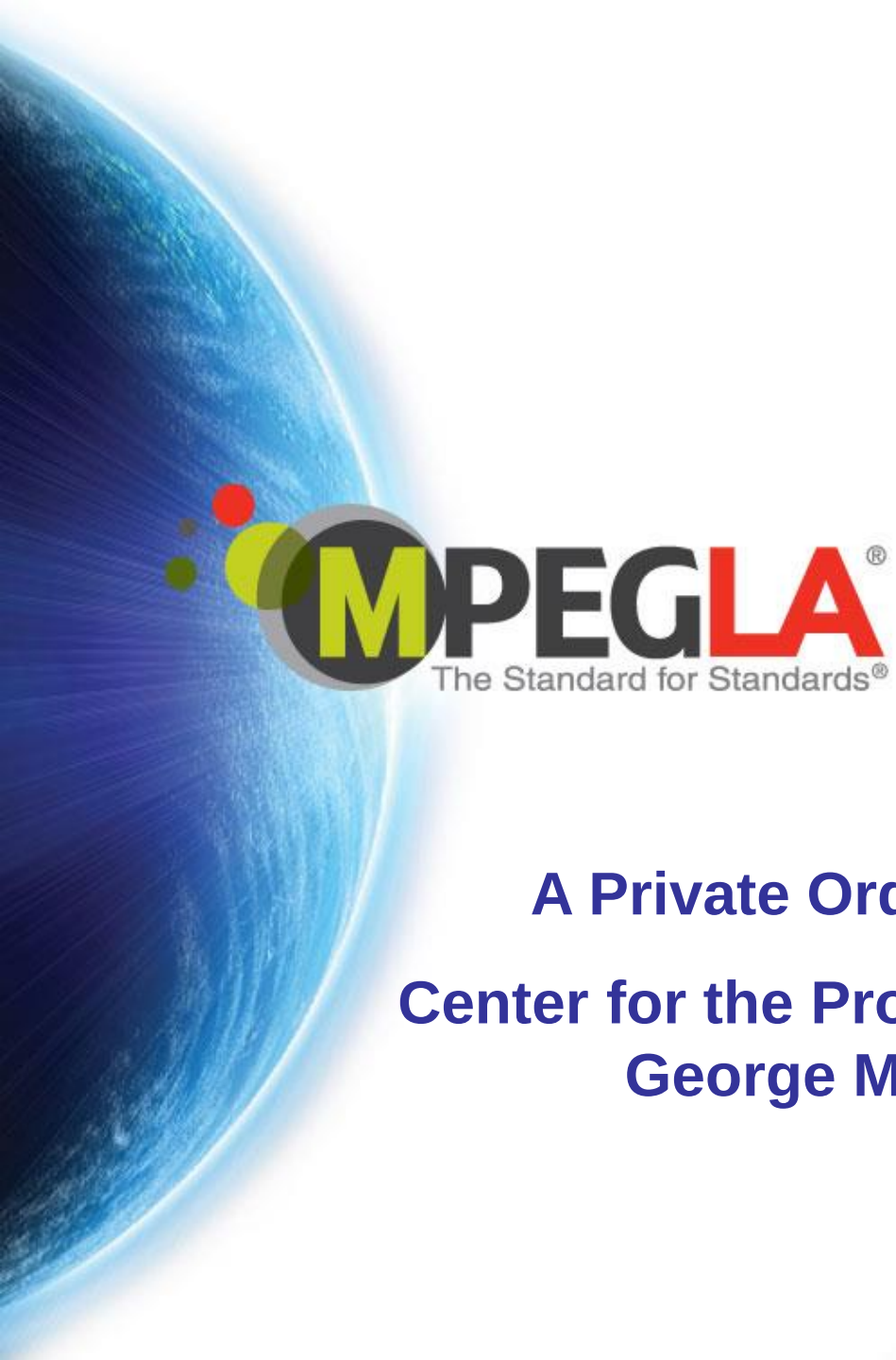
- The “shell game” that seems to be used by some tech firms is that of focusing on “consumable” inputs that are not part of the appropriated code of the application
- Content is mere “commodity” that is sent through the system; “value add” is the code and business model that enables new means of distribution
- But this could just as easily be turned around: applications are the mere “widgets” that allow distribution of premium content
- Such tech firms seem shortsighted in that the same arguments they use to devalue content (“information wants to be free”) can be used against their own proprietary positions

Inputs and Outputs

- Is it “better” for society when artist-creators are forced to seek new revenue in situations where they have been defrauded or rights have been effectively rescinded (e.g., Leonard Cohen: some suggest that it is “good” that he had to produce new material to support himself after being defrauded)
- But where are the calls for tech founders to be defrauded so that they will create new companies?
- This is especially important when one considers the complaint that too many founders “retire” off their first big success rather than becoming a sought after serial entrepreneur

Conclusion

- Artists are increasingly entrepreneurs and vice versa
- Even where they are different, their needs for appropriation mechanisms are essentially the same
- The difference in the *mode* or *mechanism* of appropriation should not be allowed to confuse us as to the underlying similarity of the need
- While we need some flexibility as to the ability to harness proprietary inputs, this should not be to the strong detriment of the input owner
- Most important, we should not let one class of creativity/innovation marginalize another class; most arguments for one are equally applicable to the other

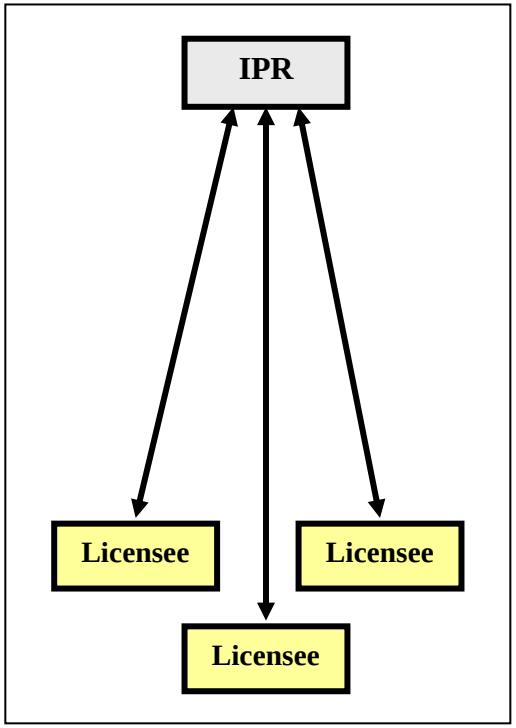


A Private Ordering Innovation of Innovation

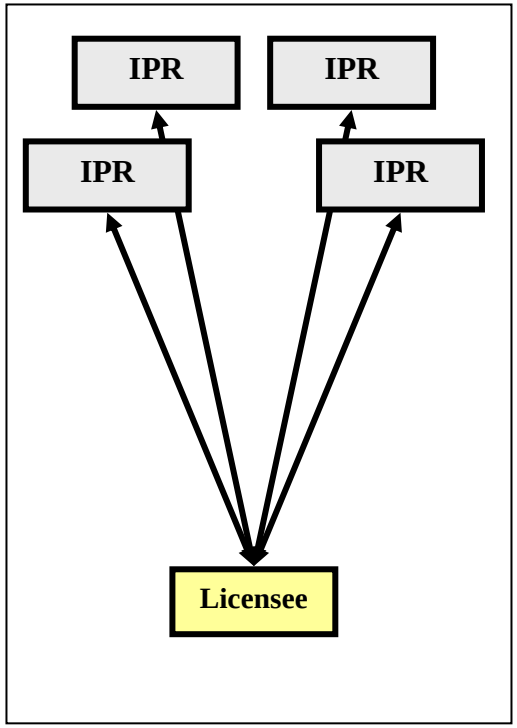
Center for the Protection of Intellectual Property
George Mason University School of Law
10 October 2014
Arlington, VA

MPEG LA® Licensing Model

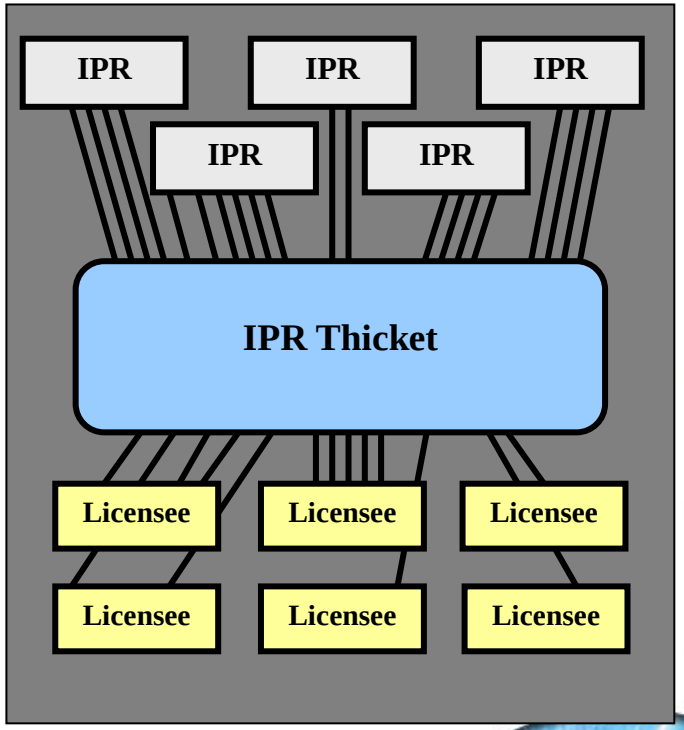
"One-to-Many"



"Many-to-One"



MPEG LA® "Many-to-Many" Licensing Model



MPEG LA pioneered modern patent pool licensing

MPEG LA® Licensing Model

- In the 1990s the MPEG-2 Standard required for digital television including DVD faced a patent thicket
- Its biggest challenge was access to essential patents
- At best this meant huge risk; at worst it meant that the Standard could not be used at all
- Following US DOJ Review in 1997 (EC Comfort letter Dec 1998), MPEG LA offered a solution
  - MPEG-2 License grew from 8 to 27 patent holders with more than 1000 patents in 57 countries.
  - ~1,900 Licensees accounting for most MPEG-2 products (TVs, DVD players/recorders, Blu-ray Disc™ players, set-top boxes, PCs, DVD Video discs, game machines, cameras) in the current world market

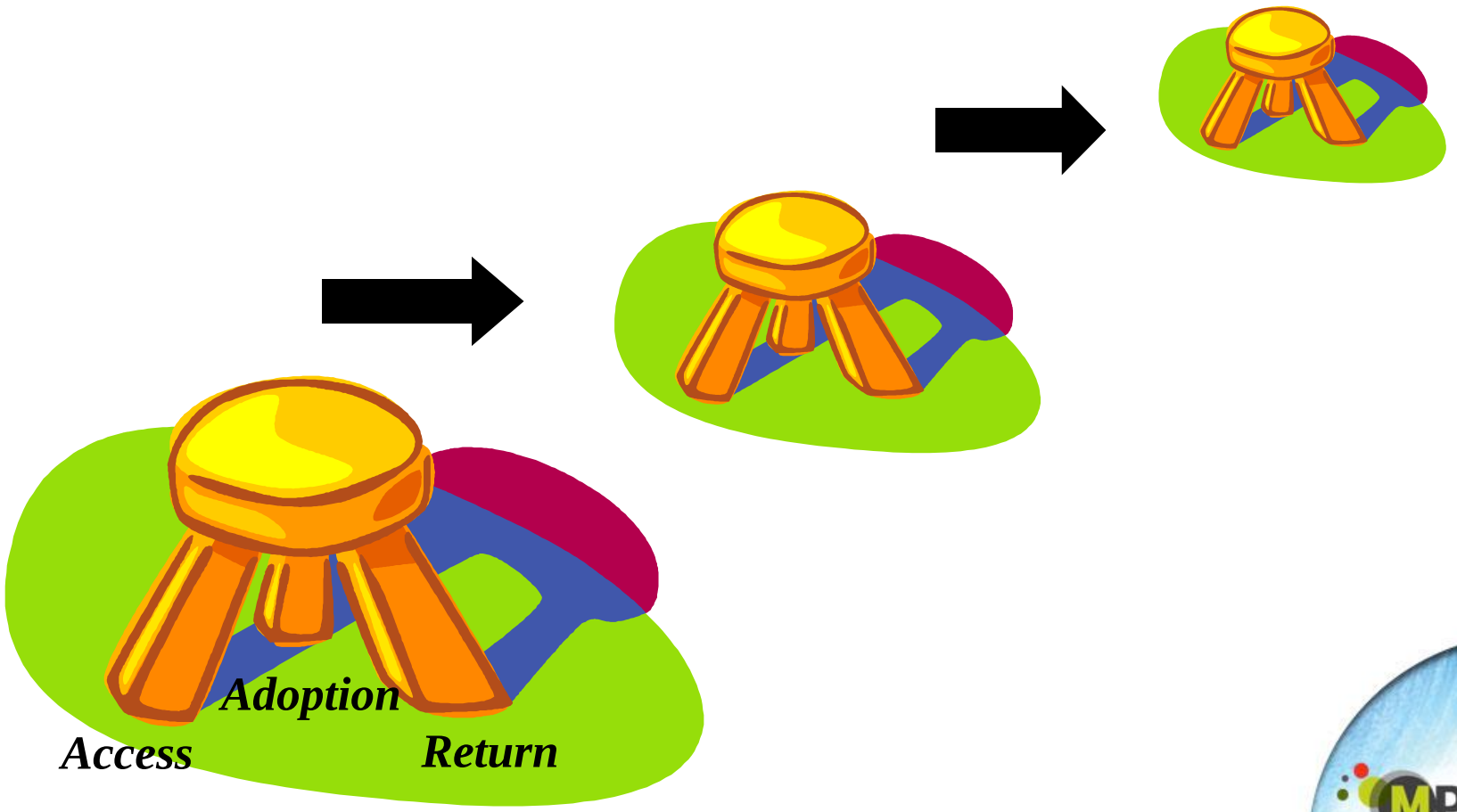
MPEG LA® Licensing Model

- MPEG-2 became the most successful standard in consumer electronics history
  - ~ 7 billion devices
  - ~ 60 billion video discs
  - ~ $4 trillion in product sales

MPEG LA® Licensing Model Pathway to Market

Access/cost predictability balanced with return on investment offer a convenient alternative enabling users to address patent thickets around their technology choices and receive the benefits of innovation

MPEG LA® Licensing Model Innovation Catalyst



The Solution Has Become the Template

- **Today MPEG LA operates licensing programs consisting of over 9,300 patents in 75 countries with more than 185 licensors and approximately 5,900 licensees**

MPEG LA Patent Pools

October 2, 2014 Data

MPEG-2 ***Program started in 1997***	**Started with** **8 patent owners** **102 patents**	**• Currently 27 patent owners** **• 1082 patents in 57 countries** **• 1926 Licensees**
ATSC ***Program started in 2007***	**Started with** **6 patent owners** **41 patents**	**• Currently 9 patent owners** **• 388 patents in 28 countries** **• 169 Licensees**
AVC/H.264 **a/k/a MPEG-4 part 10** ***Program started in 2005***	**Started with** **14 patent owners** **20 patents**	**• Currently 33 patent owners** **• 3908 patents in 56 countries** **• 1715 Licensees**
VC-1 ***Program started in 2007***	**Started with** **16 patent owners** **130 patents**	**• Currently 20 patent owners** **• 870 patents in 36 countries** **• 346 Licensees**
MPEG-4 Visual part 2 ***Program started in 2004***	**Started with** **20 patent owners** **77 patents**	**• Currently 29 patent owners** **• 1382 patents in 54 countries** **• 1172 Licensees**
MPEG-2 Systems ***Program started in 2006***	**Started with** **8 patent owners** **161 patents**	**• Currently 10 patent owners** **• 258 patents in 29 countries** **• 250 Licensees**
IEEE 1394 ***Program started in 1999***	**Started with** **6 patent owners** **8 patents**	**• Currently 10 patent owners** **• 274 patents in 22 countries** **• 227 Licensees**
MVC ***Program started in 2012***	**Started with 15 patent owners** **112 patents**	**• Currently 17 patent owners** **• 1074 patents in 42 countries** **• 38 Licensees**
HEVC ***Program started Sept. 29, 2014***	**Started with 23 patent owners** **55 patents**	**• 7 Licensees**

MPEG LA Patent Pools Patent Holders

Alcatel Lucent

Apple Inc.

AT&T Intellectual Property II, L.P.

British Telecommunications plc

Canon Inc.

CIF Licensing, LLC

Cisco Systems Canada Co

Cisco Technology, Inc.

Comcast IP Holdings

Competitive Technologies, Inc.

Columbia University

Dolby International AB

Dolby Laboratories Licensing Corporation

ETRI (Korea)

Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.v.

Fujitsu Limited

GE Technology Development, Inc.

General Instrument Corp.

Hewlett-Packard Company

Hitachi, Ltd.

Hitachi Maxell, Ltd.

HUMAX Holdings Co., Ltd.

Intellectual Discovery Co., LTD.

JVC KENWOOD Corporation

Korea Advanced Institute of Science and Technology (KAIST)

Korean Broadcasting Corporation (KBS)

KDDI Corporation

Koninklijke KPN N.V.

Koninklijke Philips N.V.

KT Corp.

LG Electronics Inc.

M&K Holdings Inc.

Microsoft Corporation

Mitsubishi Electric Corporation

Motorola Mobility LLC

Multimedia Patent Trust

NEC Corporation

NEWRACOM, Inc.

Nippon Hoso Kyokai (NHK)

Nippon Telegraph and Telephone Corporation (NTT)

NTT DOCOMO, Inc.

Oki Electric Industry Co., Ltd

Oracle America, Inc.

Orange SA

Panasonic Corporation

Pantech Co., Ltd.

Polycom, Inc.

Robert Bosch GmbH

Samsung Electronics Co., Ltd.

SANYO Electric Co., Ltd.

Sharp Corporation

Siemens AG

Siemens Corp.

SK Telecom

Sony Corporation

STMicroelectronics N.V.

Tagivan II

Telefonaktiebolaget LM Ericsson (Ericsson)

Telenor ASA

Thomson Licensing

Toshiba Corporation

Vidyo, Inc.

Zenith Electronics LLC

ZTE Corporation

New MPEG LA Business Models

- **MPEG LA continues to design new business models with similar pro-competitive benefits balancing affordable access with incentive giving consumers the opportunity to receive the benefits of new technologies**
  - **Biotechnology from leading research institutions**
  - **Nanotechnology with near term application in energy storage**
  - **Combining technology transfer component with patent licensing**

Issues of Concern

- **Private ordering solutions have incentivized innovation, created level playing field opportunities for new products and averted legal risk/cost, but they are not beyond the influence of changing conditions to inhibit them**
  - **Respect for IP as an innovation generator**
  - **Treatment of Standard Essential Patents (SEPs)**
  - **Application of FRAND**
  - **Absence of injunctive relief**
  - **Reliable enforcement systems**

University of Washington School of Law

Legal Studies Research Paper No. 2013-34

GEO. MASON L. REV. (forthcoming 2014)

Crowdfunding's Impact on Start-up IP Strategy

Prof. Sean M. O'Connor

CROWDFUNDING'S IMPACT ON START-UP IP STRATEGY

Sean M. O'Connor[*]

"Crowdfunding"—the use of the Internet to raise significant aggregated funding from a large number of persons each contributing a small amount—includes both "project crowdfunding" (donations for a specific project that are not considered investment securities) and "enterprise crowdfunding" (sale of investment securities to raise general operating and growth capital). The former is lightly regulated and exemplified by sites such as Kickstarter and IndieGoGo. The latter has been effectively prohibited under traditional securities laws. The JOBS Act of 2012 required the SEC to promulgate rules providing a legal pathway for enterprise crowdfunding. Under the proposed rules, enterprise crowdfunding firms will become essentially "junior" reporting companies with significant public disclosure requirements. This Essay argues that such disclosures will negatively impact start-ups' intellectual property ("IP") portfolios. For example, firms may accidentally disclose patentable inventions or developing proprietary business or technology innovations. Experienced IP and securities counsel can mitigate these risks, but start-ups looking to use enterprise crowdfunding may not be able to afford such counsel. The crowdfunding disclosure regime may also force firms to accelerate or otherwise change their plans to procure IP rights. Meanwhile, the JOBS Act relaxed disclosure and general solicitation rules for the kinds of unregistered stock offerings currently used by start-ups. This means that there may be less practical value for start-ups to explore crowdfunding. The Essay concludes with suggestions for how start-ups can best manage their IP portfolios in light of the new kinds of unsophisticated investors and disclosure regimes entailed under crowdfunding.

INTRODUCTION

"Crowdfunding" has been heralded as a revolutionary and democratic way to connect ordinary individuals with innovative projects they would like to support. Congress endorsed this concept by including the CROWDFUND Act in the Jumpstart Our Business Startups Act ("JOBS

[*] Professor of Law, University of Washington School of Law; J.D., Stanford Law School; M.A. (philosophy), Arizona State University; B.A. (history), University of Massachusetts, Boston. I would like to thank Adam Mossoff, Ed Kitch, John Duffy, Camilla Hrdy, Mark Schultz, Matt Barblan, ..., the participants at the George Mason University Center for Protection of Intellectual Property ("CPIP") Inaugural Conference on Patents: *The Commercial Function of Patents in Today's Innovation Economy*, and the editors at the George Mason Law Review. I would also like to thank CPIP for generous research support. All errors are mine. Comments welcome at soconnor@uw.edu.

Act") of 2012.[1] The statute was not directed at well-known crowdfunding sites such as Kickstarter and IndieGoGo—sites that facilitate "project crowdfunding" through a lightly regulated donation model. Rather, the JOBS Act provides a mechanism for ordinary investors and start-ups to use "enterprise crowdfunding," in which the start-ups can offer and sell their stock widely through the Internet. These activities were effectively prohibited under pre-JOBS Act securities laws.

While the JOBS Act was credited with creating a legal pathway for enterprise crowdfunding, start-ups cannot avail themselves of it until the Securities and Exchange Commission ("SEC") promulgates the rules mandated under the Act.[2] At the same time, the Act mandates other changes in securities regulations that may make enterprise crowdfunding less appealing than other private financing options. The Act generally relaxed mandatory information disclosure requirements and ability to use the Internet to solicit investment under these other options, even as it erected significant disclosure requirements for the new enterprise crowdfunding pathway.[3]

A number of commentators are highly skeptical of enterprise crowdfunding or the JOBS Act as a means to enable it. Some are worried about the potential for fraud and abuse.[4] Others worry that small-time "retail investors" who invest through crowdfunding in tech start-ups will not understand the dilution risks they face from later venture capital ("VC") financing rounds.[5] And a number fear that the regulatory hurdles required by the JOBS Act, and underscored in the SEC's proposed rulemaking, will simply make the costs of enterprise crowdfunding too high for firms that might benefit from it.[6]

Notwithstanding these criticisms, enterprise crowdfunding will become a reality sooner rather than later, and tech start-ups will be among the first to explore using it. Yet no one appears to have written about the effects of enterprise crowdfunding on start-ups' intellectual property ("IP")

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[1] Jumpstart Our Business Startups Act, Title III, Pub. L. No. 112-106, 126 Stat. 315 (2012).

[2] On October 23, the SEC issued proposed rules for "Regulation Crowdfunding." U.S. Securities and Exchange Commission, SEC Issues Proposal on Crowdfunding (Press Release 2013-227, Oct. 23, 2013); Securities and Exchange Commission, Crowdfunding (Releases 33-9470; 34-70701; File No. S7-09-13)(Oct. 23, 2013); Securities and Exchange Commission, Crowdfunding, 78 FED. REG. 66428 (Nov. 5, 2013). The comments period ends February 3, 2014. Thus, a final rulemaking authorizing equity crowdfunding might be promulgated in spring or summer 2014.

[3] TK Footnote

[4] *See, e.g.*, Thomas Lee Hazen, *Crowdfunding or Fraudfunding? Social Networks and the Securities Laws—Why the Specially Tailored Exemption Must be Conditioned on Meaningful Disclosure,* 90 N.C. L. REV. 1735 (2012); Alan R. Palmiter, *Pricing Disclosure: Crowdfunding's Curious Conundrum*, 7 OHIO ST. ENTRE. BUS. L.J. 373 (2012).

[5] *See* John S. (Jack) Wroldsen, The Social Network *and the Crowdfund Act: Zuckerberg, Saverin, and Venture Capitalists' Dilution of the Crowd*, 15 VANDERBILT J. OF ENT. AND TECH. LAW 583 (2013).

[6] *See* Stuart R. Cohn, *The New Crowdfunding Registration Exemption: Good Idea, Bad Execution*, 64 FLORIDA L. REV. 1433 (2012); C. Steven Bradford, *The New Federal Crowdfunding Exemption: Promise Unfulfilled*, SEC. REG. L.J. 195 (Fall 2012).

strategies. Because IP is arguably the most important asset a start-up holds, this relationship is worth considering. This Essay provides preliminary thoughts about this topic.

The Essay proceeds by reviewing the crowdfunding landscape and its potential benefits for start-ups in Part I, especially with regard to IP strategies. Part II examines the provisions of the JOBS Act to argue that the disclosure requirements of the CROWDFUND Act title will both make the latter less attractive than other financing options for use by start-ups and may negatively impact start-ups' IP strategies, including the risk of disclosing enabling aspects of patentable inventions. Part III explores issues arising from the involvement of many potentially unsophisticated investors who will neither understand the realities and risks of start-ups' IP portfolios nor have the same inside access to information and management that traditional "friends and family" unsophisticated investors possess. The Essay concludes with suggestions for how start-ups should manage these issues, as the popular appeal of crowdfunding virtually ensures that start-ups will use it once the SEC promulgates the final rules implementing the CROWDFUND Act.

I. THE CROWDFUNDING LANDSCAPE AND ITS POTENTIAL FOR START-UPS

While there seems to be no official definition of "crowdfunding," it is generally understood to be the web-based general solicitation of funding for a venture, with the expectation that many contributors might each commit to only a small amount.[7] In the aggregate, the amount contributed will hopefully be enough to fund the designated project or venture. Some legal commentators view all crowdfunding through the lens of "investments"—even as they acknowledge that much of it does not involve equity or debt but rather donations or rewards.[8] This misconception is unfortunate because it obscures crowdfunding's origins and continuing vitality as a funding mechanism for cultural or nonprofit projects that will neither be "commercial" nor profitable. Thus, there is neither an "investment" (other than as we might say that a philanthropist "invests" in a charitable project) nor interest in financial return by the funder. The most famous crowdfunding sites—Kickstarter[9] and IndieGoGo[10]—are by their own terms and intent *not* investment oriented. Likewise, Kiva, the famous

[7] *See, e.g.*, "Crowdfunding," WIKIPEDIA *available at* http://en.wikipedia.org/wiki/Crowdfunding (last visited Oct. 10, 2013).
[8] *See, e.g.*, C. Steven Bradford, *Crowdfunding and the Federal Securities Laws*, 2012 COLUM. BUS. L. REV. 1, 10-27 (referring to even charitable donors as "investors").
[9] www.kickstarter.com.
[10] www.indiegogo.com.

crowdfunded micro-lending site, intends to economically benefit *only* the poor individuals who receive micro-loans through it.[11]

One accepted taxonomy breaks crowdfunding into four categories: (1) donation sites; (2) reward and pre-purchase sites; (3) lending sites (both those offering interest and those that do not); and (4) equity sites.[12] This framework is reasonable based on the nature of the "transaction." It also aids analyses of whether particular kinds of transactions might be considered "securities" that fall within the regulation of the securities laws—an issue of major concern to all involved with crowdfunding of any stripe.

For the purposes of this Essay, a simple bifurcation suffices: "project crowdfunding" in which contributors fund a defined *project*; and "enterprise crowdfunding" where they contribute capital that can be used as capital for ongoing general operating and development expenses of an *organization*. Kickstarter and IndieGoGo are firmly in the project camp and this helps them avoid securities law issues. Kiva engages in enterprise crowdfunding, but through microloans that do not generate interest or any direct economic benefit to the funders. Part II briefly reviews the fundamentals of what makes something a security that impact whether a particular type of crowdfunding will be deemed a security.

The bifurcation model is important because building an IP portfolio for a start-up is a long-term capital expense.[13] Individual IP assets can of course arise from discrete projects, but the funding model for each project often does not include monies for IP procurement. This situation is especially true for patents, which will take a year or more and tens of thousands of dollars to prosecute. Prolonged litigation can quickly diverge from the project timeline. Further, it is hard to know during advance financial planning for a project whether inventions will arise that need to be budgeted for. Thus, such funding may be left out of project budgets. Cash-strapped start-ups, particularly those run by first-time entrepreneurs, often do not budget for patent prosecution either because they have not thought of it, do not understand the magnitude of costs, or simply cannot due to lack of forecasted investments and revenues.

For those start-ups that do seek to budget for IP, the question is where to get the money. Technology start-ups generally will have no revenue for a number of years while developing their products/services and business model. Even when revenues come in, the monies may barely offset fixed costs of salaries, facilities, and supplies. Hence the start-up

[11] www.kiva.org.

[12] Bradford, *supra* note 6 at 14-27.

[13] Many of the comments in the remainder of this section are derived from personal experience as counsel to start-up companies over 10 years in private practice and through the Entrepreneurial Law Clinic at UW Law School ("UW ELC"). University of Washington School of Law, Entrepreneurial Law Clinic *available at* http://www.law.washington.edu/clinics/entrepreneurial (last visited Nov. 30, 2013).

metric of "burn rate"—the amount of money beyond revenues each month the company will burn as it develops products/services. An IP budget will be far down the list of expenses to be budgeted for. Thus, it will have to come from capital investments.

VC-funded start-ups can usually budget for IP expenses. VCs understand both burn rate and the need for IP protection. In fact, anecdotally speaking, VCs balk at a possible investment if the founders seem to be low-balling their burn rate and expenses. VCs *expect* relatively high burn rates—the focus is on fast development, launch, and growth, not penny-pinching. While there is mixed evidence as to the insistence of VCs for *patent* protection in some industries (e.g., software), in other industries it is imperative.[14] And in all industries, VCs will still want to see *some* form of IP protection (if only trade secrets) at least until/unless first mover advantage is achieved. Law firms representing start-ups involved in a professional money raise from VCs will counsel founders to include these kinds of capital needs in the discussions and amount sought.

Angel-funded start-ups can be in a different position. Sophisticated tech-focused angels, such as those in Silicon Valley and Seattle, will operate similarly to VCs with regard to burn rate and IP expenses. Angels in those markets are often former tech professionals who had a great exit as either an employee or founder of another tech company, and so they know the importance of IP and fast growth funding.[15] But angels in other markets may not understand the start-up trajectory and needs. In those cases, IP budget funding may not be available, with potentially deleterious consequences on the start-ups' ability to monetize its investment in R&D.

The acute problem, however, is for start-ups that are bootstrapping[16] or relying (so far) only on friends and family investments. Unless the friends and family are quite generous and savvy to the needs for fast growth and IP funding, they may not be willing to invest funds to be used for patent procurement.[17] Where there are no funds, there will be no

[14] *See* Stuart J.H. Graham *et al*., *High Technology Entrepreneurs and the Patent System*, 24 BERKELEY TECH. L.J. 255 (2009); Stuart J.H. Graham and Ted. M. Sichelman, *Patenting by Entrepreneurs: An Empirical Study*, 17 MICH. TELECOMM. AND TECH. L. REV. 111 (2010).

[15] I adopt the definition of "angels" as high net worth individuals investing directly in a start-up (or at most through a personal investment vehicle). By contrast, "VCs" are the managers of a VC fund who make portfolio company investment decisions on behalf of the fund. They may "co-invest" their own money alongside that of the fund, but their main function is as fund managers.

[16] Using the founders' own money and, often, their personal credit card debt.

[17] Procurement of other forms of IP is far less expensive than that for patents. Trade secrets are "free" in that they only require physical protections against disclosure and legally binding agreements such as nondisclosure or confidentiality agreements with those who need to practice them on behalf of the start-up or its suppliers. Copyright is "free" in that it inheres automatically upon the fixation of the expression in a tangible medium; registration with Copyright Office is required in order to bring court enforcement actions of one's copyright, and is advisable earlier for full protection of rights, but is fairly inexpensive. Trademarks and trade dress rights are also "free" as they accrue as a matter of state law on use of the mark on products/services in commerce. Federal registration is desirable, and requires basic

ability to pursue patent applications.[18] The window for pursuing patent applications is also not widely flexible. Should the start-up deliver products or services embodying the invention, this will trigger the grace period for the on-sale bar of § 102(b)(1) that will ultimately lead to loss of the potential patent rights if an application is not timely filed.[19] Similarly, public use or disclosure of the invention may trigger the grace period under the same provision.[20] But even where the inventor timely files for U.S. rights, she will have lost rights in many foreign countries immediately upon such disclosure, sale, or public use. For fast growth companies with literally global ambitions, this result could be quite detrimental to their plans. At the same time, the possible need for foreign filings will only add to the expected patent procurement budget.[21]

Start-ups arguably need patents even more than do established firms. Patents provide a critical tool in the David-and-Goliath competition they will have with larger incumbents in the field they seek to disrupt.[22] Incumbents can wait for the start-up to invest significant resources in developing and launching a valuable new good or service and then simply copy it while using their economies of scale, existing manufacturing, and lack of R&D costs, to deliver the good or service more cheaply and broadly. While some could argue this benefits society and is in the nature of free market competition, it seems likely to discourage start-ups who will not be able to obtain fair returns on their R&D. With so much innovation coming from start-ups, these hurdles will likely reduce overall innovation producing a net social cost (assuming one sees innovation as a desideratum). Patents allow start-ups to appropriate the value of their R&D results by

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examination by the U.S. Patent and Trademark Office ("USPTO"), but the cost to do this is still relatively low.

[18] Some law school clinics, such as UW ELC, provide limited low or no-cost patent application services to low-income inventors, with the inventor responsible only for out-of-pocket costs such as USPTO fees. The USPTO has also coordinated development of consortiums of pro bono patent attorneys in certain markets to deliver low or no-cost patent applications on a similar basis. Programs currently exist in Minneapolis, Seattle, and other cities across the country. *See* U.S. Patent & Trademark Office, Pro Bono, *available at* htpp://www.uspto.gov/inventors/proseprobono (last visited Nov. 30, 2013).

[19] 35 U.S.C. §102(b).

[20] *Id*.

[21] Under the Patent Cooperation Treaty ("PCT"), inventors who are in Paris Convention signatory countries can file in their home jurisdiction as either domestic applications or "international patent applications" and then file national applications in other Paris Convention countries within the year. *See* World Intellectual Property Organization, PCT FAQs *available at* http://www.wipo.int/pct/en/faqs/faqs.html (last visited Oct. 10, 2013). But these rights will only be available if the applicant files in their home jurisdiction *before* any sale, public use, or disclosure.

[22] Picard v. United Aircraft Corp., 128 F.2d 632, 643 (2d Cir. 1942) (Frank, J., concurring); *see also* Colleen V. Chien, *Of Trolls, Davids, Goliaths, and Kings: Narratives and Evidence in the Litigation of High-Tech Patents*, 87 N.C. L. REV. 1571, 1577–90 (2009); Stephen H. Haber, F. Scott Kieff & Troy A. Paredes, *On the Importance to Economic Success of Property Rights in Finance and Innovation*, 26 WASH. U. J.L. & POL'Y 215, 222 (2008) ("[P]atents are powerful antimonopoly weapons—the vital slingshots 'Davids' use to take on 'Goliaths.'").

giving them legally enforceable exclusive rights that can be exercised against large incumbents seeking to copy the start-up's innovations.[23]

Given the need for patents and other IP, start-ups desperately need funds to procure these rights. If they cannot secure them from VCs, angels, friends and family, or their own personal resources, they need another avenue. Given the interest in funding innovation evinced by contributors to Kickstarter, IndieGoGo, and similar sites, crowdfunding seems to be a natural fit. But the existing sites allow only project funding. Thus, a start-up would have to seek project-based contributions for patent and other IP expenses. It is not clear that crowdfunding recipients are accountable for their use of funds received by the sites' terms and conditions (or otherwise).[24] Conceivably, a start-up could simply hope to raise enough project funding to cover the costs of the projects, any rewards that must be delivered (including delivery costs!), and procurement of IP arising from the project. So long as the rewards are fulfilled when the project is completed, then this appears to discharge the project creator's obligations under the terms and conditions. However, given the project-based sites' insistence that only *projects* be funded, the nature of patent prosecution costs as arguably enterprise capital expenses may mean that something beyond a *project* is being funded. At the same time, nothing in the terms and conditions of these sites indicate that a project creator is limited to the collection of the actual costs of developing and delivering the project rewards. Presumably, the creator can set any contribution levels for rewards, including a "profit" margin. The market will determine whether contributors want to contribute that amount. This "loophole" likely just underscores the origins of these crowdfunding sites as a means to fund otherwise un-fundable projects—meaning things not expected to be profitable. Whatever the intent, at this point the financing of IP procurement from project crowdfunding may sit in a contractual grey area.

Equity enterprise crowdfunding would remove any uncertainty about the use of funds for IP procurement. Monies received would be capital investments based on issuance of stock, bonds, or debentures.[25] Unless the terms of such instruments limited the use of proceeds and excluded IP expenses the start-up could use the funds for any lawful capital expenses.[26] What often surprises first time entrepreneurs is that patent

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[23] Even with patents, many start-ups face significant challenges from deep-pocketed incumbents who may seek to infringe the start-up's rights anyway, forcing the start-up to engage in expensive and distracting litigation.

[24] *See, e.g.*, Kickstarter, Terms of Service *available at* <http://www.kickstarter.com/terms-of-use?ref=footer> (last visited Oct. 11, 2013); Project Guidelines *available at* http://www.kickstarter.com/help/guidelines?ref=footer (last visited Oct. 11, 2013).

[25] The SEC supports the full range of debt and equity securities for crowdfunding. *See* SEC, Crowdfunding § II(B)(6)(c), 78 FED. REG. 66428, 66457-58 (Nov. 5, 2013).

[26] Under the Proposed Regulation Crowdfunding, the issuer must disclose the use of proceeds in any crowdfunding offering. *Id*. at § I.(B)(1)(c), 66440.

procurement expenses may be the single largest cash outlay they will have to make.[27] While the fair market value of salaries will be larger, the actual cash outlay is only a fraction of that total value because significant portions of compensation will be through stock grants and options. Some other costs can be mitigated by issuance of stock options as well.[28] But few good patent attorneys will take equity for their services. There is too much quality billable hour paying work from established companies for patent attorneys to speculate on equity.[29] Thus, crowdfunding could turn into a critical source of cash to procure patents in a timely fashion.

Enterprise crowdfunding is needed for start-ups to plan and execute proper IP strategies, which in turn provide bedrock value assets for the firm. While angel or VC funded start-ups will not have this same need, they are the minority of start-ups. Project crowdfunding might enable some start-ups to fund IP procurement, but this likely cannot be an explicit goal of such fundraising (under the most popular sites' terms of service). Plus the crowdfunding "market" might be unwilling to allow start-ups to covertly price IP procurement in to contribution amounts (i.e., potential funders will not contribute to a campaign, correctly deeming the value of the express project's reward lower than the amount requested). Any use of funds raised for the "project" that instead go to IP procurement may fall into a legal grey zone so far as the start-ups' contractual relationship with the crowdfunding site and the quasi-contract relationship with funders. Accordingly, enterprise crowdfunding presents the "cleanest" solution to the problem. But selling unregistered equity, such as that issued by pre-IPO start-ups, through mass-market channels was one of the core prohibitions of the securities laws before passage of the JOBS Act. Thus, the next Part unpacks the changes the Act makes to securities laws to allow enterprise crowdfunding and other avenues for general solicitation of investors through the Internet. In particular, it focuses on the disclosure requirements for these different avenues.

II. JOBS ACT DISCLOSURE REQUIREMENTS IMPACT ON CROWDFUNDING START-UPS

[27] TK Footnote

[28] Founders sometimes become too cavalier with using equity to pay for things. This can lead to a bloated capitalization table (the table showing how the company is capitalized), which in turn can deter later professional investors such as VCs. This is discussed further in Part II.

[29] Admittedly there might be more upside for the attorney who takes equity—and the client's stock becomes highly valuable—but in most cases equity stakes turn out to be worthless. Thus, patent attorneys in private practice strongly prefer hourly cash rates, and high ones at that given their expertise. Those who want to take the equity route will often go in-house and become part of the team. This gives them more access to information on where the start-up is going, greater potential to help guide the start-up, higher rate of equity compensation, and the excitement of being part of the team.

The core premise of the federal securities laws is that the government should not review the merits of investments represented by offers of securities, but rather simply mandate disclosures from the issuers of these securities so that investors can make reasonably informed decisions.[30] The form and scope of disclosure sought by lawmakers at the time of drafting the laws would have placed prohibitive costs on smaller issuers. Thus, a distinction was created between "private" and "public" issuers.[31] Some securities issued by private issuers are exempted from registration with the SEC, and the issuer is not subject to mandatory disclosure, under § 3 of the Securities Act of 1933 (the "Securities Act").[32] Securities of private issuers not exempted could still be sold without registration in certain exempted *transactions* under § 4 of the Securities Act.[33] Further sales of those securities would need to either be pursuant to registered offerings or another exempt transaction. In either case, the key to maintaining "private" status was to *not* engage in "general solicitations" or "public offerings."

While the line between offerings subject to registration and disclosure and those exempted was based on the public-private distinction, the exact nature of general solicitations or public offerings was not detailed in the Securities Act. Case law on the subject centered on tests of whether the offerees were part of a limited, defined set of persons who had either a substantial connection to the issuer or were sophisticated investors who could negotiate for the information and/or control rights that would enable them to make reasonable decisions as to initial investment and the period during which they might continue to hold the security.[34] But there was great uncertainty about how to ensure that any particular offering would be considered exempt. At the same time, structuring an offering incorrectly—even with good faith intent to avoid a public offering—meant that the offering could later be deemed to have violated § 5 of the Securities Act as an unregistered public offering.[35] Potential penalties include rescission of the offer, fines, and even prohibition of future offerings.[36]

A. *Regulation D*

The uncertainty surrounding the proper structuring of private or limited offerings arguably led to fewer such offerings as would be optimal

[30] *See*, James M. Landis, *The Legislative History of the Securities Act of 1933*, 28 GEO. WASH. L. REV. 29 (1959–1960).
[31] TK Footnote
[32] 48 Stat. 75 (May 27, 1933) (codified as amended at 15 U.S.C. § 77(c)).
[33] 48 Stat. 77 (May 27, 1933) (codified as amended at 15 U.S.C. § 77(d)).
[34] *See, e.g.*, SEC v. Ralston Purina Co., 346 U.S. 119 (1953).
[35] 48 Stat. 77 (May 27, 1933) (codified as amended at 15 U.S.C. § 77(e))
[36] 15 U.S.C. §§ 77(k), 77(l).

for small firm capital raising and prompted the SEC to promulgate Regulation D in 1980 ("Reg D").[37] Three safe harbors for private offerings were created that, if complied with, would allow the issuer greater certainty that the offering would not later be deemed an illegal unregistered public offering. Rule 504, promulgated under § 3 for exempt securities, allows an issuer to sell up to $1 million of unrestricted stock to any number of purchasers.[38] Rule 505, promulgated under § 4 for exempt *transactions*, allows an issuer to sell up to $5 million of restricted stock to up to 35 non-accredited investors, plus any number of accredited investors.[39] The stock must be restricted because it was exempted from § 5's registration requirements only for the particular Rule 505 compliant offering. The purchaser buys under the express restriction—listed in a legend on the face of the stock certificate itself—that she may not resell is absent registration by the issuer or another exempt transaction. Likewise, Rule 506, also promulgated under § 4, allows an issuer to sell an unlimited dollar value of restricted stock to up to thirty-five non-accredited investors, and an unlimited number of accredited investors, but only where the non-accredited investors are themselves, or with their purchaser representative, "sophisticated."[40]

All of the safe harbors were originally subject to Rule 502's prohibition on general solicitations.[41] This condition was congruent with the securities laws' focus on registering offerings of securities to the general public so that the SEC might ascertain that the information disclosed to potential investors adequately conveying the nature and risks of the investment. Thus, the narrowly limited exception for general solicitations under Rule 504 was reserved for those offerings that were registered and

[37] 47 FED REG. 11262 (Mar. 16, 1982).

[38] 17 C.F.R. § 230.504. However, the issuer must offer and sell the in compliance with state laws requiring registration, and public filing of the registration statement, together with delivery of a substantive disclosure document to investors.

[39] 17 C.F.R. § 230.505. Accredited investors include: i) banks; ii) private business development corporation; iii) 501(c)(3) tax exempt organizations and Massachusetts or similar trusts or business partnerships (not formed for the express purpose of buying the securities) with over $5 million in assets; iv) directors, executive officers, and/or general partners of the issuer; v) natural persons, alone or with their spouse, have more than $1 million in net worth (not including value of primary residence); vi) natural persons who have annual income over $200,000 for the past two years, or who with their spouses have annual income over $300,000 for the past two years, and has a reasonable expectation of reaching the same income level in the current year; vii) any trust with over $5 million in assets (not formed for the express purpose of buying the securities) whose purchase of the securities is guided by a "sophisticated person" (as defined under Rule 506(b)(2)(ii)); and viii) any entity in which all entity owners are accredited purchasers.

[40] 17 C.F.R. § 230.506. "Sophisticated" investors are those who alone, or with their purchaser representatives, have such knowledge and experience in financial and business matters that they are capable of evaluating the merits and risks of the prospective investment, or the issuer reasonably believes immediately prior to making any sale that such purchasers comes within this description. 17 C.F.R. § 230.506(b)(2)(ii).

[41] 17 C.F.R. § 230.502(c). Issuers could engage in general solicitation as part of a Rule 504 offering so long as it sold only to accredited investors.

subject to adequate information disclosure under a state's securities laws.[42] The prohibition on general solicitation meant that mass distribution channels of communicating offers to potential investors, such as the Internet, could not be used. This prohibition in turn effectively eliminated crowdfunding, at least under the current popular model facilitated by websites.

The limitations on offers and sales to non-accredited investors in Reg D offerings presented another serious impediment to crowdfunding. A cap of thirty-five non-accredited investors under Rule 505 and Rule 506 offerings hardly rises to the level of what we think of as crowdfunding. While it is true that the number of *accredited* investors is not capped, the nature of such investors—as relatively wealthy individuals or entities—conflicts with the ambitions of crowdfunding to democratize investment. At the same time, Rule 504's allowance of an unlimited number of non-accredited investors is tempered for the purposes of crowdfunding by the limit of the offering amount to $1 million. In the realm of project crowdfunding this change might seem to be no problem at all. Raising $1 million through hundreds or thousands of relatively small contributions is exactly what many Kickstarter and IndieGoGo campaigns look like. In fact it is probably higher than the average campaign. But start-ups that seek enterprise crowdfunding will likely need to raise more than $1 million. Even where the $1 million cap is not a hindrance, the start-up would still need to comply with the restrictions on general solicitation in order to run an Internet-based enterprise crowdfunding campaign. State-compliant offerings are still allowed, but are arguably limited to state-by-state registration, disclosure, and sales.[43] It also requires the costs of state registration and disclosure, which the start-up might not be able to afford (and if it could, it might just as well be able to register the offering for nationwide offers and sales with the SEC).

The state of the Reg D safe harbors before passage of the JOBS Act effectively prohibited enterprise crowdfunding. Limitations on the number of non-accredited investors, funding limits, and general solicitation requirements conspired in the aggregate to limit enterprise crowdfunding to state-registered offerings of no more than $1 million. Bold issuers could seek to embark on an enterprise crowdfunding campaign claiming it was not a public offering, and thus exempt under § 4(2) of the Securities Act. But the very use of a widely available website to advertise the fundraising

[42] 17 C.F.R. § 230.504(b)(i).

[43] At least one company has engaged in state-based enterprise crowdfunding campaign. *See* Bogus Brewing, "Ownership" *available at* http://www.bogusbrewing.com/ownership/ (last visited Oct. 14, 2013). Bogus Brewing engaged in a state-registered crowdfunding offering in Idaho claiming an exemption from federal registration under Rule 504. However, it might equally have claimed the intrastate exemption under § 3(a)(11) of the Securities Act. Thanks to Garrett Hall for bringing this example to my attention.

would almost certainly be deemed a general solicitation, and because there would likely be no limit of the offer to a certain group of investors, the offering would not fall under § 4(2). The clamor for enterprise crowdfunding, in an ongoing recession, and in light of the success of project crowdfunding did not go unnoticed by Congress and the Obama Administration.

B. *The JOBS Act*

In an effort to do something to help the still-ailing economy, Congress passed the JOBS Act in 2012. President Obama approvingly signed it into law on April 5, 2012. It contained many different titles, loosely centered on ways to help start-ups raise capital. While the CROWDFUND Act within the JOBS Act for enterprise crowdfunding received significant attention, it is only one of the many titles with the overall bill. Some of the others may well have a bigger impact on start-ups than will the CROWDFUND Act. This Section briefly reviews all the titles within the JOB Act.

1. "Emerging Growth Companies"

Title I creates a new issuer classification of "emerging growth companies" that enjoy relaxed mandatory disclosure rules.[44] "Emerging growth companies" are simply issuers that had less than $1 billion in total annual gross revenues during its most recently completed fiscal year.[45] This benchmark covers some fairly large businesses, so it is a generous cap. Such issuers are exempted from some of the disclosure requirements on executive compensation for reporting companies.[46] They also need only disclose two years' worth of audited financial statements upon registration for an initial public offering ("IPO").[47] Emerging growth companies do not need to have their internal control systems evaluated by their outside auditors.[48] They also are provisionally exempted from the auditor rotation and supplemental audit information required of reporting companies under the Sarbanes-Oxley Act.[49] Perhaps most importantly, Title I relaxes the restrictions on securities analysts, brokers, and dealers for communications made before, during, or immediately after an emerging growth company's

[44] TK Footnote
[45] JOBS Act, Title I-Reopening American Capital Markets to Emerging Growth Companies, § 101, Pub. L. 112-106, 126 Stat. 306, 307-308 (2012).
[46] JOBS Act, § 102.
[47] JOBS Act, § 102. Other issuers need to disclose three year's worth of audited financial statements at the time of registration.
[48] JOBS Act, § 103.
[49] JOBS Act, § 104.

IPO, especially with regard to qualified institutional buyers and institutional accredited investors.[50] It also permits emerging growth companies to submit confidential "draft" registration statements for their IPOs—in direct contrast to the existing regime in which any submitted registration statement is immediately made public through the EDGAR system.[51]

2. General Solicitations Allowed for Rule 506 Offerings

Title II requires the SEC to amend Rule 506 to allow general solicitations for offerings under it.[52] However, this exemption from the prohibition on general solicitations under Rule 502 is only available where *all* purchasers of such offers are accredited investors.[53] The Act also directs the SEC to modify the regulations of Rule 144A resales to allow offers to persons other than qualified institutional buyers, so long as such resales are only made to persons whom the seller, or its agent, reasonably believes is a qualified institutional buyer.[54] Protections are also given to persons who create platforms for new Rule 506 general solicitation offerings and Rule 144A resales offerings.[55]

3. Crowdfunding

As can be Congress' penchant, Title III was given an awkward formal title so that it could be turned into the acronym "CROWDFUND Act."[56] The parameters through which it mandates the SEC to promulgate formal rules permitting a new class of exempt transactions under § 4 of the Securities Act are complicated. The new exemption will cover only those offers and sales of a private issuer that:

- raise no more than $1 million in the aggregate with all such similarly exempt offerings in a 12 month period;
- do not exceed $2,000 or 5% of any particular investor's net worth or annual income (where the net worth or annual income is less than

[50] JOBS Act, § 105.
[51] JOBS Act, § 106.
[52] JOBS Act, Title II-Access to Capital for Job Creators, 126 Stat. 306, 313-315. The SEC issued its final rules relaxing the prohibition on general solicitations for Rule 506 offerings in July, 2013. SEC, Eliminating the Prohibition Against General Solicitation and General Advertising in Rule 506 and Rule 144A Offerings, Release No. 33-9415; No. 34-69959; No. IA-3624; File No. S7-07-12; 78 FED. REG. 44771 (Jul. 24, 2013).
[53] JOBS Act, § 201(a)(1).
[54] JOBS Act, § 201(a)(2)
[55] JOBS Act, § 201(c).
[56] JOBS Act, Title III-Crowdfunding (the "Capital Raising Online While Deterring Fraud and Unethical Non-Disclosure Act of 2012" or the "CROWDFUND Act").

$100,000) aggregated with all purchases by the investor of the issuer's stock in a 12 month period;

- do not exceed 10%, with a maximum cap of $100,000, of any particular investor's annual income or net worth where the investors annual income or net worth are equal or greater to $100,000; and
- are conducted through a broker or funding portal complying with a new § 4A added to the Securities Act, and the issuer complies with the provisions of § 4A as well.[57]

Crowdfunding issuers will have liability for material misstatements and omissions in disclosed material similar to that of IPO issuers.[58] And crowdfunded securities will be subject to a one-year holding period, with limited exceptions.[59] Issuers must use the private market intermediary portals[60] mandated under the Act, but this means that such portals must be created.[61] These portals will have significant responsibilities (and therefore potential liabilities) for obtaining and distributing information on the issuers and background checks on officers, directors, and other persons holding more than 20% of an issuer's securities.[62] The portal also needs to ensure that investors are not exceeding their investment caps.

The Act also imposes substantial disclosure requirements on crowdfunding issuers. They must disclose to the SEC, the portal handling the offering, and investors the following:

- name, legal status, physical address, and website address of issuer;
- names of directors, officers, and other persons holding greater than 20% of the issuer's securities;
- description of issuer's business and a business plan;
- three tiers of financial disclosure:
  - offerings of $100,000 or less: most recent year's income tax return; financial statements certified by principal executive officer to be "true and complete in all material respects";

[57] JOBS Act, § 302. The SEC has clarified an ambiguity in the investor income thresholds. Because the JOBS Act refers both to "net worth *or* annual income is less than $100,000" and "net worth *or* annual income are greater than or equal to $100,000," someone with, for example, annual income less than $100,000 but net worth greater than or equal to $100,000 would seem to fall into both categories. The SEC proposes to treat both categories as conjunctions (and not disjunctions), such that the lower category includes all those with net worth *and* annual income (each) less than $100,000, and the higher category includes all those with net worth *and* annual income (each) greater than or equal to $100,000. *See* SEC, Crowdfunding, § II(A)(2), 78 FED. REG. 66433-34 (Nov. 5, 2013).

[58] JOBS Act, § 302.

[59] *Id*.

[60] TK Footnote

[61] *Id*. The SEC has extensive rules for such portals, or intermediaries, in its Proposed Regulation Crowdfunding. *See* SEC, Crowdfunding, § II(C)-(D), 78 FED. REG. 66428, 66458-66496 (Nov. 5, 2013).

[62] TK Footnote

- offerings above $100,000 up to $500,000: financial statements reviewed by an independent public accountant using professional standards and procedures, or standard and procedures established by the SEC;
- offerings above $500,000: audited financial statements

* description of stated purpose and intended use of proceeds;
* target offering amount, deadline to reach the target, and regular progress updates;
* price, or method for determining price, of securities;
* description of ownership and capital structure of issuer including:
  - terms of all classes of issuer's securities, including how they may be modified and a summary of the differences among these classes, particularly how the rights of the crowdfunded securities might be limited, diluted, or qualified by the rights of any other class;
  - description of how principal shareholders' rights may negatively impact crowdfunding investors
  - name and ownership level of each holder of more than 20% of the issuer's equity;
  - method of valuation for offered securities now and in future;
  - risks to crowdfunding investors related to being minority investors, together with risks associated with corporate actions (including additional share issuances, sale of issuer or assets of issuer, and transactions with related parties); and
  - any other information the SEC may require.[63]

Following the offering, the issuer will have to file annual reports with the SEC that cover the results of operations and financial statements. Issuers must then provide the reports to investors. Under the Proposed Regulation Crowdfunding, the SEC will require issuers to submit disclosures through the EDGAR system for public access.[64] This disclosure requirement makes the crowdfunding exemption particularly problematic as discussed in Part II(C) below.

Creating a crowdfunding exemption also means that the reporting company triggers under § 12(g) of the Securities Exchange Act (the "Exchange Act")[65] have to be amended. The large number of investors in a single crowdfunded offering may well bring the number of issuer investors over the current cap of 500 non-accredited investors.[66] Accordingly, the JOBS Act amends the Exchange Act to remove crowdfunding investors

[63] JOBS Act, § 302; SEC, Crowdfunding, § II(B)(1), 78 FED. REG. 66437-66449.
[64] SEC, Crowdfunding, § II(B)(1)-(3), 78 FED. REG. 66437-66454 (Nov. 5, 2013).
[65] 48 Stat. 881 (Jun. 6, 1934).
[66] 15 U.S.C. § 78l(g)

from the calculation of shareholders for purposes of triggering reporting company status.[67]

4. "Regulation A+"

On top of allowing general solicitations on Rule 506 offerings and creating the crowdfunding exemption, the JOBS Act also created what has been dubbed a "Regulation A+" exemption.[68] The SEC had promulgated Regulation A "mini-offerings" in 1992.[69] Under Regulation A, issuers can offer unrestricted stock in what is essentially a public offering, in amounts up to $5 million over a twelve-month period, without becoming a reporting company producing audited financial statements (unless they are otherwise available).[70] The issuer also has to prepare and submit an offering statement on Form 1-A, which is similar to a public offering registration statement. But under the new Regulation A+, issuers can offer up to $50 million on similar conditions as the original Regulation A.[71]

5. Raising the Triggers for Reporting Company Status

The JOBS Act increased various triggers so that more companies can stay out of reporting company status longer.[72] The number of shareholders was increased to 2,000 persons overall, or 500 non-accredited investors.[73] Employees holding company securities obtained through employee compensation plans also do not now counts towards these trigger levels.[74]

6. Raising the Triggers for Bank Registration

Title VI of the Act increases the triggers for banks and bank holding companies to have to register under §§ 12 and 15 of the Exchange Act.[75] This trigger seems to have been a response to the issue of banks' reduction of lending, especially to small businesses, in the wake of the 2008 financial crisis and subsequent recession. This solution seems a bit tangential to that problem.

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[67] JOBS Act, § 303.
[68] JOBS Act, Title IV-Small Company Capital Formation.
[69] 57 FED. REG. 36468 (Aug. 13, 1992).
[70] 17 C.F.R. §§ 230.251-230.263.
[71] JOBS Act, § 401.
[72] JOBS Act, Title V-Private Company Flexibility and Growth.
[73] JOBS Act, § 501.
[74] JOBS Act, § 502.
[75] JOBS Act, Title VI-Capital Expansion.

7. Comparison of New and Amended Capital Raising Models

While crowdfunding has received the most attention—and not all of it positive—other sections of the JOBS Act may provide better models for start-up fundraising. Crowdfunding has many detractors, including apparently the SEC, which has delayed rulemaking beyond the 270 days allowed in the JOBS Act for implementation. In the interim, the SEC has promulgated the rules permitting general solicitation in Rule 506 offerings and general advertising in Rule 144A offerings.[76] As mentioned, there is no cap on the amount that can be raised under Rule 506 and the reporting requirements are not much more onerous than those for the crowdfunding exemption. The key difference is that general solicitation is only permitted if purchasers are restricted to accredited investors. So it is more like "high end" crowdfunding. At the same time, both Regulation A and Regulation A+ allow for general solicitation, higher offering amounts than available under the crowdfunding exemption, only somewhat more disclosure, and no restriction to accredited investors. At the same time, the existing Rule 504 allows general solicitation for offerings up to $1 million, so long as the offer is made exclusively in states that have their own registration systems for public offerings.[77] While this provision is then limited to certain states, as a practical matter such an offering may be adequate to raise $1 million—which is all that is permitted under the new crowdfunding exemption anyway. Accordingly, from a purely rational perspective, the new crowdfunding exemption may not be particularly compelling, especially if the SEC promulgates restrictive or onerous rules to implement it.

C. *The CROWDFUND Act Disclosure Requirements May Present Serious Risks to Start-ups IP and Business Strategy.*

Notwithstanding the serious questions about whether the crowdfunding exemption is advisable from a regulatory perspective, or truly helpful for start-ups, the popular appeal of crowdfunding is such that many start-ups will likely use it once available. On the positive side, it may be one more avenue for deserving start-ups to be able to access the capital they need to launch and grow. The focus on equity provides just the kind of working capital needed for start-ups to get serious about developing their IP portfolios. But the disclosure required for crowdfunding may present challenges and risks to first time entrepreneurs. The mandated disclosures will be made public through the EDGAR system.[78] While the SEC provides

[76] 78 FED. REG. 44771 (Jul. 24, 2013).
[77] 17 C.F.R. § 203.504(b)(i). As mentioned above, at least one company has relied on Rule 504 to conduct what it jokingly called an "IPO—Idaho Public Offering" using Idaho state registration procedures to conduct an enterprise crowdfunding selling equity. *See supra* Note 41.
[78] SEC, Crowdfunding, § II(B)(1)-(3), 78 FED. REG. 66437-66454 (Nov. 5, 2013).

for the redaction of some sensitive, personally identifiable information (e.g., social security numbers in tax filings),[79] it is not clear how far redaction request could go beyond this. In fact, the SEC takes seriously the relation between crowdfunding and crowdsourcing, stating:

> The proposed rules are intended to align crowdfunding transactions under Section 4(a)(6) [of the JOBS Act] with the central tenets of the original concept of crowdfunding, in which the public—or the crowd—is presented with an opportunity to invest in an idea or business and individuals decide whether or not to invest after sharing information about the idea or business with, and learning from, other members of the crowd. In this role, members of the crowd are not only sharing information about the idea or business, but also are expected to help evaluate the idea or business before deciding whether or not to invest.[80]

Thus, the SEC clearly intends enough information to be made public about the issuer that a large number of potential investors can pore over, share, and compare details of its finances, management, business plan, and employees.

The crowdfunding issuer will become a kind of junior reporting company, yet without the experience and legal counsel of a company that makes it to a traditional public offering. By contrast, Reg D offerings require only the filing of Form D—which contains minimal information—with the SEC.[81] The more extensive disclosures required under Reg D are required to be made available only *to purchasers*, and thus need not be made public. At the same time, while private investors often negotiate for even more information rights than mandated by Reg D, they usually receive it under confidentiality provisions. The only equivalent requirement for public disclosures is under Regulation A and Regulation A+ offerings. But these allow for much higher offering amounts ($5 million and $50 million, respectively, versus $1 million for the crowdfunding exemption). Also, the expense and sophistication needed to engage in one of these "mini-offerings" makes the model impractical for most of the early stage start-ups who will likely pursue crowdfunding.

There are substantial risks for early stage start-ups to enter into an extensive disclosure regime. Such companies rarely have specialized counsel that can help them navigate the risks involved. Companies pursuing a Regulation A offering or an IPO will generally have sophisticated

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[79] *Id*. at § II(B)(1)(ii)(b), 66446.
[80] *Id*. at § I(C), 66430.
[81] 17 C.F.R. § 230.503; SEC, Form D, *available at* http://www.sec.gov/about/forms/formd.pdf (last visited Oct. 15, 2013).

securities attorneys, as well as IP attorneys if they have significant IP assets. Firms without such counsel risk disclosing patentable inventions—especially business methods—before applications have been filed and rights preserved. This issue will be particularly acute for ongoing periodic disclosures, which tend to put time pressure on reporting companies because the regular deadlines can seem relentless.[82] The likely place for such accidental disclosures will be in the mandated discussion of the firm's business and financial condition discussion (compared by the SEC to the management's discussion and analysis of financial condition and results of operations (known as the "MD&A") under Regulation S-K for reporting companies).[83] But as the issuer becomes a kind of junior reporting company, it will also have increased pressure to make other public statements. These disclosures can be the most perilous, especially where they include live remarks by company representatives (whether verbal or through social media). Descriptions of the company's proposed products or services for purposes of soliciting support in the crowdfunded offering will present risks of enabling disclosures that could destroy patent rights. Part of engaging with the "crowd" may be a broad dialogue in which all manner of potential investors draw out responses from company representatives (official or otherwise) that disclose too much about the company's plans and technologies. In fact, the SEC anticipates this happening and is already considering whether and how to make such disclosures part of the formal—and hence possibly liability generating—disclosures under Regulation Crowdfunding.[84]

In the event that potentially enabling disclosures of business methods or other inventions are made, the company will have to accelerate patent filing decisions. But without the funding to prepare and file a strong application (lack of funding presumably being a major driver of the crowdfunding offering), the company may have to file an inferior application, or no application at all. Thus, the crowdfunding effort may negatively alter the company's IP strategy timeline.

Ultimately, the disclosure required under the crowdfunding exemption means that start-ups will need to retain expensive securities and IP counsel before starting the crowdfunding process. But if they could afford such counsel, they likely would not be engaged in crowdfunding. The downsides of mandatory disclosure and a broad investor base (that may

[82] Besides regular periodic reporting, the SEC is contemplating requiring material event reporting, similar to Form 8-K filings under the Exchange Act. *See* SEC, Crowdfunding, § II(B)(2), 66450-52. This will put even more time pressure and distraction on inexperienced start-ups, increasing the likelihood of accidental disclosure of sensitive information.

[83] *Id*. at § II(B), 66437-44. Because the SEC at this time is not mandating the form of the business and financial condition disclosure reports, issuers may well overreport to stay on the safe side of an indeterminate line for compliance with Regulation Crowdfunding.

[84] *Id*. at § II(B)(3), 66452-54.

or may not have voting power) should discourage companies from using this funding model unless they really need it.

Thus, the JOBS Act may unintentionally penalize the very firms that need its help the most. A number of commentators view the disclosure requirements as necessary to mitigate what might otherwise be a major new avenue for fraudulent securities scams.[85] However, Professor Edmund Kitch believes that it was a mistake for Congress to require public disclosures from crowdfunding companies.[86] But this is because he takes the controversial position that *all* mandatory disclosure under the federal securities regulations system was a mistake.[87] Similar to the legalization of gambling and other risky activities, Kitch believes that individuals should have the right to invest their money wherever they choose, and through whatever means they want, without government intervention.[88] Thus, he does not have a reason to distinguish crowdfunding from other investment vehicles. All should be matters purely between issuers and investors with no government role such as mandatory disclosure regimes. But Congress did not take this path, and arguably tended to the opposite pole by imposing significant disclosure obligations on certain classes of issuers, now including crowdfunding firms.

The crowdfunding provisions of the JOBS Act push start-ups into an advanced regulatory environment they may not be ready for. Whereas other titles in the JOBS Act allow emerging growth companies to stay private longer—giving them a longer period of privacy and confidentiality within which to develop business models, staff, and technologies—the CROWDFUND Act will rush start-ups who use it and force them to become junior reporting companies. And whereas other titles of the JOBS Act *relax* disclosure requirements for other kinds of offerings—including the new confidential draft registration statement for IPOs that Twitter recently used—the CROWDFUND Act imposes arguably a higher than usual amount of disclosure as compared to that required for similarly situated offerings (e.g., Rule 504 offerings can also raise $1 million, but have none of the public disclosures of the CROWDFUND Act, unless the issuer relies on the state registration option). The period of privacy is critical for start-ups who have nearly impossible levels of uncertainty across their business model, technologies, and markets. Further, the ability to be disruptive often relies on the element of surprise. A potentially

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[85] *See, e.g.*, Thomas Lee Hazen, *Crowdfunding or Fraudfunding? Social Networks and the Securities Laws—Why the Specially Tailored Exemption Must be Conditioned on Meaningful Disclosure*, 90 N.C. L. REV. 1735 (2012).

[86] TK Kitch article

[87] Camilla Hrdy, *Kitch & O'Connor: Should Crowdfunding be Regulated?*, WRITTEN DISCLOSURE BLOG *available at* < http://writtendescription.blogspot.com/2013/09/kitch-oconnor-should-crowdfunding-be.html> (last visited Oct. 15, 2013).

[88] TK Footnote

disruptive start-up that needs to telegraph details about its model and plans through public disclosures beginning at the earliest stages of the firm is likely to dissipate much of that element of surprise and limit its ability to successfully disrupt an industry (as the incumbents will have been able to prepare to defend their entrenched interests).

III. MANAGING CROWDFUNDING INVESTORS' EXPECTATIONS ABOUT START-UP IP PORTFOLIOS

Beyond the disclosure issues affecting start-ups IP strategies under the CROWDFUND Act, the crowdfunding concept generally presents issues for management's interaction with shareholders. Publicly traded companies develop significant expertise and staff just to deal with issues arising with a large, diffuse set of shareholders. Start-ups will be in no such position to deal with this kind of base. Further, they may use crowdfunding to avoid professional investors such as VCs, even though those professionals often bring valuable expertise that can guide the start-up to develop the sophistication to manage a base of public shareholders.

Professional or experienced start-up investors such as tech angels and VCs understand the value of IP. They often know more than the founders about the realities and expenses of building IP portfolios with limited resources. Tough decisions need to be made about what to patent among competing promising inventions. Timing decisions for applications also require experience. Likewise, some inventions may be protectable as trade secrets. And in some industries, such as software, copyright will play an equal role with patents for protection of the core products developed. On top of all this, a strong brand—manifested through distinctive, federally registered trademarks—may play a more important long-term role than patents on any particular technology. Unsophisticated investors, who may constitute a large percentage of crowdfunders, will not be able to offer any help on these matters.

Even if some crowdfunders have such expertise, a start-up would need to bring them into a special confidential relationship (such as often happens with private placement investors) in order to give them privileged information necessary to help develop the IP strategy. But this in turn might run afoul of fair disclosure concepts, which seek to have all outside shareholders on the same footing with regard to company information. Insiders, by contrast, will have access to nonpublic information, but then are restricted in their ability to trade in the company's stock based on such insider information. We do not yet know whether the SEC will treat a crowdfunded issuer as a kind of public company, which requires such insider-outsider distinctions for information dissemination.

Further, a crowdfunding raise early in a start-up's life could deter professional investors from investing later. Many VCs already lament

bloated cap tables from too many friends and family investors in companies the VCs are otherwise interested in financing. This situation means unpredictable votes on shareholder issues and more potential for litigation from early stage investors who get substantially diluted in later rounds or disagree with the company's direction and management.

Angels and VCs also usually understand the risks of IP portfolio value during the life of the company and in bankruptcy or dissolution. Even though significant amounts of money may have been spent on procuring patents, the portfolio may be worthless if the product or service it is directed to proves to be commercially unfeasible. Of course, the portfolio may be monetized in other ways and experienced VCs may have guidance on this as well. But unsophisticated crowdfunders may wildly over- or underestimate the value of the start-up's portfolio. This shortcoming, in turn, could put them at odds with company management in how to manage and monetize the portfolio.

The upshot is that management may become more conservative because of pressure from crowdfunders with unrealistic expectations about IP portfolio development and management (as well as about other corporate matters!). This pressure could escalate into litigation, similar to the shareholder activism we increasingly see in publicly traded companies. Shareholder activism can provide helpful discipline to management of large entities that may get out of touch, but it may not be appropriate for early stage start-ups that need a lot of room to maneuver while exploring risky technologies and business models. Some have suggested that crowdfunding only be done through non-voting stock with mandatory buy-out provisions allowing the company to later reduce the cap table.[89] Such equity structuring could indeed reduce problems with crowdfunding shareholders. But the shareholders would have to agree to buy shares under these conditions. It remains to be seen whether a crowdfunding market could develop around such terms.

Start-ups that employ crowdfunding will have to learn how to manage the expectations of a broad, diffuse, base of shareholders, many of whom may be quite unsophisticated. In fact, given the "democratizing" effect of crowdfunding and the low investment amounts possible, the average crowdfunder may be far less sophisticated than the average retail investor in public markets. This knowledge gap will require "investor relations" skill and staff, which may be beyond the tool kit of the usual founder or start-up employee. Thus, the company may have to retain counsel or consultants to develop or administer the investor relations function which will only add to the start-up's burn rate.

[89] For example, Ted Sichelman offered ideas like this in an IPProfs listserv exchange on crowdfunding earlier this year.

Provided that the start-up can muster the investor relations function, one of the main goals of such a program will have to be investor education about the realities of IP portfolio development and management. First, investors will need to know that patent procurement may be one of the single largest fixed costs of the start-up recurring on an annual basis. Second, not everything will be patentable, nor will the company be able to patent everything with is patentable. Tough decisions will have to be made, and some seemingly valuable things will be left unprotected. Investors will likely *not* have a say in this—and will not know all the important inside information on the inventions and patent application decisions—and will have to be comfortable "going along for the ride." Because of the perceived nature and rhetoric of crowdfunding, crowdfunders may be more inclined than public market retail investors to believe they have an active ownership role in the company—including a say in important management decisions. Finally, investor relations staff must strive to educate investors that even expensive patents and impressive looking IP portfolios may turn out to be worthless during the life of the company, as well as in bankruptcy or dissolution.

CONCLUSION

The JOBS Act reduces the disclosure required for many forms of financing emerging growth companies. Companies can stay private longer. They can file confidential draft registration statements for IPOs. Audited financial statements need only be provided for the preceding two years before going public, not three. Similarly, general solicitation is now available for certain Rule 506 offerings, and an enhanced "Regulation A+" allows for mini-public offerings up to $50 million.

Yet, the crowdfunding exemption seems to impose heavier regulation and mandatory disclosures than the relaxed standard for equivalent alternate offerings. For a meager $1 million raise, crowdfunded companies will need to become junior reporting companies. They will need to publicly disclose information about shareholders who hold more than 20% of their equity, as well as the ways in which such shareholders' equity rights could be used to harm crowdfunders' equity rights.

Despite this inferiority of crowdfunding to other funding avenues, it is expected that many start-ups will use it once the SEC promulgates the final rules. The populist and rhetorical appeal of the form—together with the success of project crowdfunding sites such as Kickstarter—virtually ensures initial attempts to use it for enterprise crowdfunding. If it allows deserving start-ups to obtain funding they would not otherwise have received, then it may be worth it. This outcome could be especially valuable for start-ups who need funding to start developing and managing an IP portfolio.

Start-ups that use crowdfunding, however, face a number of potential issues. First, they will have a broad, diffuse ownership base more like that of a large public company than of a nimble start-up. Differences of opinion and challenges to management may be more widespread than in a traditional privately-held start-up. Second, such challenges may well be on IP strategies and tactics. Because the average crowdfunder is likely to be less sophisticated than the angels and VCs that usually invest in start-ups, he may balk at the expense of patent applications, while also expressing concern over the necessarily difficult decisions to seek patent protection on one invention and not another. Third, the requirements of disclosure on inexperienced young companies may lead to compromised IP assets. Given the reluctance or inability of early stage start-ups to hire specialized counsel in corporate law, securities law, and IP, their management may inadvertently make enabling disclosures that will jeopardize patent rights.

Crowdfunding may help some start-ups financially even as it may jeopardize their IP strategies and implementation. To minimize this harm, start-ups will need to develop strong investor relations staff that can manage the expectations of disparate crowdfunders even before the offering takes place. They will also need to hire experienced securities and IP counsel in advance of the offering. But both of these will require money that the start-up does not have (else it would not be engaging in the fundraising). This in turn may limit the effectiveness of enterprise crowdfunding of start-ups.

CULTIVATING COPYRIGHT CAPABILITIES[1]

Sean A. Pager[2]

The US Constitution empowers Congress "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors . . . the exclusive Right to their . . . Writings."[3] A bedrock assumption of copyright policy holds that such exclusive rights provide incentives that encourage authors to create. Yet, legal rights are not self-executing. On their own, they can prove insufficient: Without the capabilities to exploit their rights, authors may forgo the very benefits that copyright law is supposed to confer.

A Capabilities Gap

On its face, copyright law is simple: Creators of original works enjoy protection against unauthorized copying. Unlike patents which you have to apply for specifically and which must undergo expensive and onerous formalities, copyright is automatically effective upon fixation of the work. Moreover, the threshold originality standard is set extremely low. As such, copyright law potentially confers its protection on a broad range of creative expression.

Yet, such undemanding formal entry requirements mask the reality of a copyright system that far from welcoming to the uninitiated. First, the law itself is technically complex. Determining what aspects of a work are protected by copyright and how far such protection extends often requires a convoluted analysis of statutory provisions and case-law. This make it difficult for authors to ascertain their legal rights and to avoid trespassing on the rights of others.

Second, the formal law of copyright itself functions within a complex system of institutions and practices by which rights are transacted. The information and transaction costs required to navigate this system effectively can be daunting. In effect, we have a copyright

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[1] The following was originally written for the Copyright & New Media Newsletter. I am currently in the process of revising and expanding it into a law review article.

[2] Associate Professor, Michigan State University College of Law; Associate Director of Intellectual Property, Information & Communications Law Program. http://www.law.msu.edu/faculty_staff/profile.php?prof=594

[3] US Const., Art. I, s. viii, cl. viii.

system that was created by and for the commercial content industry. It assumes all players have the lawyers and resources to administer and enforce their rights. The uninitiated and under-resourced therefore operate at a systematic disadvantage.

Independent authors and artists often lack even a basic awareness of the copyright system. Accordingly, they fail to take common-sense measures necessary to use secure their rights. Pursuing litigation or even seeking advice from legal counsel can be prohibitively expensive. The result is that such Creative Upstarts do not reap the copyright system's promised rewards. Such forgone potential undermines the incentive value of copyright law.

Why We Should Care

As it stands, our copyright system may not be configured with the interests of Creative Upstarts at heart. However, it should be. Creative Upstarts exemplify the potential for creative industries to innovate both commercially and creatively. Less wedded to traditional business models than legacy media companies, Creative Upstarts are embracing the opportunities that new digital platforms afford to connect with their fans and funders and to project their diverse voices onto the global stage. Creative Upstarts are also less constrained creatively by the imperatives of the mass market than traditional media giants. They can afford to take the chances that lead to artistic breakthroughs. Look at the recent Academy Award-winning Best Picture films. Increasingly, they come from independent filmmakers, not major studios. Similarly, you seldom find path-breaking new music on the top 40 lists dominated by major record labels. Time and again, artistic innovation starts on the fringes and moves to the mainstream only later.

At the same time, as commercial enterprises, Creative Upstarts are capable of far more ambitious and sustained creative investments than amateurs who produce user-generated content. Dancing babies and lolcats can make us smile, but their pleasures are ephemeral. Producing significant works of authorship almost always consumes economic resources on a scale that make commercial funding necessary. It is this combination of creative innovation and commercial dynamism that makes Creative Upstarts so deserving of our support.

If we take seriously the promise of copyright laws to incentivize creative innovation, Creative Upstarts should be a central focus of copyright policy. And for copyright law to unleash the dynamic potential that Creative Upstarts embody, we need to take seriously the capacity constraints that hold Upstarts back. As we have seen, the ease by which Creative Upstarts can navigate the copyright system has direct bearing on the values of incentives that copyright confers. We therefore need to develop a copyright system that is much more user-friendly and sensitive to transaction costs. This means developing mechanisms to disseminate basic copyright information and devising low cost solutions that enable Creative Upstarts to register and license their work, enforce their rights, protect their artistic integrity, and navigate around the conflicting rights of others.

Fixing the Capabilities Gap

Fortunately, there are signs that policy-makers have started to move in this direction. The internet has made possible a wealth of online resources that can educate authors and creators about copyright law. The US Copyright office website itself dispenses helpful information on variety of topics, some practical, some whimsical (e.g. "How do I protect my sighting of Elvis").[4] Similar websites are operated by many foreign copyright office counterparts. Privately run websites have also stepped into the breach, offering advice to authors on how to "Keep Your Copyright,"[5] how to stay within the contours of the fair use doctrine,[6] as well as other copyright basics pitched at Creative Upstarts constituencies.[7]

A variety of non-profit organizations, professional guilds and law school clinics also provide low-cost legal advice to Creative Upstarts. Such targeted provision of copyright expertise can furnish Upstarts

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[4] *See What Does Copyright Protect?*, US Copyright Office, http://www.copyright.gov/help/faq/faq-protect.html#star.
[5] Kernochan Center for Law, Media, and the Arts, Columbia Law School, http://web.law.columbia.edu/keep-your-copyrights.
[6] *Fair Use Checklist*, Columbia Law Schoo, http://copyright.columbia.edu/copyright/fair-use/fair-use-checklist/; *Documentary Filmmakers' Statement of Best Practices in Fair Use*, http://www.cmsimpact.org/fair-use/best-practices/documentary/documentary-filmmakers-statement-best-practices-fair-use.
[7] *Resources for Creators*, Copyright Alliance.org, http://www.copyrightalliance.org/creators_resources.

with timely, context-specific solutions. Many of these providers also conduct outreach and education initiatives that empower authors with a more sophisticated understanding of copyright.[8]

Technology has a place to play here as well. Computerized "expert systems" can deliver high-quality customized advice at a fraction the cost of conventional legal delivery systems. Tulane University's online "Durationator" tool, which calculates copyright duration (and thus tells you when the copyright will expire for a given work), offers one example that hints at greater possibilities to come.[9] Computer networks can also yield transactional efficiencies that redound to the benefit of Creative Upstarts. For example, the United Kingdom has conducted feasibility studies for a Digital Copyright Exchange that would facilitate high volume, low cost licensing of copyrighted works via an automated, online "Copyright Hub."[10] Such a system could make it far easier (and more profitable) for producers of long-tail content to monetize their creativity.

The U.S. Copyright Office has also begun to recognize the distinctive needs of independent authors and creators and to take steps to respond to them in recent initiatives. The introduction of lower fees for solo authors in its latest registration fee schedule is a welcome development.[11] Proposals for a small claims dispute resolution process would also go a long way toward alleviating one of the biggest hurdles preventing Creative Upstarts from asserting their rights: namely, the crushing expense of conventional litigation.[12]

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8. *See* Lesley Ellen Harris, *Affordable Copyright Advice*, 17 COPYRIGHT & NEW MEDIA L. NEWSLETTER, Issue 4, p.5 (2013) (surveying providers); *Resources for Creators*, Copyright Alliance.org, http://www.copyrightalliance.org/creators_resources (listing copyright services provided by professional guilds).

9 *The durationator*, http://www.durationator.com/.

10 *See* Richard Hooper CBE and Dr Ros Lynch, *Streamlining copyright licensing for the digital age*, Intellectual Property Office, July 2012, available at: http://www.ipo.gov.uk/hargreaves-copyright-dce.

11 Copyright Office Fees: Registration, Recordation and Related Services, 79 Fed. Reg., No. 56, March 24, 2014, at 15910.

12.U.S. Copyright Office, *Remedies for Copyright Small Claims*, September, 2013, available at http://www.copyright.gov/docs/smallclaims/. It is worth noting that because jurisdiction over copyright issues remains exclusively federal, authors of copyrighted works are unable to seek relief in the state court small claims system.

Such efforts remain selective and incomplete. There is much scope yet for fresh thinking and innovative uses of technology. By stripping away the barriers that prevent Creative Upstarts from effectively exploiting their copyrights, we will secure to them the benefits that the copyright is supposed to afford. And by doing so, we will, in turn, diversify our sources of creative innovation in ways that benefit all of us. As policy-makers in US undertake what promises to be a major overhaul of copyright legislation (and with similar efforts happening overseas), hopefully the needs of Creative Upstarts will garner the attention they deserve.[13]

Their choice has thus far been either to forgo their claims entirely or file a (costly) federal case.

13. *See Chairman Goodlatte Announces Comprehensive Review of Copyright Law*, U.S. House of Representatives Committee on the Judiciary, April 24, 2013, available at: http://judiciary.house.gov/news/2013/04242013_2.html; Department of Commerce Internet Policy Task Force on Copyright Policy, Creativity, and Innovation in the Digital Economy, 2014 PUBLIC MEETINGS, https://www.signup4.net/Public/ap.aspx?EID=THEG32E.

A Brief History of Software Patents (And Why They're Valid)

Adam Mossoff

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CENTER FOR THE PROTECTION OF INTELLECTUAL PROPERTY

A Brief History of Software Patents (and Why They're Valid)

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Today, there is significant public debate over patents on the digital processes and machines that comprise computer software programs. These are often referred to as "software patents,"[1] but this is an odd moniker. Aside from the similarly mislabeled debate over "DNA patents,"[2] nowhere else in the patent system do we refer to patents on machines or processes[3] in a specific technological field in this way; for instance, people do not talk about "automobile brake patents" or "sex toy patents" as their own category of patents deserving of approval or scorn. (Yes, there are sex toy patents, and there are infringement lawsuits in which none other than Judge Richard Posner, a strident critic of today's patent system,[4] ruled that a particular sex toy was obvious and therefore unpatentable.[5])

Unfortunately, the policy debates today about "software patents" are rife with extensive confusion and misinformation about what these patents are and even about what "software" is. Even the Court of Appeals for the Federal Circuit is deeply confused about these patents, as evidenced by its highly fractured en banc decision in *CLS Bank v. Alice Corp*.[6] In 135 pages of numerous concurring and dissenting opinions that accompany the one-paragraph per curiam majority opinion, the *CLS Bank* court threw patent doctrine in this booming, innovative industry into even more disarray.[7] Judge Lourie's concurring opinion, joined by a substantial number of his colleagues, essentially argues that computer programs are unpatentable.[8] In her dissenting-in-part opinion, Judge Kimberly Moore rightly observed that Judge Laurie's opinion (and the fractured *CLS Bank* decision itself) represents "the death of hundreds of thousands of patents, including all business method, financial system, and software patents as well as many computer implemented and telecommunications patents."[9] Commentators have been equally critical of *CLS Bank*.[10]

Given the widespread confusing rhetoric and the concomitant doctrinal upheaval, a little historical perspective can be helpful and illuminating. First, knowing the historical evolution of software patents—even in classic "potted history" form[11]—is important because it reveals that the complaints today about intellectual property (IP) protection for computer programs are nothing new. Opposition to IP protection for computer programs has long existed—predating the Federal Circuit's 1998 ruling that business methods are patentable,[12] predating the Federal Circuit's 1994 ruling that computer programs are patentable as the equivalent of a digital "machine,"[13] and predating the Supreme Court's 1980 decision that a computer program running a rubber vulcanization process was patentable.[14] In fact, computer programmers and others initially opposed extending copyright protection to computer software programs, as I will discuss shortly.

Second, this history reveals that the shift in legal protection from copyright law in the 1980s to patent law in the 1990s was not a result of strategic behavior or rent-seeking by commercial firms who exploited their access to the halls of power in Congress (or somehow duped the courts into providing them the same legal protections). To the contrary, this historical evolution from copyright to patent law represented a natural legal progression as the technology evolved from the 1960s up to the mid-1990s. As it happens in our common law system — precisely because it is designed to happen this way — legal doctrines evolve in response to changes in innovative technological products and commercial mechanisms that, through the marketplace, spread these new technological values throughout the world.

It bears emphasizing that this is a "potted history" (in a non-pejorative sense). In a short essay I cannot recount every historical detail, and space constraints will require me to compress some developments into a simplified version. Of course, one should consult more detailed historical accounts of the digital revolution and its follow-on revolutions. For example, I recommend T.R. Reid's *The Chip* (2001), which provides an engaging and accessible recounting of the scientific and technological developments that made the Digital Revolution possible.

What is a "Software Patent"?

Before we can address the history, though, it is necessary to get clear on what exactly we mean by a "software patent." One of the primary problems with the term "software patent" is that, like other widely used terms in the patent policy debates today,[15] it lacks an objective definition. For instance, many critics of "software patents" attack them as patents on "mathematics"[16] or patents on a "mathematical algorithm,"[17] but this is sophistry. As commentators have repeatedly recognized, a word processing program like Word for Windows or a spreadsheet program like Excel are not the same thing as 2+2=4,[18] and the fact that computer programs use mathematics is an argument that proves too much. All patented innovation uses mathematics; in fact, physicists love to say that the universal language of the universe is mathematics.[19] So if taken seriously, the argument that a "web browser, spreadsheet, or video game *is* just math and therefore it's not … eligible for patent protection,"[20] would invalidate all patents if applied equally to other inventions, especially processes and methods. All inventions of practically applied processes and machines are reducible to mathematical abstractions and algorithms (e.g., a patentable method for operating a combustion engine is really just an application of the law of PV=nRT, the principles of thermodynamics, and other laws of nature comprising the principles of engineering).

Complicating things even further, the term "software patent," even when it is not being used in a way that invalidates all patents, is often used to refer to many different types of patented innovation. The term has been used to encompass such inventions as electrical patents and business method patents simply because the patented innovation uses some type of computer software program in its implementation. (As discussed in Hal Wegner's famous patent law listserv shortly after the GAO Report was released, one concern with the GAO Report is its surprising, and what many think is unrealistic, claim that

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"By 2011, patents related to software made up more than half of all issued patents."[21] This only makes sense if one includes not just classic computer programs among total issued patents, but any and all inventions that require some type of computer program in their implementation.[22])

For ease of reference given the ubiquity of this term in the policy debates, I will refer to "software patents" in this essay, but I will limit this term solely to patents on a set of machine-readable instructions that direct a central processing unit (CPU) to perform specific operations in a computer.[23] In short, "software" means a *computer program*, such as a word processing program (e.g., Word), a spreadsheet (e.g., Excel), or even programs run on computers on the Internet, such as Google's search algorithm, Facebook, eBay, etc. Of course, the reality is far more complicated than this, but that's not the point of this essay.

In fact, few people realize the vast numbers of valid and valuable patents on computer programs. The entire Internet rests on patented innovation in computer programs: the packet-switching technology used to transmit information over the Internet was patented by Donald Watts Davies (Patent No. 4,799,258). Robert Kahn and Vinton Cerf, the inventors of the TCP/IP packet-switching protocol, later patented their follow-on invention of a packet-switching version of a knowbot[24] (Patent No. 6,574,628). Larry Page and Sergy Brin patented their famous search algorithm when they were graduate students at Stanford, and such patented innovation was a reason why Page and Brin received venture-capital funding for their start-up company, Google (there are several patents, but Patent No. 6,285,999 is one of the core ones). There are slews of other valid patents on technologically and commercially valuable computer programs, such as an early one from

1993 for one of Excel's core spreadsheet functions (Patent No. 5,272,628).

To understand why these and many, many other patents on computer programs are both valuable and valid, it is necessary to understand whence computer programs came, how they changed in both their technological and commercial function after the 1970s, and why patent law was extended to secure this technological innovation in the early 1990s.

The Digital Revolution

Our story begins in the early years of the Digital Revolution with the invention of the integrated circuit in 1958-1959 (independently invented by Jack Kilby and Robert Noyce).[25] At that time, "software," at least as we now understand this term, did not mean what we think this term means today. Software was designed for specific computers and only for those computers. To wit, what worked on a specific IBM mainframe did not work on a DEC minicomputer (which was the size of a refrigerator).

(A young reader might ask, "Who is DEC?" Good question, young man or woman! The Digital Equipment Corporation (DEC) was one of the early leading firms manufacturing computers in the high-tech industry in the 1960s, ultimately bringing in multi-billion dollar revenues.[26] Its founder and CEO, Ken Olson, was admired by a young Bill Gates.[27] Olson also infamously said in 1977, "There is no reason for any individual to have a computer in his home."[28] That's why DEC is no longer around and why young people today no longer remember this company.)

The Copyright Controversy

Despite the start of the Digital Revolution a mere 60 years ago, its early growing pains have become the equivalent of "ancient history." For this reason, many people no longer remember that the protection of computer programs under copyright—something accepted today as an allegedly "obvious" legal alternative to patent protection—was originally disputed rigorously by programmers and others. The question of whether computer programs were copyrightable was a tremendous flashpoint of controversy for much of the 1960s and 1970s, which is ironic given that people today blithely assert that we don't need patent protection for computer programs because "copyright protection … makes patent protection mostly superfluous."[29] (This claim is also false, as the historical development makes clear and as will be explained shortly.)

Despite substantial controversy, in 1964 the Registrar of Copyrights started to register copyright protection for software code for computer programs.[30] Although there was no direct legal challenge to the Copyright Registrar's decision to begin registering copyrights for computer programs, the public policy debates did not go away.[31] The controversy continued, especially in the courts, for almost two decades,[32] and it was not resolved until Congress enacted the Computer Software Copyright Act of 1980,[33] which specifically authorized the protection of software code by the Registrar of Copyrights under the Copyright Act. In sum, opposition to IP protection for computer programs has existed from time immemorial, regardless of whether it was copyright or patent.

The PC Revolution

It is significant that the Computer Software Copyright Act was enacted in the early 1980s because it was during this time—the late 1970s and early 1980s—that the PC Revolution began ("PC," for the uninitiated, means Personal Computer). This is the point in time that marks the shift away from hardware and software as a unified, single product, to hardware and software as distinct products. This is the revolution brought to us by the young hackers and computer geeks of the 1970s—Steve Jobs, Steve Wozniak, Bill Gates, Nathan Myrhvold, etc.—who conceived, designed, and implemented the idea of an operating system (OS) running on a CPU that could serve as the operational platform for any computer program written by anyone performing any tasks, such as playing tic tac toe or blinking lights on a circuit board in a certain pattern (just some of the original programs end-users could write and operate in the 1970s) to the sophisticated word processing, spreadsheet, and computer-assisted design (CAD) programs that began to be sold and used on PCs in the 1980s.

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The significance of the PC Revolution is that computer software programs now became *separate products* that consumers could purchase, install, and use on their PCs (either an "IBM Compatible" or a Mac). In fact, computer programs came in a *box* that consumers physically took off shelves and purchased at checkout registers at retail stores, such as at an Egghead Software outlet. (Egghead Software closed all its retail stores in 1998 due to the dominance of the Internet as a medium over which to order DVDs, and, eventually, through which end-users now directly purchase and download in 30 seconds their new software products or apps.[34])

The significance of a computer program becoming a separate product is that the *value* in software, what the consumer was seeking in purchasing it from the retailer, was the *function* of the program as experienced by the consumer (called an "end-user" in high-tech parlance). For instance, it was the value in the ease of use of a graphical user interface (GUI) of a particular word processing program, such as Word for Windows, that made it more appealing to consumers than the text-based commands of older word processing programs, such as WordPerfect. Or it was the pull-down menu in a Lotus1-2-3, the first widely successful spreadsheet program. The end-user now had a word processing program with many functions in it, such as editing text, italicizing text, "cutting" and "pasting," changing margins for block quotes, etc. *This* was the value in the product sold to the consumers, and thus *this function* is what designers of computer programs competed over for customers in the marketplace. For instance, few people today remember the battle in the late 1980s and early 1990s between WordPerfect (a text-based word processor developed for the text-based command system of DOS) and Word (a pull-down menu and button-based "point and click" GUI word processor for the Windows and Apple GUI OS).

This is not a radical or novel insight; it is a mundane fact recognized by many who have worked in the high-tech industry for the past several decades. Back in 2006, Nathan Myhrvold recounted how even many people working in the high-tech industry did not think that a company that solely made software like Microsoft could succeed. In 1987, he explained that he attended a

> *big industry conference in the PC industry. And there was a panel discussion I participated in—"Can Microsoft Make it Without Hardware?" I swear. Now, we had a proposition and the proposition was that not only can you make software valuable without hardware; software was actually a better business without hardware, because if you separated yourself off and you just became a software company you could focus on making the software best….An independent software company can target everybody's stuff.*[35]

What Myhrvold means by "target[ing] everybody's stuff" is that a company like Microsoft could succeed in selling computer programs that provided functional value to a vast array of end-users. Thus, for instance, Robert Sachs, a patent attorney who specializes in high-tech innovation and serves as an evaluator for high-tech standards, explains that the "vast majority of value in software comes not from some deeply embedded algorithm that can be protected by trade secret. Rather, it comes from the creation of new functionality that has immediate and apparent value to the end user, whether that's a consumer or an enterprise."[36]

In the late 1980s and early 1990s, this amazing development in new technology and new commercial intermediaries in delivering new computer programs to consumers created a problem: any programmer can easily replicate the GUI or other features of a commercially successful computer program—copying the valuable function of the program —without copying the literal software code that created this valuable function. In sum, the code becomes distinct from the end-user interface or the function of the program itself.

And there's the rub (to paraphrase the Bard): copyright protects someone only against copying of their literal words, not the broader idea or function represented by those words. In copyright law, this is the well-known legal rule referred to as the idea/expression dichotomy (express words are protected under copyright, but ideas are not).[37]

It is also reflected in the equally hoary legal rule that copyright does not protect utilitarian designs.[38]

This issue was brought to a head in the famous copyright case of *Lotus v. Borland*.[39] Lotus, the creator and owner of the very famous spreadsheet program Lotus 1-2-3, sued Borland in 1990 for copying Lotus's innovative pull-down menus in Borland's spreadsheet program, Quattro Pro. Lotus's design of the pull-down menus in Lotus 1-2-3 —these are now standard in all GUI-based computer programs—made it very efficient to use and this was a major reason for its commercial success.

The *Lotus* case was active for five years, and ultimately resulted in a trip to the U.S. Supreme Court, which split 4-4 in affirming the lower court (Justice Stevens recused himself), and thus the Supreme Court didn't hand down a precedential opinion.[40] As a result of the 4-4 split, the lower appellate court's decision (the Federal Court of Appeals for the First Circuit) was affirmed by default. The First Circuit held that Lotus could not copyright its pull-down menus because these were a functional "method of operation," i.e., a utilitarian design, and not an expressive text capable of receiving copyright protection.[41] The First Circuit and the four Justices who affirmed the First Circuit were correct in applying long-standing and fundamental copyright doctrine in denying copyright protection to the *functionality* of a computer program.

By the mid-1990s, as represented in the famous *Lotus v. Borland* case, it was clear that copyright could no longer adequately secure the value that was created and sold in software programs by the fast-growing high-tech industry. The *value* in a software program is the *functionality* of the program, such as Lotus 1-2-3, Excel, WordPerfect or Word for Windows. This function was the reason why consumers purchased a program, installed it and used it on their computers, whether an Apple computer or a Windows machine. But this functionality could be replicated using myriad varieties of code that did not copy the original code, and copyright did not protect the functional components of the program that this code created for the end-user—and for which the end-user purchased the program in the first place.

The Shift to Patent Law

This simple legal and commercial fact—copyright could not secure the real value represented in an innovative computer program—explains why in the mid-1990s there was a shift to the legal regime that could provide the proper legal protection for the innovative value in a computer program: patent law. As the Supreme Court has repeatedly recognized in contrasting patents against other IP regimes, such as copyright and trademark, "it is the province of patent law" to secure "new product designs or functions."[42]

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In fact, this shift from copyright to patent law in the mid-1990s mirrors the equally important shift in the early 1980s when the courts and Congress definitively extended copyright protection to computer programs at the start of the PC Revolution. At the time, neither legal development was destined to occur by necessity, but, in retrospect, neither development was a historical accident from the perspective of the continuing success of the Digital Revolution. These two legal developments served as the fulcrums by which it was possible for inventors and innovating firms, such as Apple, Microsoft, eBay, Google, etc. to commercialize these newly created values. (See, e.g., the earlier-cited patented innovation in computer programs, properly secured to these companies, which made it possible for them to bring such values to the marketplace and to everyone's lives.)

At approximately the same time that the First Circuit and Supreme Court came to the legally correct conclusion in *Lotus v. Borland* that the functional value in the pull-down menus was not copyrightable, the Court of Appeals for the Federal Circuit expressly recognized that computer programs were patentable as a digital "machine." In its now-famous 1994 decision in *In re Alappat*,[43] the Federal Circuit ruled that a specific computer program that performed a specific and identifiable function for an end-user was not an "abstract" claim to an unpatentable idea or "algorithm."[44] To the contrary, such computer programs were patentable inventions.[45]

In essence, the Federal Circuit recognized the basic truth to which many firms in the high-tech industry owed

their existence: a computer program such as the Excel spreadsheet program "is not a disembodied mathematical concept which may be characterized as an 'abstract idea.'"[46] A computer program, such as Google's search algorithm, or a sub-program, such as an operation in Excel's spreadsheet, is the digital equivalent of "a specific machine."[47] In sum, the invention of a word processing program is the equivalent in the Digital and PC Revolutions of the invention of a mechanical typewriter in the Industrial Revolution. Similarly, an e-mail produced by the functions of a word processing program in an email program, such as Outlook or Eudora, is the digital equivalent of a physical letter written by a typewriter and mailed via the U.S. Post Office to its recipient.

Again, similar to the identification that the value in a computer program is its functionality to the end-user, the identification of the essential functional similarity between a mechanical typewriter and a word processing program is not particularly insightful or radical. As any computer programmer will tell you, the functions of a program can be performed perfectly in either software or hardware; the functional operation between the two is a distinction without a difference, except that a computer program is less costly and more efficiently sold and used by end-users. In fact, this equivalence between hardware and software is exactly what happened for the first several decades of the Digital Revolution before the invention of the integrated circuit and before the PC Revolution. And for those of us old enough to remember the very first word processors, there was not much to them beyond what an electrical typewriter could do in the 1970s and 1980s (including correct spelling errors after a word was typed and other formatting functions as well).

In sum, the functionality of binary code in a specific computer program is in principle no different from the functionality achieved in the binary logic hardwired into computer hardware. The fact that both are easily identified by firms, retailers and end-users confirms that the two can be specific, real-world and useful products. This functional equivalence between hardware and software further reflects the fact that the difference between computer programs (either in software or hardware) and the mechanical machines they replaced is itself a distinction without a difference — both have been innovative inventions deserving of protection under the patent laws.

Conclusion

The Industrial Revolution gave us patented innovation in sewing machines,[48] typewriters, and telephones, and the Digital and PC Revolutions have given us patented innovation in word processors, email and ebooks. To restrict the patent system to only the valuable inventions of the nineteenth century is to turn the patent system on its head—denying today's innovators the protections of the legal system whose purpose is to promote and secure property rights in innovation.

In the words of the Supreme Court's recent decision in *Bilski v. Kappos*,[49] patent law is a "dynamic provision designed to encompass new and unforeseen inventions."[50] As the *Bilski* Court recognized, a physical-based "machine-or-transformation test may well provide a sufficient basis for evaluating processes similar to those in the Industrial Revolution—for example, inventions grounded in a physical or other tangible form. But there are reasons to doubt whether the test should be the sole criterion for determining the patentability of inventions in the Information Age."[51]

The American patent system has succeeded because it has secured property rights in the new innovation that has come about with each new era—and it has secured the same property rights for all types of new inventions, whether in the Industrial Revolution or in the Digital Revolution. It is time to leave behind sophistical rhetoric, such as "software patent," and recognize that computer programs are valuable inventions performing very real and valuable functions for consumers the world over. This is why people from all walks of life pay money to companies like Apple, Microsoft, Dell, Cisco and many others to purchase these programs. As made clear in *Borland v. Lotus*, this is a real-world value that cannot and should not be secured by copyright. It also cannot be secured by trade secret because the functions of a program are the publicly known capabilities sought by end-users (and over which high-tech companies compete for customers). As the history of the evolution of patent protection for computer programs makes clear, this valuable innovation can be secured only by the IP regime specifically designed to secure functional value in new technological innovation —the patent system.

ENDNOTES

1 *See* Wikipedia, *Software patent debate* (as of Sep. 19, 2013), http://en.wikipedia.org/wiki/Software_patent_debate.

2 *See* Adam Mossoff, *A Century-Old Form of Patent*, N.Y. Times, Jun. 6, 2013, http://www.nytimes.com/roomfordebate/2013/06/06/can-the-human-blueprint-have-owners/a-century-old-form-of-patent.

3 *See* 35 U.S.C. § 101 (providing that "any new and useful process, machine, manufacture, or composition of matter" is patentable).

4 *See* Richard A. Posner, *Why There are Too Many Patents in America*, The Atlantic (July 12, 2013).

5 *See Ritchie v. Vast Resources, Inc. (d/b/a Topco Sales)*, 563 F.3d 1334 (Fed. Cir. 2009) (Posner, J.).

6 717 F. 3d 1269 (2013) (en banc).

7 *See* Semil Shah, Op-Ed., *The Scale, Competitiveness, And Industrial Strategies in Mobile Computing*, TechCrunch, Sep. 8, 2013, http://techcrunch.com/2013/09/08/the-scale-competitiveness-and-industrial-strategies-in-mobile-computing/ (describing vibrant, dynamic growth in the computer industry, especially in the last two years).

8 *CLS Bank*, 717 F.3d at 1276-92.

9 *Id*. at 1301.

10 *See* John Kong, *The Alice in Wonderland En Banc Decision by the Federal Circuit in CLS Bank v. Alice Corp*, IPWatchdog (May 14, 2013, 3:16 pm), http://www.ipwatchdog.com/2013/05/14/the-alice-in-wonderland-en-banc-decision-by-the-federal-circuit-in-cls-bank-v-alice-corp/id=40344/.

11 *See* MacMillan Dictionary, http://www.macmillandictionary.com/dictionary/british/potted (as of Sep. 16, 2013, 10:21 PM GMT).

12 *State St. Bank & Trust Co. v. Signature Financial Grp*., 149 F. 3d 1368 (Fed. Cir. 1998).

13 *In re Alappat*, 33 F. 3d 1526 (Fed. Cir. 1994) (en banc).

14 *Diamond v. Diehr*, 450 U.S. 175 (1981).

15 *See* Adam Mossoff, *The SHIELD Act: When Bad Economic Studies Make Bad Laws*, Center for the Protection of Intellectual Property Blog (Mar. 15, 2013), http://cpip.gmu.edu/2013/03/15/the-shield-act-when-bad-economic-studies-make-bad-laws/ (identifying how "patent troll" lacks any definition and is used non-objectively in patent policy debates).

16 *See* End Soft Patents, *Software is math* (as of Sep. 19, 2013), http://en.swpat.org/wiki/Software_is_math.

17 This characterization of computer programs as merely "mathematical algorithms" is an unfortunate byproduct of the Supreme Court's decision in *Gottschalk v. Benson*, 409 U.S. 63 (1972), in which Justice William O. Douglas described an invention of a fundamental software program for running all computers as an "algorithm." *Id.* at 65 ("A procedure for solving a given type of mathematical problem is known as an 'algorithm.' The procedures set forth in the present [patent] claims are of that kind."). Justice Douglas thus concluded that the invented computer program was an unpatentable abstract idea:

> It is conceded that one may not patent an idea. … The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is

affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.

Id. at 71-72. This was an unfortunate misinterpretation of the nature of computer programs as such, and it has caused much confusion in patent law about both computer programs and what makes them patentable inventions. *CLS Bank* simply represents the nadir of this confusion. What is notable, as is made clear in this essay, is that this confusion about the nature of computer programs in 1972 was perhaps understandable, if only because the PC Revolution had not yet occurred and thus it was much harder for judges to understand what made computer programs valuable as separate (patentable) inventions from the computer hardware on which they ran.

18 *See* Gene Quinn, *Groklaw Response: Computer Software is Not Math*, IPWatchdog (Dec. 15, 2008, 6:30 am), http://www.ipwatchdog.com/2008/12/15/computer-software-is-not-math/.

19 Carolyn Y. Johnson, *A talk with Mario Livio – Is Mathematics the Language of the Universe*, Boston Globe, Feb. 8, 2009, http://www.boston.com/bostonglobe/ideas/articles/2009/02/08/a_talk_with_mario_livio/.

20 Timothy B. Lee, *Software is Just Math*, Forbes, Aug. 11, 2011, http:/www.forbes.com/sites/timothylee/2011/08/11/software-is-just-math-really/.

21 U.S. Gov't Accountability Office, GAO-13-465, INTELLECTUAL PROPERTY: Assessing Factors That Affect Patent Infringement Litigation Could Help Improve Patent Quality 21 (2013), http://www.gao.gov/products/GAO-13-465.

22 *See Patent Statistics in the GAO Report*, High Tech Intellectual Property Legal Blog (Sep. 18, 2013), http://blog.hiplegal.com/2013/09/gao_softwarepatents/("The problem, of course, is that there are no 'exclusively software' classes. So if an entire patent class is counted, it is extremely likely to include non-software cases as well."). Wegner and others also claim that the GAO actually made an outright error in its counting methodology. *See* Hal Wegner, *GAO Patent Litigation Report (con'd): "[P]atents related to software ma[ke] up more than half of all … patents*, LAIPLA (Aug. 2, 2013), http://www.laipla.net/gao-patent-litigation-report-cond-patents-related-to-software-make-up-more-than-half-of-all-patents/ ("The GAO authors apparently counted 20,000 software patents instead of 2,000 under the methodology at p.12 n.27 (explaining Figure 1). Thanks to Greg Aharonian for sharing this information with the patent community."); http://www.global-patent-quality.com/GRAPHS/SoftElec.htm (reporting Greg Aharonian's statistics on issued patents that show that even the 2,000 number is almost twice the actual rate of issuance of "software" patents).

23 *See* Wikipedia, *Software* (as of Sep. 19, 2013), http://en.wikipedia.org/wiki/Software.

24 *See* John Markoff, *Creating a Giant Computer Highway,* N.Y. Times (1990), http://www.nytimes.com/1990/09/02/business/creating-a-giant-computer-highway.html.

25 *See* T.R. Reid, *The Chip: How Two Americans Invented the Microchip and Launched a Revolutio*n 76-80 & 91-95 (2001).

26 *See* Wikipedia, *Digital Equipment Corporation* (as of Sep. 19, 2013), http://en.wikipedia.org/wiki/Digital_Equipment_Corporation.

27 Bill Gates has written: "An inventor, scientist, and entrepreneur, Ken Olsen is one of the true pioneers of the computing industry. He was also a major influence in my life and his influence is still important at Microsoft through all the engineers who trained at Digital and have come here to make great software products." Chloe Albanesius, *Computing Pioneer Ken Olson Dead at 84*, PC Magazine, Feb. 8, 2011, http://www.pcmag.com/article2/0,2817,2379648,00.asp.

28 *See* Joelle Tessler, *Kenneth Olsen, Pioneering Founder of Computer Company, Dies at 84*, Wash. Post, Feb. 9, 2011, http://www.washingtonpost.com/wp-dyn/content/article/2011/02/09/AR2011020906305.html.

29 Timothy B. Lee, *The Supreme Court Should Invalidate Software Patents*, Forbes, Jul. 28, 2011, http://www.forbes.com/sites/timothylee/2011/07/28/the-supreme-court-should-invalidate-software-patents/.

30 *See* National Commission on New Technological Uses of Copyrighted Works, Final Report 82 (1979); Copyright Office Circular 31D (Jan. 1965).

31 *See, e.g.,* Allen W. Puckett, *The Limits of Copyright and Patent Protection for Computer Programs*, 16 Copyright L. Symp. 81, 104-05 (1968) (recognizing that there is limited copyright protection for some aspects of computer programs but that "[s]ource programs embodied in punch cards or magnetic tape present a doubtful case"); Pauline Wittenberg, Note, *Computer Software: Beyond the Limits of Existing Proprietary Protection Policy*, 40 Brooklyn L. Rev. 116, 117-18 (1973) ("With respect to computer software, such questions [about patent or copyright protection] have been under discussion in both legal and trade journals and in the courts for nearly a decade; no clear answers have emerged.").

32 *Compare Data Cash Systems, Inc. v. JS&A Group, Inc.*, 480 F. Supp. 1063 (N.D. Ill. 1979) (holding object code is not copyrightable) *and Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F.Supp. 171 (N.D. Cal. 1981) (holding object code in ROM is copyrightable). *See also Synercom Tech., Inc. v. Univ. Comp. Co.*, 462 F. Supp. 1003, 1014 (N.D. Tex. 1978) (holding software code "formats" is not copyrightable).

33 Pub. L. No. 96-517, 94 Stat. 3015, 3028 (1980).

34 *See* Wikipedia, *Egghead Software* (as of Sep. 19, 2013), http://en.wikipedia.org/wiki/Egghead_Software.

35 Nathan Mryhvold, *Invention: The Next Software*, Intellectual Ventures, at 5 (2006), http://www.intellectualventures.com/assets_docs/Invention_Next_Software_Transcript_2006_Speech.pdf.

36 Robert R. Sachs, *Applying Can Openers to Real World Problems: The Failure of Economic Analysis Applied to Software Patents*, Bilski Blog (Aug. 13, 2013), http://www.bilskiblog.com/blog/2013/08/applying-can-openers-to-real-world-problems-the-failure-of-economic-analysis-applied-to-software-pat.html.

37 *See Baker v. Seldon*, 101 U.S. 99, 104 (1879) ("[T]he teachings of science and the rules and methods of useful art have their final end in application and use; and this application and use are what the public derive from the publication of a book which teaches them. But as embodied and taught in a literary composition or book, their essence consists only in their statement. This alone is what is secured by the copyright."); *Morrisey v. Proctor & Gamble Co.*, 379 F.2d 675, 678 (1st Cir. 1967) ("Copyright attaches to form of expression ….").

38 *See Baker*, 101 U.S. at 102 ("[N]o one would contend that the copyright of the treatise would give the exclusive right to the art or manufacture described therein. … That is the province of letters-patent, not copyright. The claim to an invention or discovery of an art or manufacture … can only be secured by a patent from the government.").

39 49 F.3d 807 (1st Cir. 1995), *aff'd by an equally divided Court*, 516 U.S. 233 (1996).

40 *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 516 U.S. 233 (1996).

41 *Lotus*, 49 F.3d at 815.

42 *Qualitex Co. v. Jacobsen Products Co., Inc.*, 514 U.S. 159, 164 (1995); *Elmer v. ICC Fabricating*, 67 F.3d 1571, 1580 (Fed. Cir. 1995) ("patent law, not trade dress law, is the principal means for providing exclusive rights in useful product features"). *See also Baker,* 101 U.S. at 102 ("[T]he exclusive right to the art or manufacture …. is the province of letters-patent, not copyright.").

43 33 F. 3d 1526 (Fed. Cir. 1994) (en banc).

44 *Id.* at 1545.

45 *Id.*

46 *Id.* at 1544.

47 *Id.*

48 *See* Adam Mossoff, *The Rise and Fall of the First American Patent Thicket: The Sewing Machine War of the 1850s*, 53 Ariz. L. Rev. 165 (2011).

49 130 S. Ct. 3218 (2010).

50 *Id.* at 3227.

51 *Id.*

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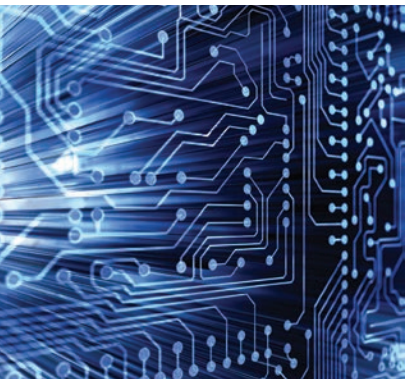
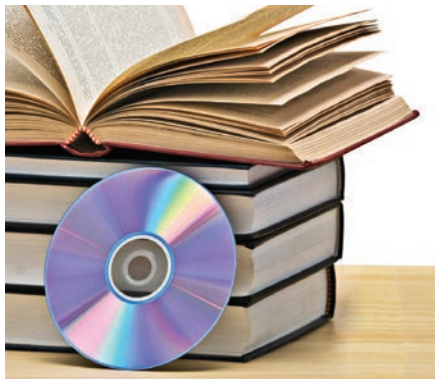

The Failure of the DMCA Notice and Takedown System:

A Twentieth Century Solution to a Twenty-First Century Problem

Bruce Boyden

DECEMBER 2013

GEORGE MASON UNIVERSITY | School of Law

The Failure of the DMCA Notice and Takedown System: *A Twentieth Century Solution to a Twenty-First Century Problem*

BRUCE BOYDEN

Section 512 of the Digital Millennium Copyright Act will be turning 15 years old soon, and it's showing its age. Its design belongs to a different era. Like a 15-year-old automobile, it no longer runs as well as it used to. It can't keep up with the newer, faster vehicles on the road. Its users are beginning to look for alternative forms of transportation. Pieces of it have been wearing down over time, and ultimately something is going to break that outweighs the cost of replacement.

That time may be now: the notice-and-takedown provision of Section 512 is straining under the weight of a blizzard of notices, as copyright owners struggle to abate the availability of infringing copies of their most highly valued works. The tool is no longer up to the task. Mainstream copyright owners now send takedown notices for more than 6.5 million infringing files, on over 30,000 sites, *each month*.[1] Printing out the list of sites for which Google receives takedown requests in just *one week* runs to 393 pages.[2] And that just counts the notices sent to Google; duplicates of many of those notices are sent to the site hosts and to other search engines. For example, over a six-month period ending in August, the member companies of the Motion Picture Association of America sent takedown notices for 11,996,291 files to search engines, but sent even more notices—for 13,238,860 files—directly to site operators. (See chart below.)

Over a six-month period ending in August, the member companies of the Motion Picture Association of America sent takedown notices for 11,996,291 files to search engines, but sent even more notices—for 13,238,860 files—directly to site operators.

Despite all the notice, there is precious little "takedown" to show for it. Unless a site employs some sort of content filtering technology, the same content typically re-appears within hours after it is removed.

That amount of effort might be worth the trouble if the flurry of paperwork made more than a dent in the availability of infringing files. Despite all the notice, there is precious little "takedown" to show for it. Unless a site employs some sort of content filtering technology, the same content typically re-appears within hours after it is removed. As a result, this is a system that makes no one happy. Copyright owners are unhappy with the amount of expense and effort the system requires for such paltry results. Online services are unhappy with the burden of having to process and respond to all of those notices. Users are unhappy with inconsistent enforcement and occasional, inevitable mistakes.

The problem is that notice-and-takedown has been pressed into service in a role for which it was never intended. Section 512 was originally designed as an emergency stopgap measure, to be used in isolated instances to remove infringing files from the Internet just long enough to allow a copyright owner to get into court. That design reflected the concerns of its time. In 1998, the dawn of widespread public use of the Internet, there was considerable anxiety about how the law would react to the growing problem of online infringement. Online services worried that they might be held directly liable as publishers for infringing copies of works uploaded by users, despite lacking any knowledge of those copies.[3] Section 512 addressed these concerns by giving service providers a safe harbor to protect them from liability for unknowingly hosting or linking to infringing material.

Section 512 was originally designed as an emergency stopgap measure, to be used in isolated instances to remove infringing files from the Internet just long enough to allow a copyright owner to get into court.

Since Section 512 was a legislative compromise, Congress sought to address the concerns of copyright owners too—at least the ones they had in the late '90s. The problem the creative industries confronted in 1998 was one of content escapes—of copyrighted work moving off of physical formats and onto the Internet. Once there, the speed and accessibility of Internet transmission meant that even a single individual could create a website—or in the 1990s, perhaps a file transfer protocol (FTP) site—and distribute such copyrighted work worldwide. That approach suited the times. Since residential transmission speeds were slow, there was a chance that if copyrighted owners acted quickly enough they could prevent uploaded works from reaching a large audience. Even preparing court papers would take a few days, however; to get immediate results, they would need the assistance of the ISPs hosting the infringing site to help them take it down, at least temporarily.

And that's why the notice-and-takedown system was added. The goal of notice-and-takedown was to get "service providers and copyright owners to cooperate to detect and deal with" infringing sites before the content was distributed too widely.[4] It was a more immediate, but temporary, substitute for going into court and getting a temporary restraining order. Indeed, it lasts approximately the same amount of time as a TRO, ten business days.

The DMCA's statutory language confirms the original, extraordinary nature of takedown requests. The notices themselves are cumbersome to draft, with six required pieces of information in a signed writing. Then, after the online service removes or disables access to the material, there is a complicated game of tennis, as the service provider must first forward the takedown notice to the user, who then may reply with a counternotice asking that the material be restored, which in turn must be forwarded back to the content owner. At that point, the copyright owner has "not less than 10, nor more than 14, business days" to stop the copyrighted work from being replaced by filing a lawsuit.[5]

The notion that content might leak onto the Internet unless somehow stopped now seems almost quaint. Modern infringement is persistent, ubiquitous, and gargantuan in scale. It is a problem that needs to be *policed*, not prevented, if our current copyright system is to continue to function. Takedown notices, with their detailed requirements and elaborate back-and-forth, are a poor way to achieve the routine policing of sites that receive thousands of new files every hour.

Indeed, the situation has only gotten worse. The DMCA's unsuitability as a tool to manage chronic, persistent, and pervasive infringement is particularly apparent after recent decisions from the Second Circuit and Ninth Circuit that construed the duty of website owners very narrowly under Section 512.[6] In those decisions, the courts largely rejected any arguments that Section 512 requires site owners to do anything more than remove the specific file identified in a takedown notice, even if a flood of takedown notices arrives all identifying the same copyrighted work, and even if the site owner has tools in place to automatically identify copyrighted work by pattern-matching.[7]

The result is that Section 512 takedowns have become largely ineffective for most works. Even for the largest media companies with the most resources at their disposal, attempting to purge a site of even a fraction of the highest-value content is like trying to bail out an oil tanker with a thimble. In their effort to make their most highly sought-after works just slightly harder to find, copyright owners are currently sending notices at an annualized rate of over 78 million infringing files. The expense of locating, identifying, and then sending a notice for that many files is so significant that even large companies must limit their efforts to only their most recent releases. And even then, despite intensive efforts targeted at the most popular

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Section 512 Notices Sent by MPAA Companies[8]

March 2013	**Infringing URLs (Total)**	**5,136,431**
	URLs sent to site operators	2,369,308
	Links sent to search engines	2,767,123
	Counter-Notices Received (Total)	**2**
April 2013	**Infringing URLs (Total)**	**4,839,709**
	URLs sent to site operators	1,982,213
	Links sent to search engines	2,857,496
	Counter-Notices Received (Total)	**2**
May 2013	**Infringing URLs (Total)**	**3,468,182**
	URLs sent to site operators	2,161,816
	Links sent to search engines	1,306,366
	Counter-Notices Received (Total)	**0**
June 2013	**Infringing URLs (Total)**	**3,378,371**
	URLs sent to site operators	1,888,692
	Links sent to search engines	1,489,679
	Counter-Notices Received (Total)	**0**
July 2013	**Infringing URLs (Total)**	**4,005,669**
	URLs sent to site operators	2,347,647
	Links sent to search engines	1,658,022
	Counter-Notices Received (Total)	**1**
August 2013	**Infringing URLs (Total)**	**4,406,789**
	URLs sent to site operators	2,489,184
	Links sent to search engines	1,917,605
	Counter-Notices Received (Total)	**3**
Grand Totals	**Infringing URLs (Total)**	**25,235,151**
	URLs sent to site operators (Grand Total)	13,238,860
	Links sent to search engines (Grand Total)	11,996,291
	Counter-Notices Received (Grand Total)	**8**

Attempting to purge a site of even a fraction of the highest-value content is like trying to bail out an oil tanker with a thimble. . . . Copyright owners are currently sending notices at an annualized rate of over 78 million infringing files.

files, takedown notices achieve not a single day when the content is not available on the most heavily trafficked sites.

That burden is falling on businesses of all sizes in every creative industry. Of the roughly 6.5 million files Google receives notices for each month from mainstream U.S. copyright owners, approximately 2.1 million are the subject of notices sent by the RIAA, and another 2 million are in notices sent by the MPAA member companies. But more than one-third of the notices received by Google are the results of efforts undertaken by other industries, such as publishing, video games, and software creators, and by smaller record labels and film and television producers.

The enormous investment of effort required under the notice-and-takedown system is a waste of everyone's resources. Worse, it may create perverse incentives. The impossibility of keeping up with new uploads means that an online service can create a site aimed at and dedicated to hosting infringing copyrighted works, comply with every takedown notice, and still benefit from the safe harbor, as long as its intent remains hidden. If the site has enough users, any popular content removed will be supplanted by new copies almost immediately.

As a result of the increasing futility of takedown notices, some copyright owners and online services have begun seeking ways to avoid the notice-and-takedown system altogether. For example, several large user-generated content sites have adopted technological tools that allow copyright owners to identify their content and specify

Despite intensive efforts targeted at the most popular files, takedown notices achieve not a single day when the content is not available on the most heavily trafficked sites.

It's long past time for a retooling of the notice and takedown regime.

what should happen when it appears on the service provider's system, such as blocking or ad placement. Access providers have joined with copyright owners in creating the Copyright Alert System, which is an attempt to police copyright infringement by issuing the equivalent of an escalating series of speeding tickets. These private agreements and coordination efforts (what economists call "private ordering") may be moves in the right direction, but they also indicate the increasing frustration that copyright owners and online services have with the Sisyphean nature of takedown notices. It's long past time for a retooling of the notice and takedown regime.

ENDNOTES

1 Based on figures available at *Transparency Report: Copyright Owners*, GOOGLE (Sept. 8, 2013), http://www.google.com/transparencyreport/removals/copyright/owners/?r=last-month. The numbers reported here are, if anything, conservative. They include only takedown notices sent by major U.S. copyright owners, and exclude companies that primarily produce pornography.

2 *See* Paul Resnikoff, *Think Piracy Is Dead? Here's One Week of Google DMCA Takedowns . . .* , Digital Music News (Sept. 23, 2013), available at http://www.digitalmusicnews.com/permalink/2013/20130923takedowns.

3 At least one court so held. *See* Playboy Enters., Inc. v. Frena, 839 F. Supp. 1552 (M.D. Fla. 1993).

4 S. Rep. No. 105-190 at 20 (1998).

5 17 U.S.C. § 512(g)(2)(C).

6 *Viacom Int'l, Inc. v. YouTube, Inc.*, 676 F.3d 19 (2d Cir. 2012); *UMG Recordings, Inc. v. Shelter Capital Partners LLC*, 106 U.S.P.Q.2d 1253 (9th Cir. 2013).

7 *Viacom Int'l*, 676 F.3d at 30-31, 41.

8 Based on information provided by the MPAA.

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Professor Bruce Boyden is an Assistant Professor of Law at Marquette Law School. Professor Boyden teaches and writes in the areas of copyright, Internet law, privacy, legal history, and civil procedure. His scholarship focuses on the ways in which law adapts to turbulence caused by sudden changes in the technological, social, or economic landscape. Recent articles include *Games and Other Uncopyrightable Systems*, 18 Geo. Mason L. Rev. 439 (2011), and *Constitutional Safety Valve: The Privileges or Immunities Clause and Status Regimes in a Federalist System*, 62 Ala. L. Rev. 111 (2011).

Prior to joining the faculty at Marquette, Professor Boyden was a visiting professor at Washington & Lee University School of Law and at Michigan State University College of Law. Before that, he was in private practice for several years with the law firm Proskauer Rose LLP, where his practice focused on copyright, digital rights management, privacy, and Internet law. Professor Boyden is a graduate of Yale Law School, where he served as Notes Editor of the Yale Law Journal and as an Editor of the Yale Journal of Law & Feminism. He received his M.A. in history from Northwestern University and his B.A., *summa cum laude*, from the University of Arkansas in history and philosophy. His current research focuses on the interaction between copyright and changing technology.

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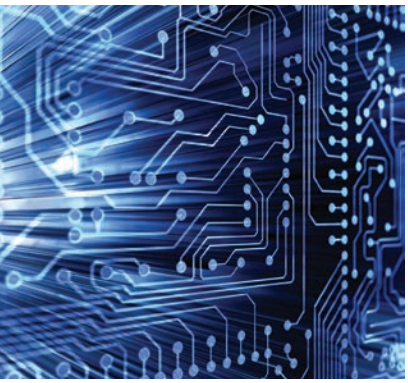
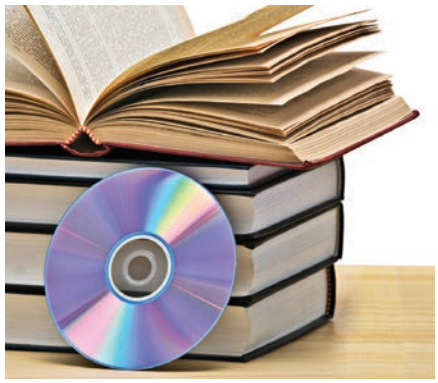

The Internet Does Not Reset the Copyright-Free Speech Balance

Sean M. O'Connor

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GEORGE MASON UNIVERSITY | School of Law

The Internet Does Not Reset the Copyright-Free Speech Balance

SEAN M. O'CONNOR

While free speech is a fundamental right, it is frequently misconstrued in the popular imagination. The First Amendment protects against *government* restrictions on speech; it does not provide a general right of free speech as against private actors. The power of the Internet as a global speech platform amplifies misunderstandings. Perhaps in part because of high profile First Amendment cases related to the Internet, a meme has developed that free speech trumps all other legal rights in cyberspace—including copyright. In this view, grabbing content from all over the Internet and posting it to one's web page is simply constitutionally protected free speech. Buttressing this is the belief among some that aggregating the content of others is a way to construct one's own virtual identity. Additionally, some believe that if content on the Web *can* be easily copied, as a technological matter, then it must be legal to copy and reuse it in any manner one sees fit. But the Web does not magically release copyrighted content from the exclusive rights its owners have long enjoyed in the physical world. Nor does its accessibility on the Web automatically make it freely reusable, any more than the access enabled by publication in the physical world justify a claim to reuse of the material by the public.

It is problematic enough that some individual Internet users mistakenly believe that free speech rights trump all other legal rights, but a number of companies are leveraging this erroneous meme into a business model. Websites and apps that profit from widespread copyright infringement are exhorting users to "express yourself" through a set of tools aimed at collecting and reusing materials from around the web. These services admittedly serve a fun and valuable function by allowing those who do not create their own content to be "curators" of others' content. However, the enjoyment and "self-expression" enabled by these sites does not excuse copyright infringement any more than the expressive value of more traditional creative works excuses their authors from claims of copyright infringement. The same contours of the free speech-copyright interface that have been applied to traditional creators apply to Internet "curators."

This Policy Brief argues that the First Amendment and copyright law maintain the same complementary relationship in cyberspace that they have in physical space, as best illustrated by cases involving appropriation art. The Brief proceeds by first reviewing the well-established Supreme Court rulings that copyright accommodates the First Amendment through the idea-expression distinction and fair use. It then analyzes landmark Internet free speech cases to underscore that they all involved *state* action that is not relevant to private enforcement of copyright. Finally, the Brief discusses cases involving appropriation art. It concludes that the First Amendment is no more in conflict with copyright on the Internet than it is in the physical world.

The Free Speech-Copyright Interface in the Physical World

Questions about the possible limitation of copyright by the First Amendment have existed at least since Melville Nimmer's seminal 1970 article, *Does Copyright Abridge the First Amendment Guarantees of Free Speech and Press?*[1] However, the Supreme Court has consistently rejected the existence of any conflict. One reason it has done so is because both authors' rights and free speech rights are secured in the Constitution—in the IP Clause and in the First Amendment, respectively. Had these two doctrines been in direct conflict, it seems unlikely the Framers would have included both rights in the same founding document—especially with no suggestion as to how to mediate the conflict.

In *Harper & Row Publishers v. Nation Enterprises*,[2] the Supreme Court explained the harmony between copyright and free speech, recognizing copyright as the "engine" of free expression:

> *In our haste to disseminate news, it should not be forgotten that the Framers intended copyright itself to be the engine of free expression. By establishing*

The Web does not magically release copyrighted content from the exclusive rights its owners have long enjoyed in the physical world.

> *a marketable right to the use of one's expression, copyright supplies the economic incentive to create and disseminate ideas.*[3]

Thus, copyright does not hinder speech—to the contrary it encourages it (as well as its publication and dissemination). Further, copyright's limitation to the particular *expression* of an idea means that the idea itself is free for all others to express in their own way. Ditto for facts. So you are free to express the same ideas, facts, and even abstract narrative storylines as I have done: you just cannot use my exact words.

More recently, copyright was challenged on First Amendment grounds in *Eldred v. Ashcroft.*[4] The case was a challenge to Congress' extension of the copyright term under the Sonny Bono Copyright Term Extension Act of 1998 ("CTEA").[5] The plaintiff argued that this extension violated his free speech rights by interfering with his business of scanning and placing books online as soon as their copyright terms expired. First, he claimed that the CTEA violated the "for limited times" restriction on Congress' power in the IP Clause to create exclusive rights for writings.[6] The theory was that, while the CTEA provided an extension of these limited times, Congress passed it just as a group of highly valuable copyrights were about to expire. This allegedly showed a willingness of Congress to keep passing extensions of such valuable copyrights each time they would near their end, so that they would become de facto perpetual rights. Second, he asserted that copyright could hinder free speech and so should be viewed as a kind of private regulation of speech subject to heightened scrutiny by the courts.[7]

Not one of the three levels of courts that heard the case—district court, appellate circuit court, and Supreme Court—accepted plaintiff's constitutional arguments. Regardless of whether future repeated extensions by Congress might become a problem, "a regime of perpetual copyrights 'clearly is not the situation before us.'"[8] Congress had extended copyright terms under earlier copyright regimes and these had not been overturned by the courts on constitutional grounds either. Likewise, even though the Court seemed to question the wisdom of Congress' passage of the CTEA, it refused to apply heightened scrutiny: "CTEA is a rational enactment; we are not at liberty to second-guess congressional determinations and policy judgments of this order, however debatable or arguably unwise they might be."[9] Ultimately, the Court adopted the *Harper* position that copyright and the First Amendment do not conflict, but rather complement each other.

Finally, in last year's *Golan v. Holder*, the Supreme Court again affirmed that the idea/expression distinction as well as the doctrine of "fair use" (as will be discussed later) acted as built-in limitations on copyright that resolved any potential conflict with the First Amendment.[10] The case concerned passage of the Uruguay Round Agreements Act which implemented an international treaty granting copyright to foreign works that were then unprotected in the United States. Similar to plaintiff's arguments in *Eldred*, the *Golan* plaintiffs argued that the congressional action violated both the IP Clause and their free speech rights. The Supreme Court rejected the de facto perpetual copyright argument already disposed of in *Eldred*: "As in *Eldred*, the hypothetical legislative misbehavior petitioners posit is far afield from the case before us."[11] Similarly, the Supreme Court rejected the free speech abridgment argument rejected in *Eldred*. The *Golan* Court cited both *Harper* and *Eldred* to rely on the "engine of free expression" formulation of copyright that, together with the "built-in First Amendment accommodations" of idea/expression and fair use, meant Congress' actions did not violate plaintiffs' free speech rights.[12]

Accordingly, the Supreme Court has consistently rejected any notion that copyright and the First Amendment are in tension. This has primarily been tested in the context of plaintiffs who were intentionally seeking to copy or perform works of others with no claim of transformative use or an additional element of creativity.[13] In this way, Nimmer's seminal article made the important point that free speech is about *self-expression*: if I am simply copying someone else's expression, I am not really engaging in self-expression.

Copyright does not hinder speech—to the contrary it encourages it (as well as its publication and dissemination).

Internet First Amendment Cases Involve Government Action, Not Private Enforcement of Copyright

A significant part of why the "free speech trumps copyright in cyberspace" meme developed may be the high-profile decisions upholding Internet free speech rights in cases such as *Reno v. ACLU*[14] and *Ashcroft v. ACLU*.[15] However, these cases addressed *government actions* directly restricting speech. This makes clear the fundamental tenet of the First Amendment: like the other provisions of the Bill of Rights, it is directed at protecting citizens from over-reaching government laws and regulations (i.e., "state action"). If there is no state action, then there is no violation of individual rights. Thus, if I prevent you from speaking by a physical action or threat, I have not violated your First Amendment free speech rights, because I am not acting on behalf of the government. You may have other criminal and civil legal actions against me, of course, but not a First Amendment action. The government can act through three mechanisms impacting free speech: legislation, executive actions or regulations, and judicial injunctions or awards. This section briefly reviews key cases involving the different mechanisms to show that they involved state action and do not limit private enforcement of copyright.

Reno, Eldred, Ashcroft, and *Golan* were challenges to congressional action. While all four were free speech cases, only two of them actually involved copyright. *Eldred* upheld Congress' passage of the CTEA, while Golan upheld the Uruguay Round Agreements, both as discussed above. By contrast, *Reno* struck down a provision of the Communications Decency Act of 1996,[16] while *Ashcroft* struck down the Child Online Protection Act.[17] Neither of these were part of the Copyright Act. And, none of the four cases involved private copyright enforcement.

Actions by federal, state, or local executives have been successfully challenged when they limit speech. For example, in *Mainstream Loudoun v. Board of Trustees of the Loudon County Library*, the District Court for the Eastern District of Virginia found the use of filters on computer terminals in a public library violated plaintiffs' free speech rights by limiting what they could access and read.[18] But, none of these kinds of cases involve private enforcement of copyright, rather they are limited to challenging state action.

The Supreme Court has consistently rejected any notion that copyright and the First Amendment are in tension.

The third mechanism of state action—judicial injunctions or awards—can be construed as state action for First Amendment purposes, but does not limit use of the courts for private copyright enforcement. In *Yahoo! v. La Ligue Contre Le Racisme*, for example, Yahoo sought a declaratory judgment that a French ruling restricting it from making available Nazi-themed materials in France could not be enforced in the United States. Yahoo was concerned that it might have to limit access across all jurisdictions because it could not determine with certainty the country of access for all of its users. Further, its servers were in the U.S. and so it would have to limit access from those servers. The district court granted Yahoo's motion for summary judgment, finding that a court action enforcing the French judgment would violate Yahoo's First Amendment rights.[19] Crucially, however, the French judgment was *not* based on a copyright claim, but instead on French law prohibiting exhibition of Nazi propaganda and articles for sale.[20] The Court of Appeals for the Ninth Circuit reversed the district court, finding that the question was not yet ripe.[21] Thus, in principle, a court's order restricting speech in a case brought by a private party could trigger First Amendment rights. But because the Supreme Court has consistently ruled that copyright and the First Amendment are not in conflict, a court order enforcing copyright cannot violate an infringer's free speech rights—even though there is state action arguably "restricting" speech.

Another source of possible confusion is the debate over whether the Internet is a "public forum" analogous to the town square in which speech must generally be allowed. Thus, *Reno* and *Ashcroft* hold that Congress must be very careful regarding limits on speech on the Internet. There are also cases about whether and how the public must have access to the Internet generally as a public forum.[22] But these are cases about government *restrictions of access* to information otherwise publicly available on the Internet. Actions by private parties are a very different matter, because of the lack of state action.

Nevertheless, supporters of free speech rights in private establishments might point to the Supreme Court decision

Most of the unauthorized uses of copyrighted works on the Internet are not even intended to be transformative. . . . And in any event, because idea/expression and fair use accommodate free speech issues, there is no First Amendment action available when a private copyright owner seeks to enforce her copyrights.

in *PruneYard Shopping Center v. Robins*.[23] In that case, the Court affirmed a California Supreme Court decision that a privately-owned shopping mall was still subject to state constitutional speech rights for members of the public and thus had to allow such speech where it was peaceful and orderly. However, this case should not be over-read. It did not overturn the earlier Supreme Court decision in *Lloyd Corp. v. Tanner* that held the public had no *federal* First Amendment rights in a privately-owned shopping mall.[24] The difference was that in *PruneYard* the free speech rights emanated from the *California* Constitution. Thus, the U.S. Supreme Court's ruling in *PruneYard* was only that a *state* could impose stronger free speech rights than those available under the federal First Amendment.[25] It was not that shopping malls were subject to *federal* First Amendment rights.

To date, I am unaware of analogous actions based on California or other state constitutional law free speech rights against websites. However, even if such claims could be brought, they would likely not be effective as a defense in a copyright infringement suit. Because the Copyright Act is federal law, it should trump conflicting state constitutional rights under the Constitution's Supremacy Clause. That is, even though the states are able to impose stronger rights than those imposed under the federal Constitution, those rights cannot be in *conflict* with the U.S. Constitution (or federal statutes promulgated under it).

Remixes, Mash-ups, and Web "Curators"

Another argument made by those advocating a conflict between copyright and free speech contends that remixes, mashups, and other such works pose a special free speech problem. They posit that modern self-expression often uses the content of others as a cultural touchstone to construct identity or to ground expression in a certain context. Many take this argument even further to contend that "curation" is now self-expression, where individuals collect materials from around the Web to place them into a certain point of view or context, bringing a different or clearer meaning to them. These individuals are engaging in Nimmerian "self-expression," but doing so through the content of others, repackaged so as to imbue the individual's vision or commentary. This position fails, however, because such usage has long existed in the physical world and has not changed the Supreme Court's views on how copyright law accommodates free speech rights through the idea/expression distinction and fair use.

Courts have long used the doctrine of fair use[26] to address remixes, mash-ups, and curatorial uses in physical world applications such as "appropriation art," and even the "newsworthiness" issue at the heart of *Harper*. While appropriation art originally fared badly in one earlier notable copyright infringement case,[27] it has more recently found some protection under fair use.[28] Both major early cases were decided by the Court of Appeals for the Second Circuit ("Second Circuit") and involved the work of the controversial appropriation artist Jeff Koons. In the most recent statement on the matter, the Second Circuit reversed the district court injunction against the equally controversial appropriation artist Richard Prince for his use of photographs from Patrick Cariou's published book.[29] The district court had declined to find a fair use defense because Prince's work did not parody or comment directly on Cariou's work, and because Cariou lost at least one potential gallery show allegedly because Prince had a high profile gallery showing of the appropriated works. But the Second Circuit held that this application of the fair use factors was too narrow and that a work could be transformative even without parody or direct commentary on the original. Thus, it found 25 of the 30 unauthorized uses to be fair, and remanded for the district court to review the remaining five under the clarified fair use factors.

Much more can be said about fair use and appropriation art, and an entire book could be written on the topic of fair use. But the point here is simply that fair use is a robust doctrine that ably acts as one of the "built-in First Amendment accommodations" of the Copyright Act. In particular, it is spot-on for determining whether the unauthorized appropriation of another's copyrighted

expression for one's own expression is a fair use exempt from normal copyright infringement remedies. Given the clear strong analogue between the nature of appropriation art in the physical world and in the virtual world, the existing case law suffices. Nothing about cyberspace changes the analysis.

At the same time, most of the unauthorized uses of copyrighted works on the Internet are not even intended to be transformative. The works are copied simply because the "curator" likes them. In some cases, an unexpected juxtaposition of works could put any or all of them into a new context. But without a clear transformative vision or meaning, this is likely not enough to constitute fair use. And in any event, because idea/expression and fair use accommodate free speech issues, there is no First Amendment action available when a private copyright owner seeks to enforce her copyrights: the defense is limited to a fair use analysis.

Conclusion

While there seems to be an online cultural meme that Internet users have free speech rights that trump copyright, there is no legal support for this belief. Certainly no cases directly on point have supported this notion. And the clear analogues from appropriation art cases in the physical world hew closely to the established copyright fair use analysis. This follows from the Supreme Court's consistent message that the First Amendment and the Copyright Act are not in conflict, but are instead complementary. Copyright incentivizes the creation and dissemination of published expression, while the First Amendment restrains the government from limiting it. Copyright does not limit the free expression by others of shared ideas or facts because of the idea/expression distinction. To the extent someone needs to use or reference another's copyrighted works to express an entirely different point, or to comment on or parody the copyrighted work, the fair use doctrine provides a means to do so. Nothing about the Internet, social media, or modern senses of creative expression changes this analysis. Commercial websites that play on this invalid meme are doing a disservice to their users and to copyright owners. In their rush to attract ever more users, and pump ever more commoditized content through their sites, these firms are inducing or contributing to widespread infringement under the guise of "free speech."

ENDNOTES

1 17 U.C.L.A. L. REV. 1180 (1970)

2 471 U.S. 539 (1985).

3 *Id.* at 558.

4 537 U.S. 186 (2003).

5 Pub. L. 105-298, 112 Stat. 2827 (1998).

6 The IP Clause is also known as the "Progress Clause," "Copyright Clause," or "Patent Clause." It is one of the enumerated powers granted Congress under Art. I, Sec. 8.:
Congress shall have Power . . . to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.
U.S. CONSTITUTION, Art. I, § 8, cl. 8.

7 For Constitutional issues, courts apply different levels of scrutiny to the action in question. Under the lowest level of review, the law or action must simply rationally advance a legitimate government purpose. At the opposite end of the spectrum, the law or action must be narrowly tailored to affect a compelling government interest. In between are various levels of intermediate review.

8 537 U.S. at 209. Further, "nothing before this Court warrants construction of the CTEA's 20-year term extension as a congressional attempt to evade or override the 'limited times' constraint." *Id.*

9 *Id.* at 208.

10 132 S. Ct. 873 (2012).

11 *Id.* at 885. The Court's statement was in large part based on the fact that Congress was conforming the copyright statute to the specific dictates of a treaty the United States had duly entered into.

12 *Id.* at 889-91.

13 Admittedly, performers of a work, such as musicians, can bring creativity to their interpretation of the composition being performed. But they still believe themselves to be performing that work, and not creating a new one.

14 521 U.S. 844 (1997).

15 542 U.S. 656 (2004).

16 Telecommunications Act of 1996, Title V, § 502, Pub. L. 104-104, 110 Stat. 133 then codified as 47 U.S.C. § 223(d)(1).

17 112 Stat. 2681-736, then codified at 47 U.S.C. § 231.

18 2 F.Supp.2d 783 (E.D. Va. 1998); 24 F.Supp.2d. 552 (E.D. Va. 1998).

19 Yahoo! v. La Ligue Contre Le Racisme, 169 F. Supp. 2d. 1181 (N.D. Cal. 2001).

20 *Id.* at 1184 (citing Section R645-1 of the French Criminal Code).

21 Yahoo! had made access policy changes of its own volition and the French plaintiffs were satisfied with them, asserting to the court that they would not pursue enforcement of the French judgment against Yahoo!. Yahoo! v. La Ligue Contre Le Racisme, 433 F.3d 1199 (9th Cir. 2006), *cert. denied* La Ligue Contre Le Racisme et Antisemitisme v. Yahoo!, Inc., 547 U.S. 1163 (2006).

22 *See Mainstream Loudoun* discussed *supra*.

23 447 U.S. 74 (1980).

24 407 U.S. 551 (1972).

25 Intriguingly, the shopping mall argued that *its* First Amendment rights were violated, because the speech of the anti-Zionist advocates at issue might be attributable to it. The Supreme Court rejected this on the grounds that it was unlikely the public would make this association.

26 The fair use doctrine is codified at 17 U.S.C. § 107. It directs courts to use four factors in determining whether an unauthorized use is "fair," which the acts as a defense to an otherwise infringing copy. The four factors are: i) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; ii) the nature of the copyrighted work; iii) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and iv) the effect of the use upon the potential market for or value of the copyrighted work. *Id.*

27 *See, e.g.,* Rogers v. Koons, 960 F.2d 301 (2d. Cir. 1992) (finding controversial appropriation artist Jeff Koons liable for infringement of plaintiff photographer's photo "Puppies" through Koons' sculpture "String of Puppies" concededly made as a copy of the photo, albeit allegedly as fair use parody or commentary).

28 *See, e.g.*, Blanch v. Koons, 467 F.3d 244 (2006) (finding same appropriation artist Jeff Koons' collage art work entitled "Niagara," which included an unauthorized copy of plaintiff photographer's image of sandal-clad feet from a Gucci ad, to be "transformative" and unlikely to have an effect on the market for the original work such as to qualify as a fair use).

29 Cariou v. Prince, 714 F.3d 694 (2d. Cir. 2013).

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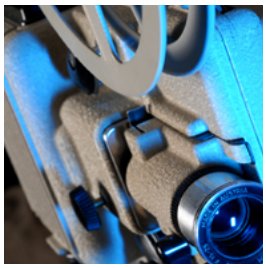


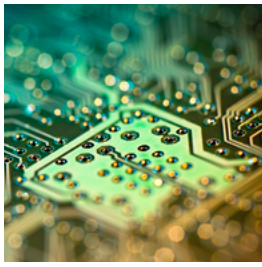

The Critical Role of Patents in the Development, Commercialization, and Utilization of Innovative Genetic Diagnostic Tests

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The Critical Role of Patents in the Development, Commercialization, and Utilization of Innovative Genetic Diagnostic Tests

CHRISTOPHER M. HOLMAN

Genetic diagnostic testing is an increasingly high-profile subject in the minds of the public, academia, and policymakers. This increased attention was prompted in part by highly publicized events such as Angelina Jolie's decision to undergo a preemptive double mastectomy based on the results of a genetic diagnostic test,[1] followed shortly thereafter by a U.S. Supreme Court decision invalidating patent claims held by the company (Myriad Genetics) that developed the test used by Ms. Jolie.[2] Although traditionally viewed as a relatively unglamorous sector of the healthcare market[3] (accounting for less than 2% of total health care spending[4]), genetic analysis and other innovative molecular diagnostics seem poised to become "a powerful element of the healthcare value chain," playing an increasingly important role in the prediction, detection, and treatment of disease.[5] "Personalized medicine," a new term that refers to the pairing of a molecular diagnostic test with a patient-specific course of pharmaceutical treatment, represents a particularly promising avenue through which molecular diagnostics might improve therapeutic outcomes while containing healthcare costs.[6]

Those involved in the development and commercialization of innovative molecular diagnostics stress the important role of effective intellectual property rights in attracting the substantial capital investment required to bring these products to market.

Those involved in the development and commercialization of innovative molecular diagnostics stress the important role of effective intellectual property rights in attracting the substantial capital investment required to bring these products to market.[7] Influential voices outside the innovation community, however, have argued strongly against patent protection for molecular diagnostics, claiming that such patents are overly broad, reduce patient access, and inhibit research that might otherwise lead to new and improved diagnostic tests. Most of these critics would acknowledge that strong patent protection is appropriate, and indeed critical, for the development of innovative drugs, in view of the huge cost of developing drugs and securing FDA marketing approval. They argue, however, that the same considerations do not apply to diagnostic tests. Unfortunately, their argument is based largely on the outdated and now-incorrect belief that diagnostic tests are developed by publicly-funded academics who are primarily motivated by non-patent incentives, and that commercialization of these tests is cheap and easy.

The critics have been heard and are finding resonance in the legislative, judicial, and executive branches. Legislation to limit the patentability of genetic inventions and the enforceability of genetic patents has been introduced in Congress, although not yet enacted. Omnibus patent reform legislation enacted in 2011 does contain a section requiring the U.S. Patent and Trademark Office ("PTO") to conduct a study examining the "impact that current exclusive licensing and patents on genetic testing activity has on the practice of medicine, including but not limited to the interpretation of testing results and performance of testing procedures," and to report back to Congress with recommendations as to how to deal with presumed problems with respect to the ability of health care providers "to provide the highest level of medical care to patients" and of innovators to improve upon existing tests.[8] In the courts, the alleged impact of genetic diagnostic patents on genetic research and the availability of diagnostic testing played an important role in litigation brought by the ACLU against the genetic testing company Myriad Genetics, challenging the validity of Myriad's so-called "gene patents." The ACLU won before the Supreme Court. The Obama administration filed amicus briefs in the Myriad litigation arguing against patent eligibility for patent claims allegedly relating to genetic testing, and National Institutes of Health (NIH) Director Francis Collins has been an outspoken critic of patents on genetic tests.[9]

The plaintiff's victory in *Myriad* has not lessened the call for more severe restrictions on the availability of effective patent protection for innovative molecular diagnostics. When the Supreme Court invalidated some of Myriad's patent claims relating to the BRCA breast cancer genes, a number of Myriad's competitors were emboldened to enter the BRCA testing market, and Myriad responded by filing lawsuits alleging infringement of some of its remaining patent claims (patent claims that were not at issue in the previous litigation). In response, Sen. Patrick Leahy (D-Vt.) sent a letter to Francis Collins asking NIH to "use its march-in rights under the Bayh-Dole Act to force Myriad Genetics Inc. to license its patents related to testing for genetic mutations associated with breast and ovarian cancer."[10]

Patents also have a fundamental role in incentivizing companies like Myriad to create markets for these new discoveries by investing in educating patients and their doctors and in facilitating the reimbursement of patients for the cost of the test via their insurance plans.

This essay addresses some of the criticisms that have been leveled against genetic diagnostic testing patents. It identifies the critical role that patents play not only in the discovery and development of new molecular diagnostic tests, but also in making these tests more accessible to the patients who can benefit from them. When we move beyond the improperly restricted and crabbed view of patents as incentivizing only discovery of new medical drugs or tests, we recognize that patents also have a fundamental role in incentivizing companies like Myriad to create markets for these new discoveries by investing in *educating* patients and their doctors and in *facilitating the reimbursement* of patients for the cost of the test via their insurance plans.

MOLECULAR DIAGNOSTIC TESTS AND PERSONALIZED MEDICINE

To understand the important role of patents in molecular diagnostic testing, it is important to have a basic understanding of what these tests are and where they come from. This is important if only because there is substantial misinformation in the public policy debates about these innovative medical discoveries. Thus, a brief primer on the topic is in order.

Molecular diagnostic tests involve the detection and/or analysis of a molecular biomarker in a patient in order to discern clinically relevant information about that patient.[11] Molecular biomarkers come in many forms - prostate-specific antigen (PSA), for example, is a protein biomarker used to diagnose prostate cancer, while high levels of glucose in the blood can serve as a biomarker for diabetes. Today some of the most promising biomarkers are genetic variations, which are detected by analyzing an individual's genomic DNA. Some genetic variations in the human breast cancer genes BRCA1 and BRCA2, for example, can be used to predict the likelihood that an individual harboring that variation will develop breast or ovarian cancer. Although significant progress already has been made, scientists are just beginning to scratch the surface of the potential of molecular diagnostic testing. Research continues in the quest to identify and validate new biomarkers correlated with a host of diseases and disease outcomes.

Testing for molecular biomarkers is not only useful in the diagnosis and prognosis of disease; it can also be used to guide doctors in the best course of treatment tailored to the needs of an individual patient. Personalized medicine, for example, encompasses the use of molecular diagnostic testing to identify the best course of drug therapy for an individual patient by (1) identifying the best drug for that individual, or (2) predicting the optimal drug dosage for that particular patient in terms of safety and efficacy. In a case involving determining personalized levels of drug dosage, *Mayo v. Prometheus*, the Supreme Court recently invalidated patent claims covering a non-genetic molecular diagnostic test that enables doctors treating patients for Crohn's disease to prescribe a drug dosage at a level that maximizes efficacy while minimizing the horrible side effects too often endured by patients before the test became available.[12] In doing so, the Court overturned a decision by the Court of Appeals for the Federal Circuit which upheld the validity of the claims - the Federal Circuit's decision explicitly acknowledged that the claims relate to methods of medical diagnosis and treatment which have until recently been assumed to constitute patentable subject matter.[13]

The fundamental challenge in developing molecular diagnostic tests is identifying and validating clinically significant molecular biomarkers. The magnitude of this challenge is vastly underappreciated by those who argue against patent protection for these tests.

The fundamental challenge in developing molecular diagnostic tests is identifying and validating clinically significant molecular biomarkers. The magnitude of this challenge is vastly underappreciated by those who argue against patent protection for these tests. It is true that some relatively rare genetic diseases such as sickle cell anemia, cystic fibrosis and Tay-Sachs are associated with specific genetic variations (sometimes referred to as mutations), and once those variations have been identified it is relatively straightforward for any competent clinical laboratory to test for the presence of a mutation that has been unambiguously associated with the disease. But these are the low hanging fruit. For the vast majority of human diseases which have a genetic component, the correlation between biomarker and clinically relevant information is much less straightforward, and substantial investment is necessary to support the lengthy and labor-intensive research efforts required to discern and validate the clinical significance of novel biomarkers.

With respect to any two individual humans there typically exists about 6 million genetic variations (referred to as polymorphisms) spread across the genome. Most comprise single nucle-

otide variations that occur on average about once in every 1000 nucleotides.[14] Significantly, almost all of these polymorphisms are believed to be clinically irrelevant.[15] Thus, the challenge is to identify that small cohort of human genetic variations that can function as useful biomarkers, and to assign and validate their clinical significance.

...substantial investment is necessary to support the lengthy and labor-intensive research efforts required to discern and validate the clinical significance of novel biomarkers.

Compounding the difficulty is the fact that the clinical significance of most genetic variations is substantially affected by the influence of other genetic variations residing throughout the rest of the genome, oftentimes in a manner that is not additive, and by interactions with non-genetic environmental factors.[16] For example, there is often an observed synergistic amplification of susceptibility to disease caused by the interaction of variations at multiple locations in the genome, or, conversely, a dampening of the effect of one variation caused by variations at other locations.[17] It can be extremely difficult to identify and validate correlations for multifactorial genetic diseases of this type, which in large part explains the relatively modest progress that has been made in molecular diagnostic testing in the decade subsequent to the initial sequencing of the human genome.[18]

For example, some genetic variations in the BRCA1 and BRCA2 breast cancer genes have been shown to be associated with an extremely high likelihood of developing cancer, while others are associated with a likelihood of developing cancer only somewhat higher than the general population.[19] Many of the observed variations in the BRCA genes are believed to be neutral, having no cancer-related implications. In fact, even after years of research and millions of dollars in investments, we are still finding patients with variations in the BRCA genes for which the significance is currently unknown. These "variations of uncertain significance," or VUSs, constitute a major limitation on the clinical usefulness of molecular diasgnostic tests. Patents provide the incentive for the substantial up-front investment in gathering and analyzing the clinical data necessary to assign a predictive value to a VUS.

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SHRINKING PATENT PROTECTION FOR MOLECULAR DIAGNOSTICS AND PERSONALIZED MEDICINE

For years, innovative scientists and physicians working in diagnostics and personalized medicine have sought and obtained patent protection for diagnostic tests that are based on the detection and/or analysis of molecular biomarkers. While patent claims covering isolated and synthetic DNA molecules can play some role in this regard, the most direct and effective means of patenting a diagnostic test is by claiming the method itself. Unfortunately, the Supreme Court's recent decisions in *Mayo* and *Myriad* have substantially impaired the ability of innovators to obtain effective patent protection for DNA molecules used in diagnostic testing and for diagnostic testing methods per se.[20] Although *Myriad* has garnered more public attention, *Mayo* is likely a much more significant decision with respect to the patentability of diagnostic tests, since it most directly implicates the method claims which are so important for effective patent protection in this area of technology.

Unfortunately, the Supreme Court's recent decisions in Mayo and Myriad have substantially impaired the ability of innovators to obtain effective patent protection for DNA molecules used in diagnostic testing and for diagnostic testing methods per se.

Three aspects of *Mayo* could prove extremely problematic for future patenting of molecular diagnostics in general. First, the Court adopted a very broad definition of the term "natural phenomena" as it is applied in the context of patent eligibility for discoveries in medical treatments. The *Mayo* Court's definition of this term, which refers to facts of nature that are unpatentable, appears to encompass the discovery of clinically significant biomarkers that is the essence of innovation in diagnostics and personalized medicine. Second, the Court held that in order to be patent eligible, a method claim must include some "inventive concept" above and beyond the discovery of a natural phenomenon. And third, the Court declared that a method claim is patent ineligible if it "preempts" all practical applications of a natural phenomenon.

A recent district court decision, *Ariosa Diagnostics v. Sequenom*, illustrates the profoundly troubling implications of *Mayo* for patents on molecular diagnostic methods.[21] On a motion for summary judgment, the judge invalidated all of the genetic diagnostic testing method claims at issue in the case for failure to satisfy the requirements of patent eligibility as set forth in *Mayo*. In particular, the judge held that the claims failed the "inventive

concept" test because they encompassed conventional methods of DNA analysis, and failed the "preemption" test based on a determination that the claims would cover all "commercially viable" methods of performing the test as of the filing date of the patent.

...how many venture capitalists are interested in investing hundreds of millions of dollars in a start-up diagnostic company whose patents are unable to preclude competition by free-riders using alternate, unpatented (but still commercially viable) methods for detecting the same biomarkers that the start-up invested in identifying?

If this is indeed the standard by which the validity of molecular diagnostic claims will be assessed, the prospect for effective patent protection appears bleak. Innovation in molecular diagnostics resides primarily in the identification and characterization of biomarkers of clinical significance, e.g., genetic variations useful in the diagnosis and prognosis of disease. Once the biomarker and its clinically significant correlation has been identified, conventional forms of DNA analysis involving techniques such as PCR amplification and/or labeled hybridization probes are employed for diagnostic testing. A patent eligibility test that bars the inventor from claiming the use of conventional DNA analysis techniques will render the patent ineffective in blocking competitors from entering the market and thereby free-riding on the initial inventor's substantial investments in the discovery of this molecular biomarker.

This troubling concern is not mere prophecy. In *Ariosa Diagnostics*, the judge held that *Mayo* prohibits any patent claim that encompasses all "commercially viable" means of testing for a biomarker. This decision renders any protection afforded by a valid diagnostic patent illusory. After all, how many venture capitalists are interested in investing hundreds of millions of dollars in a start-up diagnostic company whose patents are unable to preclude competition by free-riders using alternate, unpatented (but still commercially viable) methods for detecting the same biomarkers that the start-up invested in identifying?

Furthermore, in *Myriad*, the Supreme Court held that isolated DNA molecules corresponding to naturally occurring DNA are patent ineligible, absent some significant structural difference compared to the naturally occurring molecule. This holding is problematic for innovators in genetic testing because the DNA molecules used in the course of genetic diagnostic testing, such as DNA primers for PCR and hybridization probes, are inherently highly similar in chemical structure to naturally occurring DNA molecules, and thus apparently patent ineligible under *Myriad*. A district court recently adopted this view in a decision denying the patentee's motion for preliminary injunction against an alleged infringer in a lawsuit commenced post-*Myriad*, finding that product claims directed towards DNA primers useful in BRCA genetic testing are likely invalid under *Myriad*.[22] The PTO recently issued guidance adopting the same restrictive interpretation of *Myriad* with respect to DNA primer claims.[23]

THE ROLE OF PATENTS IN MOLECULAR DIAGNOSTIC R&D

The Unfounded Assumption that Patents Inhibit Research

The plaintiffs in *Myriad* argued that Myriad's patents inhibit research that might otherwise lead to improvements in BRCA testing.[24] Unfortunately, many share this pessimistic view of the role of patents in the research and development of molecular diagnostic tests, and this deeply mistaken notion found support in a number of amicus briefs filed with the Supreme Court in support of the *Myriad* plaintiffs. A typical example was an amicus brief filed by the American Medical Association, which argued that patents are not only unnecessary to incentivize the optimal level of innovation in genetic diagnostic tests, but that genetic diagnostic patents allegedly inhibit research that could develop improved tests.[25]

The argument that patents inhibit research in genetic diagnostics is based largely on an unfounded assumption that the existence of a patent necessarily precludes research on the patented subject matter. In fact, empirical studies have shown that basic researchers follow a norm of ignoring patent infringement, and that patent owners do not enforce their patents against basic researchers, resulting in a de facto research exemption from liability.[26] Patent owners have little if any incentive to enforce patents against basic researchers - to the contrary, patent owners often welcome third-party basic research on patented subject matter, since it tends to promote and enhance the value of the patented subject matter.

The argument that patents inhibit research in genetic diagnostics is based largely on an unfounded assumption that the existence of a patent necessarily precludes research on the patented subject matter.

Myriad's policy toward basic research on the BRCA genes is a good case in point. During the time in which Myriad's BRCA patents have been in force, basic research on the BRCA genes has flourished in both the US and abroad. While patent-skep-

tics assume that Myriad's patents preclude research on the genes, in fact thousands of research articles relating to the genes have been published, many by researchers at leading US academic institutions such as the University of Pennsylvania, the University of Chicago, Emory University, and the University of Rochester.[27] While it has been widely publicized that Myriad has on occasion threatened lawsuits against academic institutions that engaged in genetic diagnostic testing, it is important to bear in mind that these academic institutions were invariably engaged in *commercial* genetic testing, not basic research - i.e., they were charging patients for the testing services and thus competed with Myriad.[28]

During the time in which Myriad's BRCA patents have been in force, basic research on the BRCA genes has flourished in both the US and abroad.

In attempting to support their assertion that patents harm research and development of diagnostic tests, patent-skeptics often point to the "SACGHS Report," a 2010 report on the impact of patents on patient access to genetic tests that was prepared by the Secretary of Health and Human Services' Advisory Committee on Genetics, Health, and Society.[29] Despite these citations to the SACGHS Report, the case studies presented in the SACGHS Report for the most part show exactly the opposite. For example, the Report's case study on the impact of patents and patent licensing practices on access to genetic testing for hereditary hemochromatosis concluded not only that "concerns regarding inhibition of research due to the HFE gene patents do not seem to be supported," but that substantial basic research aimed at identifying new genes and genetic variations associated with hemochromatosis, along with new methods of testing for these biomarkers, were proceeding in spite of third-party patents.[30] Similar findings were reported with respect to genetic tests investigated in other case studies, including the tests for cystic fibrosis,[31] hearing loss,[32] and Alzheimer's disease.[33]

The Important Role of Patents in the Development and Commercialization of Diagnostic Tests

While patents do not inhibit basic research, they do play a critical role in incentivizing the substantial investment required to translate the results of basic research into high-quality, commercially available diagnostic tests that meaningfully impact people's lives. In a recent report, the President's Council of Advisors on Science and Technology found that the "ability to obtain strong intellectual property protection through patents has been, and will continue to be, essential for pharmaceutical and biotechnology companies to make the large, high-risk R&D investments required to develop novel medical products, *including genomics-based molecular diagnostics*."[34] Similarly, commentators familiar with the challenges associated with the development and commercialization of diagnostics have concluded that patents are vital "to incentivize the significant investment required" for clinical research in personalized medicine.[35] And while the AMA came out against genetic diagnostic testing patents in *Myriad*, the Association of American Physicians and Surgeons ("AAPS," a national nonprofit association representing thousands of physicians) filed an amicus brief in support of Myriad's patents, explaining that "advancing patients interests means supporting and defending incentives for medical innovations." [36]

Innovators in molecular diagnostics rely heavily on venture capital to fund the years of research, development, and validation necessary to bring a novel diagnostic product to market, and the decision of whether to invest is heavily dependent upon the availability of effective patent protection.[37] Weakening of patent protection for molecular diagnostics will inevitably cause venture capitalists to shift their investments to other sectors of the economy.[38] Not surprisingly, the National Venture Capital Association filed an amicus brief with the Supreme Court in support of Myriad.[39]

Innovators in molecular diagnostics rely heavily on venture capital to fund the years of research, development, and validation necessary to bring a novel diagnostic product to market, and the decision of whether to invest is heavily dependent upon the availability of effective patent protection.

One of the most compelling amicus briefs submitted to the Supreme Court in support of Myriad was filed by Lynch Syndrome International ("LSI"), an all-volunteer organization founded and governed by Lynch syndrome survivors, their families, and health care professionals who treat Lynch syndrome.[40] Lynch syndrome is a genetic condition caused by genetic variations in certain genes that result in a greatly increased risk of developing colon cancer. Lynch syndrome and BRCA mutations are highly analogous, with one important difference - patents in the area of Lynch syndrome have been nonexclusively licensed, so there has been no single provider to invest in developing and improving genetic tests for Lynch syndrome, nor in making the test widely available to the patients who could benefit from it. In its brief, LSI argues passionately for greater patent protection in the area of genetic diagnostic testing, in the hope that patent exclusivity might incentivize a patent owner to invest in Lynch

syndrome in a manner comparable to Myriad's investment in BRCA testing.

LSI explains that:

> The development and commercialization of genetic tests require significant amounts of capital, but capital sources will not provide the necessary funding unless the newly developed tests will have patent protection. Only patent protection will assure the capital sources of sufficient investment return to make the provision of funding worthwhile.[41]

LSI's brief goes on to urge the Supreme Court to maintain patent eligibility for genetic tests in the hope that patents might provide incentives for the development of high-quality tests comparable to those available for BRCA thanks to the investments made by Myriad.[42] LSI points to the long odds against success facing start-up companies like Myriad, noting that most start-up companies fail, particularly in the area of diagnostics. In the words of LSI:

> Myriad's survival, due largely to patent eligibility for genetic tests, has been a miracle for BRCA1 and BRCA2 patients: without Myriad, it is possible that only fragmented and potentially unregulated testing would be available. Lynch syndrome patients desperately need access to the quality testing that Myriad has been able to provide to BRCA1 and BRCA2 patients.[43]

While the SACGHS Report found little evidence that patents impede basic research, it also found (incorrectly) that patents are largely unnecessary for genetic research, based largely on an assumption that genetic research is primarily conducted by academics who are not particularly interested in obtaining patents.[44] The Report opines that while patents incentivize some private investment in genetic research, this private funding is "supplemental to the significant federal government funding in this area."[45] In conclusion, the Report states that "patent-derived exclusive rights are neither necessary nor sufficient conditions for the development of genetic test kits and laboratory-develop tests."[46] But these conclusions are seriously flawed, as explained below.

When the Report assumes that most genetic research is conducted by academic researchers, it is specifically referring to the identification of *genes* associated with genetic disease. While finding a gene associated with genetic disease is an important first step, the Report fails to take into account the much more difficult and costly research required to discern and validate the clinical significance of *genetic variations*. The Report's conclusions, based on an analysis of the relatively straightforward genetic diseases that have been the basis for the first round of genetic diagnostic tests, are largely inapplicable to the next generation of diagnostic tests, where the correlation between genetic variation and clinical significance will be much more attenuated and difficult to establish.

While the discovery of the genes in the 1990s was an important first step, the real work began after the genes were identified, as Myriad and others sought to distinguish the clinically significant variations in the BRCA genes from the clinically insignificant, and to quantify and validate the likelihood of cancer for patients having clinically significant variations.

The BRCA genes provide a good example of this. While the discovery of the genes in the 1990s was an important first step, the real work began after the genes were identified, as Myriad and others sought to distinguish the clinically significant variations in the BRCA genes from the clinically insignificant, and to quantify and validate the likelihood of cancer for patients having clinically significant variations. Some variations have been shown to correspond with only a marginal likelihood of cancer, others with a very high likelihood. Myriad reports that even today 3% of the variations it finds when it tests patients are still of unknown significance, and this is after performing thousands of tests and compiling enormous amounts of data. In Europe, where for years Myriad has as a practical matter not enforced its patents, many independent laboratories perform BRCA tests. The number of variations of uncertain significance in Europe is much higher than in the US, not surprising since without an exclusive provider there is less incentive and ability to gather and analyze the data necessary to assign significance to ambiguous variations.

Celera Diagnostics, a private-sector developer of advanced diagnostic tests, made this point in a comment submitted in connection with the SACGHS Report:

> Even though the Draft Report suggests that scientists who search for gene-disease associations may not be motivated by the prospect of receiving a patent, they cannot conduct this type of research without considerable capital and resources. In our experience, meaningful gene-disease associations are confirmed only if the initial discoveries are followed by large scale rep-

> lication and validation studies using multiple sample sets, the costs of which are prohibitive for many research groups. Private investors who provide funding for such research invariably look to patents that result from such work as a way of protecting their investment.[47]

The SACGHS Report concluded that patents are unnecessary for the development and commercialization of diagnostic test, but that conclusion was based on an unrealistic assumption that the cost of developing a sequencing-based diagnostic test is in the range of $8,000-$10,000.[48] While this paltry sum might have been sufficient for the development and commercialization of the simple diagnostic tests considered by SACGHS in preparing its Report, it is orders of magnitude short of the investment required for the critical next generation of diagnostic tests being developed by companies such as Myriad, Celera, and Genomic Health.

Furthermore, patents also promote innovation by facilitating collaboration and coordination between firms, which will be particularly important in the development of personalized medicine. For example, the pairing of the cancer drug Herceptin with a companion genetic diagnostic test that identifies patients likely to benefit from treatment with Herceptin represents one of the first successful implementations of personalized medicine. Herceptin, a biotechnology drug developed by Genentech, is only effective for a subpopulation representing about 30% of breast cancer patients, but for those for which it is effective it can reduce the recurrence of a tumor by 52%.[49] Another pharmaceutical company, Abbott, developed the companion genetic diagnostic test used to distinguish between patients who will benefit from Herceptin and those who will not.[50] The distinction is important because it allows doctors to rapidly begin Herceptin treatment for patients who will benefit from it, while avoiding the high cost and delay that result from trying Herceptin on a patient that, for genetic reasons, will not respond to the treatment. Patents play an important role in incentivizing companies like Abbott to develop a companion diagnostic, as well as facilitating the collaboration necessary to effectively pair one company's diagnostic with another company's drug.[51]

An important attribute of patents is that they encourage the disclosure of information that in the absence of the patent would likely be kept as a trade secret.

Now that Myriad's patent protection has been weakened, some argue that the company should make its proprietary data freely available in order to allow competitors to improve their tests.[52] At one time Myriad did share this data, but in recent years it has adopted a policy of maintaining much of it as a trade secret.[53] Of course, this is exactly the response one would predict in the face of weakened patent protection. No company is likely to invest in the creation of a valuable database if competitors are free to appropriate the value of the data. An important attribute of patents is that they encourage the disclosure of information that in the absence of the patent would likely be kept as a trade secret. Indeed, the SACGHS Report explicitly recognized that an absence of patent protection promotes secrecy, and that such "secrecy is undesirable because the public is denied new knowledge." [54]

THE IMPORTANT ROLE OF PATENTS IN PROMOTING ACCESS

One of the main complaints leveled against patents on genetic diagnostic tests is that a patent owner like Myriad is able to charge a higher price as the exclusive test provider, which limits access for patients who cannot afford the test.[55] A study included in the SACGHS Report attempted to assess this allegation by comparing the cost for Myriad's BRCA test with the genetic test for Lynch syndrome. When normalized for the relative sizes of the genes, the Report found that Myriad charges "little if any price premium" for its exclusively controlled BRCA testing relative to the price charged for nonexclusively licensed testing of the Lynch genes.[56] The Report concluded that this "surprising" finding "suggests that the main market impact of the BRCA patents is not on price but rather on volume, by directing BRCA full-sequence testing in the United States to Myriad, the sole provider."[57]

While the prices of BRCA and Lynch syndrome testing are comparable, many more BRCA tests are performed in the US compared to Lynch syndrome testing, suggesting that, at least with respect to these two tests, patent exclusivity actually serves to *enhance* patient access. Epidemiologically the two syndromes are quite similar - both have a similar prevalence in the overall population and in cancer populations, both can result in drastic increases in the risk of developing cancer, and breast and colon cancer are two of the leading causes of cancer death in the country. Prior to the *Myriad* decision there were 15 providers of full sequence Lynch syndrome testing in the US, and only one authorized provider of full sequence BRCA testing (*Myriad*). However, in the period from June 2010 through March 2013 nearly 5 times as many patients in the US received BRCA testing than testing for Lynch syndrome (339,294 vs. 70,294).

One explanation for the discrepancy could lie in the relative quality of the tests. The turnaround time for Lynch syndrome

testing results is reportedly longer than that of Myriad's BRCA tests, and the VUS rate is much higher for Lynch syndrome (15-30% for non-Myriad Lynch testing vs. 3% for Myriad BRCA testing). The amicus brief filed by LSI specifically noted the superiority of Myriad's BRCA test, which LSI attributed to the patent exclusivity enjoyed by Myriad with respect to the BRCA genes.

Increased public awareness of BRCA testing relative to Lynch syndrome testing is likely to account for much of the discrepancy in usage of the tests. The SACGHS Report specifically found that the "incentive to advertise the service and broaden the market is stronger for a monopoly provider than in a shared market because a monopolist will gain the full benefit of market expansion."[58] According to the Report, one of the social benefits of patents is that they incentivize an exclusive test provider like Myriad to invest in creating more public knowledge of the availability of genetic tests.[59] The Report acknowledges a clear "link between [Myriad's] status as a single provider and incentives for direct-to-consumer advertising, with single provider status in this case associated with exclusive patent rights for BRCA testing."

A Center for Disease Control (CDC) survey found an increase in BRCA test requests and questions about testing among women, and an increase in test-ordering among physicians and providers, in cities where Myriad invested in direct-to-consumer "public awareness campaigns."[60] The SACGHS Report noted that "[t]he overall impact of a DTC advertising campaign on the Kaiser Permanente health system in Denver was a more than two-fold increase in number of women in the high risk category getting tested, a more than three-fold surge in contacts about testing."[61] Another study showed that high-risk women—those eligible for BRCA testing based on family history—were three times as likely to get tested following a physician recommendation as those who did not get such a recommendation.[62]

...one of the social benefits of patents is that they incentivize an exclusive test provider like Myriad to invest in creating more public knowledge of the availability of genetic tests.

Ironically, while Myriad fought to inform patients and healthcare providers about the availability of BRCA testing, many policymakers argued in favor of restricting patient access to the results of these tests. For example, the Working Group of Stanford's Program in Genomics, Ethics and Society recommended that 'for most people, testing for BRCA1 and BRCA2 mutations is not appropriate.'[63] Similarly, NIH director Francis Collins testified before Congress that the results of genetic testing for BRCA mutations should generally not be made available to patients.[64] With respect to BRCA testing, patents have played an important role in empowering patients to take control of their own their own genetic information, in the face of a medical establishment that sought to limit patient access to this information.

With respect to BRCA testing, patents have played an important role in empowering patients to take control of their own their own genetic information, in the face of a medical establishment that sought to limit patient access to this information.

One of the most formidable obstacles facing patients in need of genetic diagnostic testing services is insurance reimbursement.[65] Patents play an important role in overcoming this obstacle, by providing an incentive for patent owners to work with insurance companies to ensure that a maximum number of patients will be able to get insurance reimbursement for testing. For example, in 1995 only 4% of insurance providers allowed reimbursement for BRCA genetic testing.[66] By 2008 Myriad was able to report that it had established contracts or payment agreements with over 300 carriers and has received reimbursement from over 2500 health plans, reducing the number of self-pay patients to single-digit percentages of its clientele.[67] By 2010 BRCA genetic testing in the U.S. was covered for roughly 95% of those requesting tests, and reimbursed to cover 90% of their charges.[68] In contrast, non-profit diagnostic testing services in many cases charge patients upfront for genetic testing, and require patients to seek their own reimbursement from their insurance company, which can be slow in coming, assuming it comes at all.[69]

CONCLUSION

Arguments in favor of reining in the availability of effective patent protection in the area of genetic diagnostic testing are based largely on two fundamental misconceptions regarding the role of patents in this important area of technological innovation. The first is the mistaken assumption that patents negatively impact patient access to genetic diagnostic testing by preventing research that might lead to new or improved versions of a genetic test and by increasing the cost of testing services. The second is the failure to appreciate the substantial positive role patents play in in the development and utilization of genetic diagnostic tests. In fact, patents have little if any negative impact on basic research, and have been proven to significantly improve patient

access to advanced diagnostic testing services by incentivizing the substantial investment that is necessary not only to bring these tests to market, but also to educate patients and their doctors with respect to the availability of the tests, and to work with third-party payers to expand patients' eligibly for reimbursement. Next-generation technologies are poised to dramatically improve healthcare and patient outcomes, but this will only occur if effective and enforceable patent protection is available as the necessary spur for innovation and commercialization.

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Professor Chris Holman is a Professor of Law at the University of Missouri-Kansas City School of Law. His primary research focus lies at the intersection of intellectual property and biotechnology. He has published numerous articles in law reviews and scientific publications such as *Science, Cell and Nature Biotechnology*, and has authored *amicus* briefs in a number of important biotechnology patent cases at the Supreme Court and Federal Circuit. In 2008 he was awarded the Daniel L Brenner Faculty Publishing Award for an influential law review article on human gene patent litigation.

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Resolving the Patent-Antitrust Paradox:

Promoting Consumer Welfare Through Innovation

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CENTER FOR THE PROTECTION OF INTELLECTUAL PROPERTY

Resolving the Patent-Antitrust Paradox: *Promoting Consumer Welfare Through Innovation*

GREG DOLIN

It is often said that antitrust law and patent law are irreconcilable and in perpetual conflict when it comes to the promotion of competition. In fact, I have made such an observation myself in my previous scholarship.[1] This view is so widely held that it is viewed as almost a truism. But is it really true? Are the two legal regimes diametrically opposed to one another?

The answer to that question depends on what one views as the role of these legal regimes. Is it promotion of competition for the sake of competition, or is it promotion of overall consumer welfare? If it is merely the former, then at least in a number of instances strong patent rights may thwart competition (even though the relationship is not necessarily linear). If, however, the true goal of patent and antitrust law is consumer welfare writ large, then the two legal regimes can be seen as working in tandem, rather than in opposition. This is true even when the mechanisms supporting the promotion of consumer welfare are fundamentally different—public-ordering restrictions on certain competitive behaviors versus the private-ordering mechanisms that are the natural byproduct of securing a property right in innovation.

There is no doubt that competition is a primary force of advancing consumer welfare. As companies compete for consumers' dollars, they take steps to make their wares more attractive than those of their competitors. But the scope and avenues of competition should not be oversimplified to the point where it is viewed as merely a race between competitors to the lowest possible price. Quite the contrary. Competition is a dynamic and multi-faceted process that proceeds along multiple dimensions.[2]

Companies can (and do) compete on price over the essentially identical product, but they also compete on many other issues, such as product differentiation to serve multiple tastes, market-making (pioneering innovation), modes of delivery and distribution, reputation/quality/status, influencing consumer tastes, manufacturing and process innovations, and other dimensions of competition. In other words, the mere fact that only one company produces product X does not mean that the company exists in a world without competition. Competition is a dynamic process, and so lack of competition in one dimension, such as price, does not necessarily mean there is no competition in other dimensions. Moreover, competition (or lack thereof) across a particular dimension is not, by itself, determinative of overall consumer welfare.

The question then is how the legal system should be structured so as to promote overall consumer welfare. Given that consumer welfare is dynamic and can be enhanced through multiple modalities, it should be rather self-evident that a legal analysis that focuses on just one particular mode fails to account fully for the effect of business practices on consumer welfare. Yet, it seems that this is precisely the approach the Federal Trade Commission (FTC) is taking when faced with entities intent on exploiting their patent rights through licensing, litigation, or both.

The FTC's approach today to patent licensing and to the attendant patent infringement lawsuits is reminiscent of the now-abandoned, pre-1980s approach to antitrust law. For most of the twentieth century, American antitrust law focused primarily on specific *competitors* and whether various business practices by one party harmed that party's competitors. When such harm was discovered, it was presumed to be anti-competitive and thus deemed to be an *automatic* (*per se*) violation of the antitrust laws.[3]

In his seminal book, *The Antitrust Paradox: A Policy at War With Itself* (1978), Robert Bork rethought this early antitrust paradigm. He argued that the purpose of antitrust laws is not protection of competitors, but protection of *consumer welfare* through competition. From this perspective, the mere fact that a particular business practice may harm or exclude a competitor is not particularly problematic if, on balance, such practice has the effect of increasing consumer welfare (be it through lower prices or new and better goods and services). Bork's reconceptualization of the purpose of

Whereas antitrust law seeks to promote competition mostly on price, patents promote competition by incentivizing new innovation, product differentiation, manufacturing and process innovations, and influencing consumer tastes.

antitrust law has had a tremendous impact on how courts and enforcement agencies view the goals of antitrust law.[4]

Patented innovation and its commercialization should be analyzed under the same paradigm where the ultimate goal is consumer welfare. Patents by their very nature allow the patent owner to exclude competitors from the market for that particular product or process. But as courts have recognized over the last thirty years, mere exclusion of competitors is not automatically detrimental to consumer welfare. In fact, in enacting the Patent Act, Congress made an affirmative judgment that patents are needed to "promote the Progress of Science and useful Arts,"[5] and that such "Progress" is consumer welfare-enhancing. Although a patent *may* provide the patent owner with an opportunity to charge super-competitive prices to consumers, on balance consumers benefit from having access to new, innovative technology that is invented and commercialized as a result of the incentives created by patents. Patents spur innovation and bring consumer-desired improvements to the market. From pioneering pharmaceuticals to revolutionary electronic devices, patents have allowed consumers to increase their quality of life at a faster pace than would have been available absent patent-based protections.

(As an aside, it should be noted that patents do not *necessarily* enable the patent owner to charge super-competitive prices if other commercial firms sell substitutes in the marketplace. For example, a pharmaceutical company that invents a new and improved pain killer is still heavily constrained in what price it can charge by the availability of other pain killers on the market, such as aspirin, acetaminophen, naproxen, and the like).

Bork's insight about the true nature of antitrust law made it possible to recognize that patents are not antagonistic to competition, and are not in tension with antitrust law; rather, patents and other intellectual property rights simply advance competition on a different axis of analysis than does antitrust law. Whereas antitrust law seeks to promote competition mostly on price, patents promote competition by incentivizing new innovation, product differentiation, manufacturing and process innovations, and influencing consumer tastes. (On the issue of consumer taste, just look at what Apple has achieved in terms of the aesthetics in high-tech products.)

The FTC, however, seems to have forgotten this function of patents. The FTC has thus taken a rather strong stance about the (alleged) anticompetitive effects of settlements between patented brand name and generic pharmaceutical manufacturers,[6] it has expressed skepticism about the companies who have engaged in commercial innovation in patent aggregation and licensing (companies that it identifies as "patent assertion entities"),[7] and it has taken action against firms that own patents covering industry-wide standards (such as Bosch and Google).[8] In the FTC's view, each of these situations presents a significant problem for competition and for consumers due to the (alleged) effect on price of the activities in question. The FTC's skepticism of patents can essentially be summarized as the notion that since patents secure exclusive rights to make, use, or sell in the marketplace, and since exclusive rights are inimical to a competitive environment, any robust assertion of such rights is detrimental to consumer welfare.

The problem with the FTC's approach today is that it essentially looks at the economy as static and zero-sum, not as dynamic and expansive through innovation. Under the FTC's view, a patent simply locks up a market for a particular method or device, which forces competitors to either wait until the expiration of the patent or pay royalties to the patent owner with the cost being passed down to the consumer. Absent from this view is the understanding that patents themselves spur competition. In addition to the just-discussed function of providing rewards for innovation, patents also encourage individuals and companies to seek multiple solutions to the same problem, whether in new products or in new commercial arrangements that exploit such products. For example, by foreclosing (for a limited time) one particular avenue to competitors, patents encourage these competitors to "design around" and come up with new products. There was first Viagra, and now there is Cialis. This competition for better and cheaper solutions ultimately benefits consumers.

Consider the pharmaceutical market and the diversity of drugs available to treat a particular disease. For example, two pharmaceutical companies may make competing insulin products for the treatment of diabetes. (To be sure, these products are not perfect substitutes, as each has some particular advantages and disadvantages, as is true with all non-identical competing products. In the more mundane world, think Coke and Pepsi.) In a world where patent protections are weak, a competitor would be more likely to spend resources and time invalidating the existing patent on insulin so as to easily enter a proven, valuable market. With the easy loss of patent rights, profits per unit sold would decrease, and thus pharmaceutical companies would have less money to pay the high cost of new research and development. Instead of the uncertainty (and the potentially large pay-off) inherent in R&D, companies may settle for the certainty of low payoff. Indeed, this is not merely theory, as this is the business model of the companies producing generic medicines. Instead of seeking and inventing new pharmacological compounds, the generic industry contents itself with copying products already on the market and selling them at a lower price.

There is, of course, nothing wrong with copying. Multiple companies providing identical products to consumers generally results in competition on price, with consumers reaping the benefit of that competition. But copying alone cannot provide consumers with the benefits of new technological improvement.

That is where patent law comes in. Not only do patents spur innovation by rewarding those making scientific advances or discoveries, they push competitors to out-innovate each other and thus compete not solely on price, but also on such things as product features (what's touted every few months with each new smart phone), methods of commercializing their products (Apple Stores), and in other dimensions.

There can be little doubt that the patent laws serve this function. Although the United States has lost the leader's mantle in terms of total number of patented innovations per year (as counted by the number of patent applications filed either in the U.S. or abroad), the U.S. Patent and Trademark Office (PTO) continues to outpace every other patent office in terms of the number of applications filed. This indicates that both domestic and foreign industries view the United States as the primary market in which to sell their innovative products. In other words, American patent laws entice both domestic and foreign companies to seek patent protection here and thereafter to sell these new and innovative goods and services to the American consumer. The reason that these companies choose to disproportionately file their applications in the PTO is because of the robust protections that patents have provided to technological and commercial innovation in the United States.

A prospect of monetization is what drives inventors or firms working in the innovation industries to continue creating inventions and applying for patents, as opposed to keeping them secret.

Finally, patents serve a valuable role as a knowledge transfer medium. As a condition of obtaining a patent, an inventor must disclose how to make the claimed invention. This disclosure not only allows the public to copy the invention once the patent has expired, but, even more importantly, to build upon this knowledge during the patent term by creating additional innovations and improvements.

The incentive to disclose an invention in one's patent application is robust only when the ultimately-issued patent can be monetized in the marketplace. Absent the ability to commercialize and to profit from one's patented innovation, it is unlikely that inventions would be made publicly available. In other words, if the inventor knows that he will not be able to monetize his invention, he is less likely to disclose it in a patent application, and more likely to keep it as a trade secret or abandon it altogether. A prospect of monetization is what drives inventors or firms working in the innovation industries to continue creating inventions and applying for patents, as opposed to keeping them secret.

The range of means for monetizing patents is broad. Some inventors are able to monetize the invention by manufacturing the patented innovation, such as selling the product or service. Others sell their patented innovation to a third party that is either in a better position to manufacture the innovation, to license the innovation, or to use the patent's disclosure for creating additional innovation.[9] Regardless, consumer welfare is enhanced—consumers get access to new products or the information disclosed in the patent leads to new and improved products

and services. There is no reason to believe that one of these other approaches to monetizing the patent's value is unworthy of the law's respect.

With this understanding, we can turn to addressing the FTC's concerns about what it calls "patent assertion entities" (PAE). The FTC defines PAEs as entities that "purchas[e] patents from existing owners [] seeking to maximize revenues by licensing the intellectual property to (or litigating against) manufacturers who are already using the patented technology."[10]

It's clear, though, that PAEs serve two important functions. First, they allow inventors to monetize their inventions (and utilize profits for further inventive activities). This enhances the incentive to invent. Moreover, the PAE and all of its licensees acquire knowledge disclosed in the patent, allowing everyone to use that knowledge in creating further improvements to the state of the art. Second, by vigorously licensing or asserting their patent rights, the PAEs leverage the patent's function of providing an impetus for competitors to "design around," a competitive process made possible in part by the full disclosure in the patent of the valuable innovation. Indeed, the more robust the patent, and the more aggressively it is asserted, the more incentive there is to design around.

This means that, from the perspective of dynamic innovation and ultimate consumer welfare, it should not matter whether a patent is commercialized by the original inventor, by a licensee, or by a company that purchased the patent and either manufactures or further licenses the technology. Thus, the FTC's concern that PAEs reduce consumer welfare seems misplaced. Aggregation of patents by particular companies, whether they manufacture or license, may hurt some competitors in the short run, but in the long run it may well enhance consumer welfare by ensuring inventors are full incentivized to invent, by widely distributing knowledge contained in a publicly available patent, and by inducing competitors to out-innovate the patent owner.[11] In economic terms, static price-based competition may be temporarily forestalled by patents, but this does not mean that dynamic competition is absent and that consumers are not better off as a result.

None of this is to say that patent rights cannot be abused. A patent owner who knowingly attempts to enforce an invalid patent or a patent procured by fraud abuses his rights and is not—and should not—be immune from antitrust liability.[12] Neither should a patent owner who knowingly asserts a patent claim with respect to a product that he does not in good faith believe infringes. But antitrust liability should not arise merely because a patentee aggressively asserts valid patent rights in securing licenses or in suing infringers.

In summary, both antitrust law and patent law achieve the same overarching purpose – increased consumer welfare. Antitrust law does so by protecting competition, and patent law does so by promoting dynamic innovation along multiple dimensions. Accordingly, it must always be remembered that competition is not a static process of price wars over identical products sold in the marketplace. Rather, competition is a dynamic, multi-dimensional process, with companies competing over a variety of factors other than price. Thus, when faced with a situation where a patent owner is aggressively asserting its rights, the FTC should not be asking whether this is detrimental to *competition* over a specific product, but whether this is detrimental to *consumer welfare* in the broader innovation market made possible by the patent system. To fail to make this important distinction is to repeat the errors identified so well by Bork in the mistaken antitrust policy of the first half of the twentieth century.

ENDNOTES

1 *See* Gregory Dolin, *Reverse Settlements as Patent Invalidity Signals*, 24 HARV. J. L. & TECH. 281, 318 (2011) (observing that "courts and scholars have explicitly and repeatedly recognized, there is inherent and constant tension between antitrust law and patent law").

2 *See* Joshua D. Wright, *Antitrust, Multidimensional Competition, and Innovation: Do We Have an Antitrust-Relevant Theory of Competition*, in COMPETITION POLICY AND PATENT LAW UNDER UNCERTAINTY: REGULATING INNOVATION 228-251 (Geoffrey A. Manne & Joshua D. Wright eds., 2011).

3 *See, e.g.,* United States v. Arnold, Schwinn & Co., 388 U.S. 365 (1967).

4 *See, e.g.*, Leegin Creative Leather Products, Inc. v. PSKS, Inc., 127 S. Ct. 2705 (2007); Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Company, Inc., 127 S. Ct. 1069 (2007); State Oil Co. v. Khan, 522 U.S. 3 (1997); Brooke Group Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209 (1993).

5 U.S. CONSTITUTION, Article I, Section 8, Clause 8.

6 *See* Federal Trade Commission v. Watson Pharmaceuticals, Inc., 677 F.3d 1298 (11th Cir. 2012), *cert granted*, Federal Trade Commission v. Actavis, 133 S.Ct. 787 (U.S. Dec. 7, 2012) (No. 12-416).

7 *See* Jon Leibowitz, *Opening Remarks for Patent Assertion Entity Activities Workshop* (Dec. 10, 2012), http://www.ftc.gov/speeches/leibowitz/121210paeworkshop.pdf.

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11 On a related issue, see Cockburn, Iain M., Megan J. MacGarvie, and Elisabeth Müller. *Patent Thickets, Licensing and Innovative Performance,* 19 INDUSTRIAL AND CORPORATE CHANGE 899 (2010).

12 *See* Walker Process Equipment, Inc. v. Food Machinery & Chemical Corp., 382 U.S. 172 (1965).

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The Dangerous Adventurism of the United States Trade Representative:

Lifting The Ban Against Apple Products Unnecessarily Opens A Can Of Worms In Patent Law

Richard A. Epstein

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CENTER FOR THE PROTECTION OF INTELLECTUAL PROPERTY

The Dangerous Adventurism of the United States Trade Representative: *Lifting The Ban Against Apple Products Unnecessarily Opens A Can Of Worms In Patent Law*

RICHARD A. EPSTEIN

In ordinary times, the business of the International Trade Commission does not appear as the lead story in the *Wall Street Journal*, predicting massive changes in the high-stakes patent battles.[1] But these are not ordinary times, given the ongoing multi-front war between Apple and Samsung, in which each side has accused the other of serious acts of patent infringement. So when the International Trade Commission issued its order excluding Apple's still popular iPhone 4 and older versions of the iPad, the smart money predicted that the Obama Administration, acting through the United States Trade Representative, would for the first time in 25 years decide to overrule a decision of the ITC, which it pointedly did in a three page letter of August 3, 2012, signed by Ambassador Michael B. G. Froman and addressed to Irving A. Williamson, Chairman of the ITC, whose wings have definitely been clipped.[2]

Injunctions, Damages, or Something in Between

Properly understood, that letter should be regarded as a patent bombshell whose significance goes far beyond the individual case. The choice of remedy in patent disputes has been, at least since the much-cited 2006 Supreme Court decision in *eBay v. MercExchange*,[3] one of the central issues in patent law. In the academic literature there has been an extensive debate as to whether various forms of injunctive relief should be allowed as a matter of course, or whether the court should place great weight on so-called public interest factors that many modern patent lawyers claim should displace a remedy which under prior legal practice had been awarded largely "as a matter of course."

That last phrase is not intended to indicate that blanket injunctions should be awarded in any and all cases. Instead, by analogy to traditional equitable principles as applied in various other contexts, including ordinary nuisance cases, the basic principle is subject to some important qualifications that do not undermine the force of the basic rule. First, any patentee may forfeit in whole or in part the right to an injunction by improper conduct on his own part: taking undue delay with respect to enforcement could lead to a loss in some cases of injunctive relief. But the application of this doctrine is within the control of the patentee, who can preserve his rights by promptly asserting them, which means that this issue almost never comes into play with valuable patents that are consistently asserted. Second, traditional doctrine allows a court to delay the enforcement of an injunction to allow the infringer to fix his device, and perhaps even deny the injunction in those cases where a complex device contains many patented components, of which only one is in violation.

The 25-year gap between decisions allowing importation of infringing products makes it quite clear that this provision has never been read to invite the broad type of "facts and circumstances inquiry" that the Trade Representative invoked to decide whether to grant or deny injunctive relief.

The Magic of Section 337 in FRAND Cases

The decision of the Trade Representative did not point to any such complications in the case justifying a departure from the usual remedy of an injunction. Indeed the ITC order was not lightly entered into, for it was agreed by all commissioners that Apple had indeed infringed the Samsung patents in ways that would have resulted in extensive damage awards if the case had been tried in a federal court. The ITC does not have statutory powers to award damages, so the Commission thought, perhaps mistakenly, that it was bound to make an all-or-nothing choice: allow or exclude the importation of the infringing device. Under the applicable statutory provisions of Section 337 of the Tariff Act of 1930, the ITC is supposed to take into account a number of "public interest factors" that address "the effect of such [exclusion or order] upon the public health and welfare, competitive conditions in the United States economy, the

production of like or directly competitive articles in the United States, and United States consumers . . ."

The language in this section is quite broad on its face, and if it were applied in a literal fashion, the history of proceedings before the ITC should be replete with decisions that let infringing products into the United States. The words "public health and welfare" are in modern American English broad enough to allow foreign pharmaceuticals into the United States even if they infringe key pharmaceutical patents. Any mysterious reference to competitive principles would again seem to invite a wide-ranging inquiry that could easily turn this provision of the Tariff Act into an open sesame for infringing products. The 25-year gap between decisions allowing importation of infringing products makes it quite clear that this provision has never been read to invite the broad type of "facts and circumstances inquiry" that the Trade Representative invoked to decide whether to grant or deny injunctive relief.

Against this background, it is critical to note that the dispute in this case boiled down to the question of the scope of Samsung to license its key patent on fair, reasonable and nondiscriminatory, or FRAND terms, to all comers including Apple. In ordinary cases, no owner of property is required to license or sell its property to a competitor. But for hundreds of years, common carriers have by virtue of their monopoly power been under an obligation to take all passengers on fair and reasonable terms. The thumbnail sketch for this position runs as follows. The obligation to do business on these terms is an offset to the dangers of monopoly power. The prohibition against discrimination is intended to make sure that the common carrier does not duck its obligation by offering its products only at prices so high that it is confident that no passenger will pay them. The concern with nondiscrimination is intended to make sure that the firm does not play favorites among potential customers to whom it can supply the essential service at roughly identical cost.

The carryover of FRAND obligations to the patent space arises only in connection with what are termed "standard-essential patents," which are those patents that cover an invention that is incorporated in an industry standard that all parties must use in order to market and deploy their own products.[4] The FRAND obligation requires parties to enter into negotiations to make sure that all market participants have a fair shot, so that the owner of the essential patent cannot hold out against a potential user.

In dealing with this issue, the Trade Representative took the position that a White House Report from January 2013 dealing with standard-essential patents revealed the manifest risk of holdout that could take place in these contexts, and recommended a fact-specific inquiry be made into each dispute to determine whether the action of the patent holder was unreasonable under the circumstances.[5] The Trade Representative then extended his discretion further into this situation by insisting that "reverse holdouts" (i.e. those by a potential licensee) should be subject to a similar analysis.

[T]he frequency and severity of the holdout problem is in fact far less than asserted by the overwrought statements of those who advance this theory.

How the Trade Representative Overreaches

It would be foolish to respond to the position of the Trade Representative by saying that there is no holdout risk at stake whenever a party has monopoly power. But there is a vast disagreement over the proper institutional arrangements to deal with these FRAND obligations. The implicit subtext of the Trade Representative's Report is that holdout is a major risk in these settings that requires some heavy lifting to combat, not only before the ITC, but also in ordinary patent disputes. Just that position was taken by Commissioner Dean Pinkert in dissent below,[6] who relied on some recent work by the well-known Professors Mark Lemley of Stanford and Carl Shapiro of Berkeley, who have proposed major intervention in a form of "final offer baseball arbitration," whereby the arbitrator chooses between the royalty rates proposed by the two parties.[7]

The obvious point is that this baseball form of arbitration seems ill-suited to determine the complex set of terms that are normally found in any complex licensing agreement. Why propose something that no one has ever used in the voluntary market? But put that point aside, and address the prior question of whether any compulsory remedy is needed to deal with the asserted holdout problem at all. The issue is one to which I have some exposure because I have worked on this question as a legal consultant with Qualcomm. On the strength of that work, and other work of my own on the biomedical anticommons, coauthored with Bruce Kuhlik (now general counsel at Merck), I have concluded that the frequency and severity of the holdout problem is in fact far less than asserted by the overwrought

statements of those who advance this theory.[8] In work that I did with Scott Kieff and Dan Spulber, we reported that Qualcomm was a member of some 84 standard organizations and reported few if any problems in working through the details with any of them.[9] Indeed, apart from the citation of a few cases that dealt with tangential issues, there is nothing in the Lemley and Shapiro paper that indicates that this problem has serious dimensions.

The question then arises why this might be so, and the answer is a collection of factors, none of which is decisive but all of which are to some degree relevant. The process of standard-setting does not take place in a vacuum, but involves repeat play by individual firms, all of whom know that coordination is key to their mutual success. The common pattern of standard-setting involves having technical people coming up with a sound technical solution before worrying about who holds what patent position. Standard-setting organizations then require their participants to disclose patents that read onto the standard. These organizations typically revisit standards as circumstances and technology change, which creates a subtle threat for patentees that the standard may migrate away from their patented technology if the patentee's license terms become too risky. The threat of retaliation is real as well, and all parties know that if they hold up a standard they not only hurt their competitors but also themselves. The process may not look pretty, but in the hands of experienced professionals, the evidence is that it works well.

The choice in question here thus boils down to whether the low rate of voluntary failure justifies the introduction of an expensive and error-filled judicial process that gives all parties the incentive to posture before a public agency that has more business than it can possibly handle. It is on this matter critical to remember that all standards issues are not the same as this particularly nasty, high-stake dispute between two behemoths whose vital interests make this a highly atypical standard-setting dispute. Yet at no point in the Trade Representative's report is there any mention of how this mega-dispute might be an outlier. Indeed, without so much as a single reference to its own limited institutional role, the decision uses a short three-page document to set out a dogmatic position on issues on which there is, as I have argued elsewhere, good reason to be suspicious of the overwrought claims of the White House on a point that is, to say the least, fraught with political intrigue.[10]

Ironically, there was, moreover a way to write this opinion that could have narrowed the dispute and exposed for public deliberation a point that does require serious consideration. The thoughtful dissenting opinion of Commissioner Pinkert pointed the way. Commissioner Pinkert contended that the key factor weighing against granting Samsung an exclusion order is that Samsung in its FRAND negotiations demanded from Apple rights to use certain non standard-essential patents as part of the overall deal. In this view, the introduction of nonprice terms on nonstandard patents represents an abuse of the FRAND standard. Assume for the moment that this contention is indeed correct, and the magnitude of the problem is cut a hundred or a thousand fold. This particular objection is easy to police and companies will know that they cannot introduce collateral matters into their negotiations over standards, at which point the massive and pointless overkill of the Trade Representative's order is largely eliminated. No longer do we have to treat as gospel truth the highly dubious assertions about the behavior of key parties to standard-setting disputes.

The brave new world of discretionary remedies could easily backfire and undermine cooperative behavior by rewarding those who refuse to cooperate.

But is Pinkert correct? On the one side, it is possible to invoke a monopoly leverage theory similar to that used in some tie-in cases to block this extension. But those theories are themselves tricky to apply, and the counter argument could well be that the addition of new terms expands the bargaining space and thus increases the likelihood of an agreement. To answer that question to my mind requires some close attention to the actual and customary dynamics of these negotiations, which could easily vary across different standards. I would want to reserve judgment on a question this complex, and I think that the Trade Representative would have done everyone a great service if he had addressed the hard question. But what we have instead is a grand political overgeneralization that reflects a simple-minded and erroneous view of current practices.

The enormous technical advances in all these fields are not consistent with the claim that holdout problems have brought an industry to a standstill. The brave new world of discretionary remedies could easily backfire and undermine cooperative behavior by rewarding those who refuse to cooperate. If the critics of the current system focused on that one background fact, they might well be more diffident about pushing vast industries into uncharted territories on their regrettable overconfidence in their own untested judgments.

ENDNOTES

1 See Ian Sherr & Brett Kendall, Veto of Apple Ruling Likely to Upend Big Patent Battles, WALL ST. J., Aug. 5, 2013, http://online.wsj.com/article/SB10001424127887323420604578648272862276836.html.

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5 See U.S. Dep't of Justice & U.S. Patent & Trademark Office, Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments (Jan. 8, 2013), at http://www.uspto.gov/about/offices/ogc/Final_DOJ-PTO_Policy_Statement_on_FRAND_SEPs_1-8-13.pdf.

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