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**STRATEGIC BEHAVIORS AND COMPETITION
INTANGIBLES, INTELLECTUAL PROPERTY AND
INNOVATION**

OLUFUNMILAYO B. AREWA*

Abstract

Intangibles such as intellectual property rights are an increasingly important source of value for businesses today. This increasing importance has significance for the uses of intangibles by companies and the mechanisms and behaviors by which companies extract value from intangibles. The manners in which holders of intellectual property rights wield such rights can play an important role in shaping the effective functioning of intellectual property frameworks. Although intellectual property rights may serve as important tools of innovation, empirical evidence shows that in many industries intellectual property protection is not a primary means by which innovation is protected. Moreover, increasingly pervasive intellectual property portfolio management strategies are often combined today with broad grants of intellectual property rights. These factors may promote strategic uses of intangibles that are thought to be increasingly characteristic of business practice today. These factors may also permit and even encourage the holders of such rights to use them offensively as strategic weapons in a manner that may actually be a disincentive to diffusion and future innovation. Existing models of intellectual property rights focus to a large extent on assumptions about ex ante incentives for individual creators and inventors. Under the intangibles paradigm, new markets for new products and technologies have arisen that suggest a more complex picture of incentives with respect to intellectual property, some of which may challenge dominant assumptions. The operation of markets for technology and uses of intellectual property rights today also suggest that greater attention should be paid to the implications of the uses of intellectual

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property rights for markets, market competition and future innovation.

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INTRODUCTION

In the sleepy village of Santa Clara, there lived a very wealthy but very frightened giant named Intel. Intel was plagued by a fearsome band of evil trolls – patent trolls, to be exact – who wanted a glittering pot of gold in exchange for doing absolutely nothing. And they were very powerful because they said they owned the patent on some of the magic Intel used to become rich.¹

Intellectual property frameworks operate today in a business context in which intangibles such as intellectual property rights have become increasingly predominant.² How the value of such intangibles is extracted and intangibles used by businesses today have important implications for the operation of intellectual property frameworks. Narratives that are told today about the uses of intellectual property reflect in part the contested nature of how intellectual property frameworks should interface with this new intangibles-oriented world. Consequently, trolls might tell another version of the above fairy tale:

The companies Detkin [former Intel assistant general counsel] calls trolls relate a much different version of the fairy tale. In their story, Intel is a crafty colossus who stomped on their rights and brazenly stole the all-important magic that helped spin the semiconductor into gold. They're just getting a fair share for themselves and their clients and contend this is why the patent system is in place: to protect the small from manipulative mammoths like Intel.³

These divergent narratives have significant real world implications. Some of these implications are evident today in the patent arena in significant increases in patent infringement actions and licensing revenues from patents in recent years.⁴ Contested claims in relation to patents have thus become big business today: in 2001, conservative estimates indicated that the best-known lawyer in the

¹ Brenda Sandburg, *You May Not Have a Choice. Trolling for Dollars*, THE RECORDER, July 30, 2001, at <http://www.phonetel.com/pdfs/LWTrolls.pdf>.

² See generally Olufunmilayo B. Arewa, *Measuring and Representing the Knowledge Economy: Accounting for Economic Reality under the Intangibles Paradigm*, 54 BUFF. L. REV. 1 (2006) [hereinafter Arewa, *Knowledge Economy*] (discussing some implications of the knowledge economy and the shift to an intangibles paradigm).

³ Sandburg, *supra* note 1.

⁴ See *infra* notes ___ to ___ and accompanying text.

patent enforcement industry at garnered at least \$400 million in fees.⁵ The activities of so-called patent trolls have had broader impact in that many large companies also seek to tap into the power and revenues that can come from extracting value from intellectual property portfolios, particularly patents.⁶

Although certainly not new, extractive and strategic behaviors with respect to intellectual property may take on potentially different significance in the context of the intangibles paradigm. This Article considers some implications of the intangibles paradigm for business practices and the legal regimes that govern and mediate such practices. It focuses specifically on the types of strategic and other behaviors that are evident in the intangibles paradigm under which companies now operate. It also considers the effects of such behaviors for competition and focuses on the relationship between intangibles, intellectual property structures and innovation. Part I discusses the increasingly important role of intangibles in business and the global economy and the implications of the advent of this intangibles paradigm. Part I also considers the implications of the intangibles paradigm for the largely tangibles paradigm legal frameworks that are being adapted to intangibles paradigm business practices.⁷ Part II focuses on the implications of the intangibles paradigm for strategic behaviors, while Part III considers some broader implications of such strategic behaviors for competition.

I. INTANGIBLES AND INTELLECTUAL PROPERTY

A. *Intellectual Property and Business Practices: BlackBerry and Linux Technology*

The recent Research in Motion (RIM) patent settlement highlights some ways in which intellectual property disputes may unfold

⁵ Sandburg, *supra* note 1 (noting that lawyers in the field routinely charge contingency fees as high as 45 percent and suits settle for as much as \$50 million).

⁶ *Id.*; see *infra* notes ___ to ___ and accompanying text.

⁷ See Arewa, *Knowledge Economy*, *supra* note 2, at 54-66 (discussing of the use and functions of intangibles in intangibles paradigm business worldview and practice).

today.⁸ This settlement by RIM and subsequent stock market reactions to the settlement underscore the importance of intellectual property for company market values. On March 3, 2006, RIM, maker of the popular BlackBerry phone and email device (also referred to as the CrackBerry for its high addiction potential),⁹ announced a \$612.5 million settlement of a patent dispute with NTP, a patent holding company.¹⁰

Following the settlement announcement, RIM's stock price increased by close to 20% in both U.S. and Canadian stock markets.¹¹ This rise in stock price reflected an increase of \$2.3 billion in RIM market capitalization.¹² The RIM stock price increase on the Toronto Stock Exchange (TSX) was also the largest single day increase on the TSX since RIM and NTP announced a \$450 million settlement in March 2005 that was subsequently invalidated.¹³

NTP has been characterized as a patent troll,¹⁴ which is an entity

⁸ For further discussion of this case, see Olufunmilayo B. Arewa, *Intellectual Property and the Knowledge Economy: Intangibles and Legal Boundaries* ____ (2006) (manuscript on file with author) (hereinafter, "Arewa, *Legal Boundaries*").

⁹ 'CrackBerry' Addicts Fear Future, TORONTO STAR, Jan. 27, 2006 (noting that BlackBerry addictions have led the device to earn the nickname "CrackBerry").

¹⁰ Simon Avery & Barrie McKenna, *RIM, NTP Settle BlackBerry Patent War*, TORONTO GLOBE & MAIL, Mar 4, 2006 (noting end of more than four year legal battle with announcement of settlement on March 3, 2006); *RIM Statement on NTP Settlement*, WALL ST. J., Mar. 3, 2006 ("RIM has paid NTP \$612.5 million in full and final settlement of all claims against RIM, as well as for a perpetual, fully-paid up license going forward.").

¹¹ Sharda Prashad, *RIM Shares Soar on \$613 Million U.S. Settlement*, TORONTO STAR, Mar. 4, 2006 (noting increase of 19 percent on Nasdaq Stock Market following announcement of settlement); David Paddon, *RIM's Deal with NTP Sends Stock to Its Biggest Increase in Nearly a Year*, Canada.com, Mar. 7, 2006 (noting increase on Toronto Stock Exchange of 16 percent).

¹² Carlo Longino, *RIM, NTP Settle Their Differences – For \$612.5 Million*, Techdirt Corporate Intelligence, Mar. 3, 2006, at <http://news.techdirt.com/news/wireless/article/6499> (noting increase of \$2.3 billion in RIM capitalization following announcement of the settlement).

¹³ Paddon, *supra* note 11 (noting that the Toronto Stock Exchange (TSX) increase following announcement of the \$613 million settlement was the largest single day increase on the TSX since March 16, 2005, when RIM and NTP announced a \$450 million settlement that soon fell apart).

¹⁴ See Bruce Sewell, *Commentary: Troll Call*, WALL ST. J., Mar. 6, 2006 (noting that NTP is small patent holding company reputedly comprised of one inventor

that acquires patents that it does not intend to commercialize for the purpose of using such patents strategically for purposes such as extracting revenues from commercial products that might infringe on the patent troll's patents.¹⁵ NTP was able to obtain a settlement from RIM partly because of the possibility that it might be able to get an injunction that would shut down RIM's operations and require the estimated 4 million BlackBerry users to find alternative devices.¹⁶ The prospect of even a potential shut down in turn had a

and one patent lawyer that has no competitive product, is not in the business of making products, making it "one of a large number of companies known as patent trolls"); James Surowiecki, *BlackBerry Picking*, NEW YORKER, Dec. 26, 2005 and Jan. 2, 2006, at http://www.newyorker.com/printables/talk/051226ta_talk_surowiecki (noting that patent trolls thrive by suing other companies and that NTP never tried to build a real business around its patents and never licensed them to others).¹⁵ See "Patent Troll," Wikipedia, at http://en.wikipedia.org/wiki/Patent_troll ("Patent troll is a pejorative and controversial phrase coined by former Intel assistant general counsel Peter Detkin in 2001 to describe entities that broadly assert specious patents across an industry for the purpose of generating nuisance value settlements. Instead of actively developing a technology, a 'patent troll' would acquire or register a patent and pursue a strategy of looking for potential infringers and proposing license agreements to companies. Where the patent troll is unable to achieve a licensing agreement, it threatens, or enters, patent infringement litigation. To avoid litigation, companies often choose to settle by purchasing a license. Today, 'patent troll' is used to describe a number of businesses using similar patent strategies."); Joe Beyers, *Rise of the Patent Trolls*, C|Net News, Oct. 13, 2005, at http://news.com.com/Rise+of+the+patent+trolls/2010-1071_3-589296.html (discussing the rise of patent trolls as a new kind of business with a simple business model); Maggie Shiels, *Technology Industry Hits Out at 'Patent Trolls'*, BBC News, Jun. 6, 2004, at <http://news.bbc.co.uk/go/pr/fr/-/1/hi/business/3722509.stm> (discussing how businesses such as Intel and eBay see dealing with patent trolls as an "unfortunate cost of doing business"); Sandburg, *supra* note 1 (discussing the business of patent trolls).

¹⁶ Sandburg, *supra* note 1 ("Patent enforcers and their lawyers have used the simple, yet effective, power of financial threat to persuade companies to settle. [If a company goes to court and does not settle a case] there's no guarantee they'll win, and an injunction to stop a company from manufacturing an infringing product would create the financial equivalent of nuclear winter."); Mark Heinzl, *Crunch Time Approaches for the BlackBerry Crowd*, WALL ST. J., Mar. 3, 2006 (noting that the U.S. is home to 3 million of the world's 4.3 million BlackBerry users and that these users were anxiously awaiting word from Judge Spencer of the Eastern District of Virginia as to whether a ruling would be made that could shut down the BlackBerry wireless email system in the U.S.); Michelle Kessler, *High Court Refuses to Hear BlackBerry Maker Case*, USA TODAY, Jan. 23, 2006 (noting that the BlackBerry patent lawsuit could force RIM to "halt or alter the popular mobile e-mail service in the USA").

devastating impact on RIM's ability to recruit new BlackBerry users as well as its stock price.¹⁷

Although issues connected to strategic uses of patents are sometimes reduced to being a problem of the actions of patent trolls such as NTP,¹⁸ the uses of patents and intellectual property more generally today actually relate to broader societal and business forces.¹⁹ Such forces reflect the fact that a fundamental change in societal, economic and business models is occurring as part of the shift from a tangibles paradigm to an intangibles on in which intangibles have become a predominant source of value for many companies as well as in the broader economy more generally.²⁰

This changing business context is an important factor in assessing many behaviors that are evident in the current intellectual property arena. In addition, aggressive or strategic intellectual property behaviors are by no means limited to the realm of patent. The ongoing SCO-Linux dispute exemplifies aggressive behavior with respect to intangibles in the copyright arena. This dispute involves claims by The SCO Group with respect to open source Linux technology,²¹ which has been alleged by SCO to infringe upon Unix copyrights that may not actually even be owned by SCO.²² SCO's assertion of rights has involved its sending letters to more

¹⁷ See Russell Shaw, *Here's My Analysis of Why RIM Settled Rather than Fought*, BBHub, The BlackBerry Weblog, Mar. 3, 2006, at <http://www.bbhub.com/2006/03/03/heres-my-analysis-why-rim-settled-rather-than-fought/> (discussing the influence of the NTP case on RIM net subscriber additions and suggesting that the increase in RIM market capitalization more than compensated for the amount paid to NTP); Rich Tehrani, *Why BlackBerry Settled*, VoIP Blog, <http://www.bbhub.com/2006/03/03/heres-my-analysis-why-rim-settled-rather-than-fought/> (noting the effects of the NTP case on BlackBerry customer sales, which plunged as a result of the litigation).

¹⁸ Sewell, *supra* note 14, at ____.

¹⁹ Arewa, *Knowledge Economy*, *supra* note 2, at 31-40, 54-66 (discussing the broader societal and economic forces underlying the intangibles paradigm).

²⁰ Paul A. David, *The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox*, 80 AM. ECON. REV. 355, 356 (1990) (noting the emergence of a new "techno-economic regime based on computer and communications innovation" that is "supplanting the mature, ossified Fordist regime of mass production.")

²¹ The SCO Group ("SCO") bought its Unix business in 1995. See *infra* notes ____ to ____ and accompanying text.

²² See *infra* notes ____ to ____ and accompanying text.

than 1,500 companies in the United States and overseas demanding that these companies pay SCO licensing fees on account of their use of Linux.²³

SCO has effectively been able to expand its uncertain rights with respect to Unix copyrights by informal legal means,²⁴ despite the uncertainty of what these rights actually are, through successful use of marking behaviors evident in the licensing letters.²⁵ SCO's approach reflects the use of licensing and cease and desist letters as a means by which intellectual property rights may be expanded at times without recourse to formal legal proceedings, although the threat of such proceedings may be used.²⁶ SCO supplemented such activities with a series of lawsuits.²⁷ Although it is unclear whether SCO actually owns any copyrights with respect to Unix, some companies have acquiesced to SCO's assertions of rights with respect to Unix copyrights and have paid SCO licensing fees in spite of the fact that Novell, a major Linux supporter, claims ownership of the Unix copyrights.²⁸ SCO's activities, at least initially, enabled it to garner the licensing revenues that it sought, become profitable for the first time in its history and reap the benefits of a more than 700% increase in its stock price.²⁹

The fact that SCO targeted Linux users is significant as well, since companies may increasingly target end users for alleged instances of infringement.³⁰ Such allegations of infringement have the potential to have a chilling effect and for practical purposes, the

²³ See *infra* notes ___ to ___ and accompanying text.

²⁴ See *infra* notes ___ to ___ and accompanying text; Olufunmilayo B. Arewa, *Copyright on Catfish Row: Musical Borrowing, Porgy and Bess and Unfair Use*, 37 RUTGERS L. J. ___ (2006) (hereinafter, "Arewa, *Catfish Row*") (noting that licensing letters and cease and desist letters are major informal means by which intellectual property rights may effectively be expanded).

²⁵ See *infra* notes ___ to ___ and accompanying text.

²⁶ See Arewa, *Catfish Row*, *supra* note 24, at ___ (discussing ways in which copyright owners may expand the effective scope of their rights).

²⁷ See *infra* notes ___ to ___ and accompanying text.

²⁸ See *infra* notes ___ to ___ and accompanying text.

²⁹ See *infra* notes ___ to ___ and accompanying text.

³⁰ See Eben Moglen, *Questioning SCO: A Hard Look at Nebulous Claims 3* (July 24, 2003), Paper based on presentation given to the Open Source Development Lab's User Advisory Council in New York (making an analogy to a publishing house, which instead of suing an infringing publishing house, sues the purchasers of the allegedly infringing book), at www.osdl.org/docs/osdl_eben_moglen_position_paper.pdf.

consequences for the alleged infringer may be in some cases indistinguishable from instances of actual infringement.³¹ In the case of litigation involving business entities, many companies would rather settle such cases than take them to court.³² Other examples of similarly aggressive behavior with respect to intellectual property rights include the litigation tactics used by the Recording Industry Association of America (RIAA) against file sharers reflected in a series of thousands of lawsuits filed in 2003 to the present.³³ By November 2005, the RIAA had initiated more than 15,000 lawsuits.³⁴

B. *The Increasing Importance and Value of Intangibles*

The SCO-Linux and BlackBerry cases exemplify the types of strategic behaviors and tactics that are important pieces in today's standard business practice tool kit.³⁵ These cases also highlight current business approaches to uses of intangible resources such as intellectual property rights. Such business behaviors are closely associated with a societal and business context in which

³¹ Wendy J. Gordon, *Toward a Jurisprudence of Benefits: The Norms of Copyright and the Problem of Private Censorship*, 57 U. CHI. L. REV. 1009, 1030 fn. 78 (1990) (Review of PAUL GOLDSTEIN, *COPYRIGHT: PRINCIPLES, LAW AND PRACTICE* (1989)) ("At issue here, however, is the chilling effect on artists, and artists are not usually copyright experts. Thus, the fact that a work could be a *potential* infringement is as important in practical terms as *actual* infringement.").

³² Sandburg, *supra* note 1 ("Companies fear the expense of patent litigation – which can run as high as \$2 million per patent and often would rather settle with a patent enforcer than mount an expensive fight.").

³³ As of June 22, 2004, the RIAA had filed 2,047 "John Doe" lawsuits targeting groups of suspected copyright infringers. See Congressional Budget Office, *Copyright Issues in Digital Media* 19 (Aug. 2004), at <http://www.cbo.gov/ftpdocs/57xx/doc5738/08-09-Copyright.pdf> (hereinafter, "CBO"); see also Felix Oberholzer & Koleman Strumpf, *The Effect of File Sharing on Record Sales: An Empirical Analysis* 4 (June 2005), at http://www.unc.edu/~cigar/papers/FileSharing_June2005_final.pdf (finding in empirical study that "file sharing has only a limited effect on record sales").

³⁴ Electronic Frontier Foundation, *RIAA v. The People: Two Years Later 2*, at http://www.eff.org/IP/P2P/RIAAatTWO_FINAL.pdf (noting that the recording industry had sued over 15,000 people by November 2005).

³⁵ Rosemarie Ham Ziedonis, *Don't Fence Me In: Fragmented Markets for Technology and the Patent Acquisition Strategies of Firms*, 50 MGMT SCI. 804, 805 (2004) (noting that strategic uses of patents "may vary considerably even within an industry and are driven by both firm-specific and environmental factors.").

intangibles play an increasingly important role.³⁶ The role played by intangibles today is reflected in both business activities and strategies with respect to intangible resources, as well as changing business models that are often required to compete effectively in the intangibles paradigm era.³⁷

In the knowledge economy, technological innovations have had a transformative effect on business organizational structure and practice.³⁸ These innovations have drawn attention to the widening role of information and communication technologies (ICTs) in the context of businesses, the economy and the broader society as a whole.³⁹ Further, ICT technologies such as semiconductors,

³⁶ Arewa, *Knowledge Economy*, *supra* note 2, at 6-10 (discussing the increasing magnitude and economic importance of intangibles).

³⁷ JONATHAN LOW & PAM COHEN KALAFUT, INVISIBLE ADVANTAGE: HOW INTANGIBLES ARE DRIVING BUSINESS PERFORMANCE 26 (2002) (noting that the transition to an intangibles economy has “seriously and substantially ratched up the level and place of competition . . . [and] [t]his increase in the level of competition, in turn, has increased the strategic importance of intangibles.”).

³⁸ Adam B. Jaffe & Manuel Trajtenberg, *Introduction*, in ADAM B. JAFFE & MANUEL TRAJTENBERG, PATENTS, CITATIONS AND INNOVATIONS: A WINDOW ON THE KNOWLEDGE ECONOMY 1, 1 (2002) [hereinafter, JAFFE & TRAJTENBERG] (discussing the transition to the knowledge economy as involving a shift in key economic assets that drive long term performance from tangible assets to knowledge); GORDON MOORE & KEVIN DAVIS, LEARNING THE SILICON VALLEY WAY 2 (Stanford Institute for Economic Policy Research, SIEPR Discussion Paper No. 00-45, 2001) (noting that a central element of Silicon Valley history is transformations of businesses and business organizations to take advantage of significant technological opportunities), at <http://siepr.stanford.edu/papers/pdf/00-45.html>; see LAWRENCE LESSIG, FREE CULTURE: HOW BIG MEDIA USES TECHNOLOGY AND THE LAW TO LOCK DOWN CULTURE AND CONTROL CREATIVITY (2004); see also The European Commission, *ICT Investment in the Intangible Economy*, at <http://www.ll-a.fr/eu-epsilon/resources/ict/home.htm>; W. Michael Cox & Richard Alm, *The New Paradigm*, FEDERAL RESERVE BANK OF DALLAS 1999 ANNUAL REPORT (1999), at <http://www.dallasfed.org/fed/annual/1999p/ar99.pdf>.

³⁹ See The European Commission, *supra* note 38, §2.2; Stephen D. Oliner & Daniel E. Sichel, *The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?*, 14 J. ECON. PERSPECTIVES 3, 21 (2000) (commenting that information technology accounted for some two-thirds of increase in labor productivity growth between first half and second half of 1990s); Dale W. Jorgenson, *Information Technology and the U.S. Economy* 3 (Jan. 6, 2001), Presidential Address to the American Economic Association, New Orleans, Louisiana (noting that information technology producing industries source of most of aggregate productivity growth in 1990s).

computers, cellular telephones and the Internet have profoundly influenced economic growth and the ways in which businesses operate, as well as aspects of the day-to-day lives of users of such technologies.⁴⁰

Intangibles include intellectual property rights, information technology, research and development, business methods, brand equity, corporate culture, stockholder relations, access to markets, knowledgeable workers and management and human resources.⁴¹ In addition to increased use of intangibles in the production of goods and services,⁴² an expansion has also occurred in the consumption of intangible goods and services such as digital products, services and entertainment.⁴³ ICTs represent an important part of this increasingly intangibles-centered environment because ICTs are typically characterized by a high level of intangible inputs such as knowledge and may involve the creation of products that are themselves also intangible.⁴⁴

The technological changes that have taken place since the Second World War may or may not be commensurable in magnitude with periods of rapid technological change in the past.⁴⁵ Further,

⁴⁰ See *infra* notes ___ to ___ and accompanying text.

⁴¹ Kenneth L. Kraemer & Jason Dedrick, *Strategic Use of the Internet and E-Commerce: Cisco Systems*, 11 J. STRAT. INFO. SYS. 5, 5 (2002) (describing types of intangibles); Michael G. Harvey & Robert F. Lusch, *Balancing the Intellectual Capital Books: Intangible Liabilities*, 17 EUR. MGMT J. 85, 85 (1999) (describing types of intangible assets and liabilities).

⁴² See OVE GRANSTRAND, *THE ECONOMICS AND MANAGEMENT OF INTELLECTUAL PROPERTY: TOWARDS INTELLECTUAL CAPITALISM 2-10* (1999) (discussing some implications of the transition to a more knowledge-based society and the rising value of intellectual property).

⁴³ See Charles Goldfinger, *Understanding and Measuring the Intangible Economy: Some Suggestions for Further Research* 4 (Aug. 1, 1997), CIRET Seminar, Helsinki, at <http://www.gefma.com/Francais/Present-fr/Intangibles%20research%20CIRET.doc> (noting consumption of nonphysical goods).

⁴⁴ *Id.*

⁴⁵ See, e.g., DANIEL E. SICHEL, *THE COMPUTER REVOLUTION: AN ECONOMIC PERSPECTIVE* 113-133 (1997) (finding continuity between the computer revolution and past technological changes); TOM STANDAGE, *THE VICTORIAN INTERNET* (1999) (discussing some changes that accompanied the introduction of the telegraph (the “Victorian Internet”) in the nineteenth century); ROBERT J. GORDON, *INTERPRETING THE “ONE BIG WAVE” IN U.S. LONG-TERM PRODUCTIVITY GROWTH* 33-37 (Nat’l Bureau of Econ. Research, Working Paper No. 7752, 2000), at <http://www.nber.org/papers/w7752> (describing the timing of

although earlier economies also relied on knowledge, the application of science to economic ends has been identified as a distinguishing characteristic of modern economic growth.⁴⁶ Consequently, a number of important ICT-derived products and services have been introduced in the last several decades.⁴⁷

great inventions in considering how to explain the big wave in U.S. long-term productivity growth between 1891 and 1972); ROBERT J. GORDON, MONETARY POLICY IN THE AGE OF INFORMATION (IMES Discussion Paper Series No. 99-E-12, 1998) (arguing that current technological changes do not compare in quantitative importance with great inventions of late nineteenth and early twentieth centuries), at <http://www.imes.boj.or.jp/edps99/99-E-12.pdf>; David, *supra* note 20, at 355 (looking at the modern productivity paradox in light of the experience with the diffusion of the dynamo); Joel Mokyr, *Punctuated Equilibria and Technological Progress*, 80 AM. EC. REV. 350, 351-52 (1990) (discussing nature of technological change and innovation as involving a pattern of “periods of long stagnation or very slow change, punctuated by sudden outbursts like the Industrial Revolution.”).

⁴⁶ ASHISH ARORA ET AL., MARKETS FOR TECHNOLOGY: THE ECONOMICS OF INNOVATION AND CORPORATE STRATEGY 1 (2001) (“It is now a commonplace that we live in a knowledge economy. Like all clichés, this one is also wrong insofar as it suggests that earlier economies did not rely upon knowledge . . . the distinguishing characteristic of modern economic growth has been the systematic application of science to economic ends. Understanding how scientific and technological knowledge is produced and applied to economic goals is the key to understanding the process of modern economic growth.”).

⁴⁷ See The European Commission, *supra* note 38; Alessandra Colecchia & Paul Schreyer, *ICT Investment and Economic Growth in the 1990s: Is the United States a Unique Case?* (Oct. 25, 2001), Organisation for Economic Co-operation and Development (hereinafter, “OECD”), Directorate for Science, Technology and Industry, at [http://www.oecd.org/olis/2001doc.nsf/LinkTo/DSTI-DOC\(2001\)7](http://www.oecd.org/olis/2001doc.nsf/LinkTo/DSTI-DOC(2001)7) (discussing comparative study of ICT investment and economic growth in 9 OECD countries), OECD, Directorate for Science, Technology and Industry, *Industrial Performance and Competitiveness in an Era of Globalisation and Technological Change* (June 9, 1998), DSTI/IND(97)23/FINAL, at <http://www.oecd.org/dataoecd/11/15/2090669.pdf>; H.P. van der Wiel, *Does ICT Boost Dutch Productivity Growth* (December 2001), CPT Document No. 016 (studying ICT and Dutch productivity growth), at <http://www.cpb.nl/nl/pub/document/16/doc16.pdf>; Gilbert Cette, Jacques Mairesse, & Yusuf Kocoglu, *Dissemination of Information and Communication Technologies and Economic Growth – The Case of France over the Long Term Period (1980-2000)* (Nov. 2, 2001), at http://www.insee.fr/en/nom_def_met/colloques/acn/colloque_9/cette_gb.pdf (examining the affect of ICT dissemination on GDP and labor productivity growth in France in the 1980s and 1990s); COMMISSION ON INTELLECTUAL PROPERTY RIGHTS, INTEGRATING INTELLECTUAL PROPERTY RIGHTS AND DEVELOPMENT POLICY 12 (Sept. 2002), at

One consequence of the intangibles paradigm has been an increasing mismatch between tangibles paradigm-derived rules and systems intended to govern business behavior and the realities of intangibles paradigm business behaviors and practices.⁴⁸ Much has been written in recent years about the legal concerns that the intangibles paradigm has introduced with respect to intellectual property and other laws,⁴⁹ including bankruptcy law, for example.⁵⁰ Similarly, in the field of accounting, an ongoing discussion is occurring about the failure of existing accounting rules to adequately disclose the true economic value and risks of intangibles.⁵¹ Although the legal implications of this shift to the intangibles paradigm have been considered with respect to the behavior of consumers,⁵² less attention has been paid to the

http://www.iprcommission.org/graphic/documents/final_report.htm (discussing patent filings by developing countries).

⁴⁸ Arewa, *Knowledge Economy*, *supra* note 2, at 3, 29-31.

⁴⁹ Various scholars have focused their attention on a number of problematic areas in intellectual property law, devoting attention, for example, to examining the perceived increased scope of control and commercialization of intellectual property rights as well as the apparent breakdown in application of some aspects of intellectual property regulation, particularly in the copyright area. *See e.g.*, LESSIG, *supra* note 38; LAWRENCE LESSIG, *THE FUTURE OF IDEAS* (2001); LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* (1999) (hereinafter, "LESSIG, CODE"); STUART BIEGEL, *BEYOND OUR CONTROL? CONFRONTING THE LIMITS OF OUR LEGAL SYSTEM IN THE AGE OF CYBERSPACE* (2001); SIVA VAIDHYANATHAN, *COPYRIGHTS AND COPYWRONGS: THE RISE OF INTELLECTUAL PROPERTY AND HOW IT THREATENS CREATIVITY* (2001); JAMES BOYLE, *SHAMANS, SOFTWARE, & SPLEENS: LAW AND THE CONSTRUCTION OF THE INFORMATION SOCIETY* (1996); JESSICA LITMAN, *DIGITAL COPYRIGHT* (2001).

⁵⁰ *See, e.g.*, Marjorie Chertok & Warren E. Agin, *Restart.com: Identifying, Structuring and Maximizing the Liquidation Value of Cyber-Assets in Bankruptcy Proceedings*, 8 AM. BANKR. INST. L. REV. 255, 255-56 (2000) (discussing problems in bankruptcy for Internet companies because of the predominance of intangible assets as compared with old economy companies in which tangible assets predominate) Arewa, *Knowledge Economy*, *supra* note 2, at 2, 19-22, 92-101 (discussing the implications of the intangibles paradigm for accounting regimes and securities law frameworks).

⁵¹ *See generally* BARUCH LEV, *INTANGIBLES* (2001) (giving an overview of the issues that intangibles present for accounting and related areas).

⁵² The peer-to-peer file sharing phenomenon is one example of consumer behavior that has received widespread attention. *See, e.g.*, *Metro-Goldwyn-Mayer Studios Inc. v. Grokster Ltd.*, 125 S. Ct. 2764, 2770 (2005) (holding in peer-to-peer file sharing case that "one who distributes a device with the object of promoting its use to infringe copyright, as shown by clear expression or other

specific ways in which this shift has influenced business structure and practice.

Discussions relating to intangibles are by no means limited to the fields of law and accounting. National income and statistics officials, for example, are likewise grappling with how to ensure that statistics relating to intangibles and ICTs are appropriately included in national income figures, upon which critical economic measures such as gross domestic product (GDP) and inflation are based. An extensive literature thus exists concerning measurement of the effects of ICT-related activities.⁵³

affirmative steps taken to foster infringement, is liable for the resulting acts of infringement by third parties.”); *A&M Records et al. v. Napster, Inc.*, 284 F.3d 1091, 1095–98 (9th Cir. 2002) (describing how Napster’s peer-to-peer file sharing service conducts searches and attempts to filter out copyrighted works); CBO, *supra* note 33, at 17–20 (noting the dramatic increase in peer-to-peer file sharing, and describing how peer-to-peer networks function); Yochai Benkler, *Coase’s Penguin, or, Linux and The Nature of the Firm*, 112 YALE L.J. 369 (2002) (outlining the information gains of peer production); Joseph A. Sifferd, *The Peer-to-Peer Revolution: A Post-Napster Analysis of the Rapidly Developing File-Sharing Technology*, 4 VAND. J. ENT. L. & PRAC. 92, 93 (2002) (analyzing the applicability of copyright law to peer-to-peer file sharing technologies); Jane C. Ginsburg, *Copyright and Control Over New Technologies of Dissemination*, 101 COLUM. L. REV. 1613, 1625–26, 1631–47 (2001) (noting differences between internet copyright infringement and earlier copyright infringement technology); Oberholzer & Strumpf, *supra* note 33, at 4 (concluding through empirical analysis that file sharing has an effect on music sales that is statistically indistinguishable from zero).

⁵³ See e.g., Charles Goldfinger, *Intangible Economy and its Implications for Statistics and Statisticians*, 65 INT’L STAT. REV. 191, 198 (1997) (“More generally, economists have difficulties coming to grips with the polymorphic and ubiquitous nature of information, simultaneously a good, a production asset and a market attribute.”); K. Atroscopic, John Gates & Ron Jarmin, *Measuring the Electronic Economy: Current Status and Next Steps*, U.S. Census Bureau (June 2000), at <http://www.census.gov/eos/www/papers/3.pdf> (discussing establishment of principles to identify information critical to measuring the electronic economy); Bart van Ark, *Understanding Productivity and Income Gaps in the OECD Area: Are ICT and Intangibles the Missing Link*, Groningen Growth and Development Centre and the Conference Board (March 2002) (discussing the extent to which ICT and intangibles may explain gaps in labor and productivity national income statistics), at <http://www.eco.rug.nl/ccso/quarterly/2002q1.html#2002q1-4>; The European Commission, *supra* note 38, § 3.5 (noting that modern growth school economists now believe that inflation may be overstated by as much as 2-3% in countries with a high concentration of technology and that all measures of

C. *Tangibles Paradigm Rules and Intangibles Paradigm Practices: Creating Avenues for Strategic Behaviors*

1. The Boundaries of Intangible Knowledge

Current dialogue about intangibles in accounting has highlighted the risks and uncertainty often associated with intangibles.⁵⁴ The current dialogue in accounting on one level reflects questions and concerns about intangibles that are not new.⁵⁵ Discussions about intangibles in law tend, not surprisingly, to focus on the establishment of legal boundaries around intangible knowledge,⁵⁶ as well as the distinction between intellectual property and other types of property.⁵⁷ The intangibles paradigm has significantly influenced this boundary fixing process by virtue of the fact that intellectual property rights are increasingly being attached to products that are also intangible.⁵⁸ This increasing level of intangibility of products adds yet another layer of intangibility to an intellectual property right and knowledge underlying such right, both of which are already intangible.⁵⁹

Questions surrounding the bounding of intangible knowledge for

profitability and return on capital are biased because of the failure to take account of intangible investment).

⁵⁴ Arewa, *Knowledge Economy*, *supra* note 2, at 13-31.

⁵⁵ *Id.* at 67.

⁵⁶ Arewa, *Legal Boundaries*, *supra* note 8, at ____; David Lange, *Reimagining the Public Domain*, 66 *LAW & CONTEMP. PROBS.*, Spring 2003, at 463, 467 (noting that defining the boundaries of the property interest in an intangible is a central problem in intellectual property) (hereinafter, “Lange, Reimagining”); David Lange, *Recognizing the Public Domain*, 44 *LAW & CONTEMP. PROBS.*, Autumn 1981, at 147, 147 (“the subject matter of intellectual property is unlike the subject matter of more conventional forms of property which have in common an underlying attribute of tangibility and are in consequence susceptible to some form of sensory perception.”) (hereinafter, “Lange, Recognizing”).

⁵⁷ I. Trotter Hardy, *Not So Different: Tangible, Intangible, Digital, and Analog Works and their Comparison For Copyright Purposes*, 26 *DAYTON L. REV.* 211, ____ (2001) (noting that intellectual property is no different than tangible property); Frank Easterbrook, *Intellectual Property Is Still Property*, 13 *HARV. J.L. & PUB. POL’Y* 108, ____ (1990) (arguing that intellectual property should be treated like tangible property).

⁵⁸ Arewa, *Legal Boundaries*, *supra* note 8, at ____.

⁵⁹ See Arewa, *Legal Boundaries*, *supra* note 8, at ____ (discussing the constitution of intellectual property as consisting of a “double intangible”).

legal purposes are not new and were a key feature of earlier eighteenth and nineteenth century debates about intellectual property in Britain.⁶⁰ In the more than a century since adoption of modern intellectual property systems,⁶¹ these questions about boundaries continue to be relevant and at times disputed. Questions relating to boundaries are evident in a number of intellectual property arenas. For example, a recurrent debate is evident that is manifested at times in a consistent need to return to fundamentals, particularly in the copyright area.⁶² In the patent arena, questions about inherency, for example, relate to the effective legal boundaries of patent claims.⁶³ Such questions of patent claim boundaries can be particularly magnified in instances such as the BlackBerry case, where many core NTP patent claims were based on continuation applications filed by NTP during the patent prosecution process.⁶⁴

⁶⁰ BRAD SHERMAN & LIONEL BENTLY, *THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW* 59 (1999) (assessing the development of the modern intellectual property system in nineteenth century Britain and seeing the history of intellectual property as “one of the law attempting to contain and restrict the intangible – to capture the phantom – only to find that the object of representation reconfigures itself in a new medium: the latest example being in relation to digital works.”).

⁶¹ SHERMAN & BENTLY, *supra* note 60, at 129 (noting that modern forms of intellectual property became recognizable by the 1850s).

⁶² Boyle, *supra* note 49, at 19 (“It is that in copyright law—to a greater extent than in most other fields of legal doctrine—there is a routine and acknowledged breakdown of the simplifying assumptions of the discourse, so that mundane issues force lawyers, judges and policymakers to return to first principles.”).

⁶³ See Dan L. Burk & Mark A. Lemley, *Inherency*, 47 WM & MARY L. REV. 371, 372 (2005) (discussing questions of inherency generally with respect to patents, noting that unknown attributes that are “unappreciated or unidentified in a patent description, but which are nonetheless present” are referred to as “inherent” in the product or process).

⁶⁴ See Arewa, *Legal Boundaries*, *supra* note 8, at ___; Burk & Lemley, *supra* note 63, at 390 (noting that disclosure cases raising inherency questions tend to arise when patentees file continuation applications during prosecution); THE FEDERAL TRADE COMMISSION, *TO PROMOTE COMPETITION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY* 16 (Oct. 2003) [hereinafter, *FTC REPORT*], available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf> (“[S]ome [patent] applicants keep continuing applications pending for extended periods, monitor developments in the relevant market, and then modify their claims to ensnare competitors’ products after those competitors have sunk significant costs in their products.”).

2. Boundaries and Intangible Products and Services

The shift in business paradigms from a manufacturing based economy to one where intangibles play a dominant role has laid bare fault lines in legal categories and principles.⁶⁵ Intellectual property law as conceived and implemented in its modern form in the nineteenth century, as well as in earlier discussions about such issues,⁶⁶ developed in the context of products that for the most part had a physical embodiment (e.g., books and manufactured goods), rather than intangibles such as digital goods.⁶⁷ The shift to the intangibles paradigm has made the legal boundary fixing process significantly more difficult in a number of important respects.⁶⁸

The intangibles paradigm thus at times exposes a mismatch between intangibles paradigm business practices and legal and other rules that were crafted under a tangibles paradigm.⁶⁹ As a result, the intangibles paradigm may also reveal and perhaps reinforce deep contradictions in the nature of intellectual property rights grants themselves: patents and copyrights are often characterized grants of monopoly rights intended to spur innovation and creation.⁷⁰ As is true in other contexts, grants of

⁶⁵ See N. Stephan Kinsella, *Against Intellectual Property*, 15 J. LIBERTARIAN STUDIES 1, 2 (2001) (noting that matters become fuzzier in movement from tangible or corporeal toward the intangible); STEPHEN A. MERRILL, RICHARD C. LEVIN & MARK B. MYERS, EDs., A PATENT SYSTEM FOR THE 21ST CENTURY, NATIONAL RESEARCH COUNCIL OF THE NATIONAL ACADEMY OF SCIENCES 1 (2004), available at <http://www.nap.edu/html/patentsystem/0309089107.pdf> [hereinafter, NATIONAL ACADEMY OF SCIENCES REPORT] (“both economic and legal changes are putting new strains on the [patent] system.”).

⁶⁶ SHERMAN & BENTLY, *supra* note 60, at ___; William W. Fisher III, *The Growth of Intellectual Property: A History of the Ownership of Ideas in the United States* at <http://www.law.harvard.edu/faculty/ffisher/iphistory.html>.

⁶⁷ Jessica Litman, *Innovation and the Information Environment: Revising Copyright Law for the Information Age*, 75 OR L. REV. 19, ___ (1996) (noting that copyright law originally extended to printed media only); COMMITTEE FOR ECONOMIC DEVELOPMENT, PROMOTING INNOVATION AND ECONOMIC GROWTH 4 (2004), at http://www.ced.org/docs/report/report_dcc.pdf (“legal rules and many business models have been developed over the years based on the production and distribution of physical objects rather than intangible goods.”).

⁶⁸ Arewa, *Legal Boundaries*, *supra* note 8, at ___.

⁶⁹ *Id.* at ___.

⁷⁰ Edmund W. Kitch, *Elementary and Persistent Errors in the Economic Analysis of Intellectual Property*, 53 VAND. L. REV. 1727, 1730 (2000) (noting that analyses of intellectual property typically characterize intellectual property

rights with market power may have significant implications for efficiency in the form of deadweight loss and behavior in the ways in which those with market power may exercise such power.⁷¹ In the intellectual property realm, such behaviors can have an impact on competition to the extent that holders of such rights exercise their power in anticompetitive ways.⁷² In the intangibles paradigm, for example, such activities are reflected in a number of contexts.⁷³ Although such behaviors are by no means a novelty in the intangibles paradigm,⁷⁴ the implications of such behaviors may take on a different and even magnified significance by virtue of the at times amorphous and indeterminate nature of intangibles themselves.⁷⁵

as granting monopoly power, but that such characterizations are incorrect in that intellectual property rights rarely confer monopoly power).

⁷¹ SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES 37 (2004)

(“Deadweight loss is the main defect of intellectual property as an incentive mechanism. . . [which] can be mitigated, and possibly eliminated, if the monopolist can discriminate on price”); Michele Boldrin & David Levine, *The Case Against Intellectual Property*, 92 AM. ECON. REV. 209, 209 (2002) (noting that intellectual property has come to mean not only the right to own and sell ideas, but also the right to regulate their use, which creates a socially inefficient monopoly that is economically dangerous); Julie Cohen, *Copyright and the Perfect Curve*, 53 VAND. L. REV. 1799, ____ (2000) (discussing deadweight loss); WILLIAM G. SHEPHERD, THE ECONOMICS OF INDUSTRIAL ORGANIZATION 258-59 (4th ed. 1997) (discussing the general factors that tend to breed monopoly behavior); Fritz Machlup, An Economic Review of the Patent System, Study No. 15 of The United States Subcommittee on Patent, Trademarks and Copyrights 10-12 (1958), available at <http://www.mises.org/etexts/patentsystem.pdf>

(discussing ways in which the patent monopoly might be abused).

⁷² Michael J. Meurer, *Controlling Opportunistic and Anti-Competitive Intellectual Property Litigation*, 44 B.C. L. REV. 509, 509-10 (2003)

(“Intellectual property (IP) law effectively stimulates the creation and distribution of information and information-rich products that are vital to economic growth and well-being. Unfortunately, it also promotes harmful rent-seeking by owners of IP rights who undertake opportunistic and anti-competitive lawsuits. Some IP owners value their property rights chiefly as ‘tickets’ into court that give them a credible threat to sue vulnerable IP users. Socially harmful IP litigation is common because the rights are easy to get and potentially apply quite broadly, and the problem is growing worse because of the expansion of the scope and strength of IP law.”) (citations omitted).

⁷³ See *infra* notes ____ to ____ and accompanying text.

⁷⁴ See *infra* notes ____ to ____ and accompanying text.

⁷⁵ Arewa, *Legal Boundaries*, *supra* note 8, at ____.

3. Strategic Uses and Intangible Value

The mismatch between tangibles paradigm frameworks and the business and economic reality of the intangibles paradigm is evident in a number of areas. In the patent area, for example, discussions about patent trolls, the quality of patents and whether software patents should be issued, for example, are at least in part a question of what types of patents should be issued in an increasingly intangibles dominated economic and business landscape. In addition to increasing questions about the quality of intellectual property grants, particularly in the patent area,⁷⁶ the ways in which holders of intellectual property rights actually exercise such rights is also of concern.⁷⁷ The exercise of intellectual property rights by their holders is intimately linked to the intangibles paradigm partially as a result of the increased value that is often attributed by intangibles by markets and business practices that have become characteristic under the intangibles paradigm:⁷⁸

Patented technology is increasingly perceived as having more strategic importance than previously as reflected in the creation of intellectual property practices by nearly all large consulting firms, the emergence of specialized firms that analyze clients' patent holdings and counsel them on using patent portfolios to obtain licensing revenue, the advent of venture-backed firms that purchase unexploited patents and assert them, the use of patent information to pinpoint strategic trends and stock

⁷⁶ Alan Murray, *War on "Patent Trolls" May Be the Wrong Battle*, WALL ST. J., Mar. 23, 2006 (noting that most universities might fall within current descriptions of patent trolls and that the key question is the quality of patents granted); SCOTCHMER, *supra* note 71, at 75 (noting that the PTO and courts expanded patentable matter in the 1990s to include computer software, which then became controversial because they were perceived as "low-quality patents" and defining low quality patents as referring to "the PTO's failure to screen out applications that do not meet the requirements for patentability, especially as to prior art."); BRONWYN H. HALL, BUSINESS METHOD PATENTS, INNOVATION AND POLICY 13-15 (Institute of Bus. & Econ. Res., Dept. of Econ., U. Cal. Berkeley, Paper No. E03-331, 2003), at <http://repositories.cdlib.org/iber/econ/E03-331> (noting that a high quality patent is one whose scope is clear and where there is relative little uncertainty about the breadth of claims and that business method and software patent tend to be of low quality); FTC REPORT, *supra* note 64, at 5 ("A poor quality or questionable patent is one that is likely invalid or contains claims that are likely overly broad.")

⁷⁷ See *infra* notes ___ to ___ and accompanying text.

⁷⁸ Arewa, *Knowledge Economy*, *supra* note 2, at 38-46.

investment opportunities, and the appearance of business management commentary on the importance of a firm's identifying lucrative licensing prospects among its latent patents.⁷⁹

Companies can thus gain market value and achieve other strategic goals by using intangibles such as intellectual property rights in particular ways.⁸⁰ Intangibles generally raise at times new questions in often new contexts of usage but can also cause old questions to be recast by virtue of such new contexts of usage. These new contexts of usage may also reflect strategic uses of intangibles such as intellectual property. Such strategic behaviors may raise issues with respect to both innovation and competition. Consequently, the uses of rights granted by intellectual property structures can take on new significance and power as holders of intellectual property rights take advantage of the power and value of intangibles by wielding them to meet strategic goals and objectives. The use of injunctions in the patent context,⁸¹ for

⁷⁹ NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 65, at 31 (citations omitted).

⁸⁰ Arewa, *Knowledge Economy*, *supra* note 2, at 31-66.

⁸¹ See 35 U.S.C. § 283 (2006) ("The several courts having jurisdiction of cases under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable."); *eBay Inc. v. MercExchange, L.L.C.*, 126 S. Ct. 1837, 2006 U.S. LEXIS 3872, at *4-6 (2006) (reversing a CAFC holding that as a "general rule that courts will issue permanent injunctions against patent infringement absent exceptional circumstances" and holding that familiar equity principles and the traditional four factor test apply to patent infringement actions since nothing in the Patent Act indicated that Congress intended a departure from traditional equity practices); *Intel Corp. v. ULSI Sys. Technology*, 995 F.2d 1566, 1568 (Fed. Cir. 1993) ("The issuance of a preliminary injunction under 35 U.S.C. § 283 is a matter of discretion for a district court. We have cautioned, however, that a preliminary injunction is a drastic and extraordinary remedy that is not to be routinely granted"); *GenDerm Corp. v. Ferndale Labs, Inc.*, 32 U.S.P.Q.2d 1567 at *8 (E.D. Mich. 1994) (discussing the four factors by which a court determines whether to issue an injunction in a patent action); *High Tech Medical Instrumentation v. New Image Indus.*, 49 F.3d 1551, 1555 (Fed. Cir. 1995) ("We conclude that the district court committed legal errors in the course of disposing of two of the issues before it: HTMI's likelihood of success on the merits of its infringement claim, and HTMI's claim that it will suffer irreparable harm if it is denied injunctive relief pending trial."); Brief Amici Curiae of 52 Intellectual Property Professors in Support of the Petitioners, *eBay, Inc. and Half.com, Inc. v. MercExchange, L.L.C.*, (No. 05-130) (discussing problems with the CAFC mandatory injunction standard) (hereinafter, "eBay IP Professor Brief").

example, may have different implications in an intangibles dominated world where some argue that patent quality has significantly decreased.⁸² With such decreasing patent quality, the use of existing tools such as injunctions can represent a powerful weapon in the hands of patent holders.⁸³ In addition, intellectual property grants connected to intangibles are potentially quite malleable, giving holders of such grants incentive to wield intellectual property rights to influence the effective scope of their rights.⁸⁴ Such actions by holders of intellectual property rights may have a significant value impact with respect to a company's stock market price, for example. Further, such increases in market capitalization have independent value to many companies today.⁸⁵

⁸² Murray, *supra* note 76; Surowiecki, *supra* note 14; ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, PATENTS AND INNOVATION: TRENDS AND POLICY CHALLENGES 8 (2004), at <http://www.oecd.org/dataoecd/48/12/24508541.pdf> (“This strengthening of patent systems in the European Union, Japan and the United States has, however, raised new concerns and exacerbated old ones. There have been numerous claims that patents of little novelty or excessive breadth have been granted, allowing their holders to extract undue rents from other inventors and from customers. This has been of particular concern in software, biotechnology and business methods, where patent offices and courts have had most difficulties in responding to rapid change, building up institutional expertise, evaluating prior art and determining correct standards for the breadth of granted patents.”), Shubha Ghosh, *Patents and the Regulatory State: Rethinking the Patent Bargain Metaphor After Eldred*, 19 BERKELEY TECH. L.J. 1315, 1378 (2004) (“[T]he fact that so few patents are actually commercialized indicates the low quality of granted patents and the ease with which patents can be obtained. If the PTO was performing effectively, relatively few patents would go unexploited. The agency's role is to grant patents to deserving inventions, ones that licensors would want to access. The lack of commercialization may be evidence that the agency is acting as an inefficient screen of patents.”) (citations omitted).

⁸³ See eBay IP Professor Brief, *supra* note 81, at 5-7 (discussing the connection between injunction power and abuse of the patent system through activities such as holdups); eBay v. MercExchange at *4-11 (discussing the legal standard for determining whether injunctions should be issued in patent infringement actions); Nicholas Varchaver, *eBay Gets the BlackBerry Treatment*, *Fortune*, Mar. 28, 2006, at http://money.cnn.com/2006/03/28/technology/eBay_fortune/index.htm (discussing the stakes involved in the *eBay v. MercExchange* case in relation to the rise of patent trolls and the use of injunctions in patent infringement actions).

⁸⁴ See Arewa, *Legal Boundaries*, *supra* note 8, at ____.

⁸⁵ Daniel C. Langevoort, *The Organizational Psychology of Hyper-Competition: Corporate Irresponsibility and the Lessons of Enron*, 70 GEO. WASH. L. REV. 968, 972 (2002) (“As Enron shows, a high stock price has an independent

The activities of so-called patent trolls highlight the strategic uses of intangibles such as patents and other intellectual property that have become increasingly of concern in recent years.⁸⁶ Such uses can be described as strategic in that they deploy intellectual property offensively as a strategic weapon for various purposes, including blocking competitive products or extraction of revenues or a settlement. These strategic uses contrast with uses of intellectual property as a defensive weapon to protect a creation or innovation that may also involve tactical behaviors with respect to intellectual property. Although this distinction shades into areas of grey at the extreme margins, distinguishable patterns of behavior have developed. Such patterns have significant implications for the operation of intellectual property frameworks, which are largely based on an assumption that intellectual property rights should be granted to incentivize acts of creation or invention.⁸⁷ Such incentive focused views of intellectual property rights at times tend to take less note of the potential uses of intellectual property in the process of establishing the boundaries and scope of intellectual property rights. They also do not always fully account for uses of intellectual property that have little or nothing to do with acts of creation or invention.⁸⁸

D. *Some Sociocultural and Behavioral Ramifications of Intellectual Property Rights Constructions*

1. The Changing Uses of Intellectual Property

An essential reorientation of societal and corporate asset bases

competitive purpose – it provides an acquisition currency and a source of collateral that can be used to facilitate substantial (often hidden) leveraging . . . Also, and perhaps more subtly, stock price is a metric by which to test the success of the control group currently in power in a firm with much hard-to-measure value, and hence goes deeply to their sense of identity.”)

⁸⁶ Timothy Aepfel, *Patent Dispute Embroils Host of Industries*, WALL ST. J., Oct. 21, 2004 (quoting attorney Jonathan Singer of Fish & Richardson PC stating that patent suits today reflect “the personal injury game” coming to the patent arena and that companies faced with “potentially costly litigation often decide it is cheaper to settle than fight in court”); Surowiecki, *supra* note 14 (noting that patents have “never been easier to get or more lucrative to hold,” which has led to a tripling of patent applications since 1980 and a quadrupling of patent grants, thus allowing patent holders to “rope off more and more of the economy, even though the quality of patents has been steadily declining”).

⁸⁷ See *infra* notes ___ to ___ and accompanying text.

⁸⁸ See *infra* notes ___ to ___ and accompanying text.

evident in the increasing magnitude and scope of intangible assets and resource has been a key aspect of the intangibles paradigm shift.⁸⁹ Concurrently with the intangibles paradigm shift, a widening scope of intellectual property protection has been increasingly evident since the 1980s.⁹⁰ The intangibles paradigm, together with this expansion in the range and intensity of intellectual property protection, has promoted increased strategic behaviors by businesses,⁹¹ which are reflected in part in behaviors that reflect an aggressive value-maximizing approach to the enforcement and use of property rights.⁹² Increases in patent litigation actions in recent years lend support this phenomenon in the patent context,⁹³ while aggressive intellectual property

⁸⁹ The European Commission, *supra* note 38, at §1 (discussing the shift in the asset base of companies and societies relating to intangibles); Arewa, *Knowledge Economy*, *supra* note 2, at 31-66 (noting that the shift to an intangibles paradigm is reflective of a shift in dominant business production and operation models to ones involving significant utilization of intangible inputs and production of goods and services that are themselves intangible).

⁹⁰ Richard B. Graves, *Private Rights, Public Uses, and the Failure of the Copyright Clause*, 80 NEB. L. REV. 64, 68 (2001) (noting the expanding scope of intellectual property protection and political influence of intellectual property industries); Bronwyn H. Hall & Rosemarie Ziedonis, *The Patent Paradox Revisited: An Empirical Study of the U.S. Semiconductor Industry, 1979-95*, 32 RAND J. ECON. 101, 101 (2001) (discussing the strengthening of U.S. patent rights and the consequences of such strengthening); ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* 11 (3d ed. 2002) (“Since the creation of the Federal Circuit, patents have been held valid more frequently than in the anti-patent era of the 30s to the 70s. It is also much easier to get an injunction against an infringer. And money damages have soared too, both on average and in the highest-visibility cases.”) (citations omitted).

⁹¹ Hall, *supra* note 76, at 11 (discussing empirical studies in patent area, noting that introducing or strengthening a patent system unambiguously results in an increase in strategic uses of patents).

⁹² Meurer, *supra* note 72, at 516-17 (“Anecdotal evidence suggests that the problem of opportunistic IP litigation is serious and getting worse. Defendants fear the high cost of IP litigation and settle opportunistic claims to avoid that cost.”) (citations omitted); Julie E. Cohen, *Lochner in Cyberspace: The New Economic Orthodoxy of Rights Management*, 97 MICH. L. REV. 462, 463-465, 470, 480 (1998) (noting the value maximizing ideological and behavioral postures increasingly taken by owners of intellectual property).

⁹³ Arewa, *Legal Boundaries*, *supra* note 8, at ___; *see also* John R. Allison et al., *Valuable Patents*, 92 GEO. L.J. 435, 435 (2004) (finding in empirical study that valuable patents tend to be litigated more frequently and that the vast majority of patents are not litigated at all); John R. Allison & Mark A. Lemley, *Empirical*

enforcement actions through cease and desist letters and law suits suggest a parallel movement in the copyright sphere.⁹⁴ Further, the implications of such behaviors are particularly significant with respect to intangibles because of the nature or essence of intangibles themselves.⁹⁵ These potential trends highlight the need for better empirical understanding of the manners in which intellectual property rights holders actually enforce such rights and how such behaviors have changed over time.⁹⁶

2. Businesses as Knowledgeable Actors

The role of businesses as conscious, motivated and self-interested actors is an important one in the intellectual property arena. Looking at businesses from this perspective entails moving away from idealized notions of how businesses behave and looking at actual behaviors and the bases of such conduct.⁹⁷ Truly assessing the operation of intellectual property frameworks in practice requires recognition of the actors involved in creating intellectual property rights frameworks as knowledgeable actors.⁹⁸ It also entails distinguishing between the rules of the intellectual property game that are rooted in tangibles paradigm assumptions and the manner of play with respect to such rules, which is reflected in the processes by which holders of intellectual property rights actually

Evidence on the Validity of Litigated Patents, 26 AIPLA Q.J. 185 (1998) (analyzing the validity of litigated patents empirically).

⁹⁴ See *infra* notes ___ to ___ and accompanying text; see also Marjorie Heins & Tricia Beckles, *Will Fair Use Survive? Free Expression in the Age of Copyright Control*, 4-5, 35-37 (Brennan Center for Justice, Free Expression Policy Project 2005) [hereinafter FEP, *Fair Use*], available at <http://www.fepproject.org/policyreports/WillFairUseSurvive.pdf> (noting the potential chilling effect of cease-and-desist letters and other enforcement practices of copyright-holders).

⁹⁵ Arewa, *Legal Boundaries*, *supra* note 8, at ___.

⁹⁶ See *infra* notes ___ to ___ and accompanying text.

⁹⁷ See Richard R. Nelson, *Assessing Private Enterprise: An Exegesis of Tangled Doctrine*, 12 BELL J. ECON. 93, 109 (1981) (noting that the conception of private enterprise underlying economists' analytical models is based more on faith than on empirical understanding of varieties and roles of private enterprise entities); Mark A. Lemley, *Ex Ante versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129, 149 (2004) ("Individual companies are neither omniscient, pure-hearted, nor necessarily rational. Indeed, at best, they are out to line their pockets with as much money as they can find.").

⁹⁸ ANTHONY GIDDENS, *THE CONSTITUTION OF SOCIETY* 30 (1984) (noting existence of knowledgeable actors in societal constructions).

wield their rights under the intangibles paradigm.⁹⁹

Looking at the behavior of businesses and the treatment of such behaviors by legal institutions sheds light on the formal and informal legal means by which intellectual property issues are framed and the mechanisms by which intellectual property rules are developed, implemented, observed and enforced. The behaviors of various actors in the formulation of intellectual property frameworks have real world significance and effects. For example, during the time period in which patents were not generally seen as being available for software, lawyers played an important role in helping prospective patent holders structure patent applications for software in such a way as to avoid the limitations of current legal doctrine relating to software patents.¹⁰⁰ This highlights the role that lawyers may play as intermediaries in the process of determining the scope and contour of intellectual property rights as well as in shaping the development of companies that might use such rights.¹⁰¹

3. Intended and Unintended Consequences of Intellectual Property Regimes

Existing business behaviors also highlight the need for greater consideration of both intended and unintended consequences of intellectual property frameworks.¹⁰² Discussions of intellectual

⁹⁹ Arewa, *Legal Boundaries*, *supra* note 8, at ___ (discussing the rules of the game and the manner of play).

¹⁰⁰ See Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 1, 9 (2001).

¹⁰¹ See Marc C. Suchman, *Dealmakers and Counselors: Law Firms as Intermediaries in the Development of the Silicon Valley*, in UNDERSTANDING SILICON VALLEY: THE ANATOMY OF AN ENTREPRENEURIAL REGION 71-97 (Martin Kenney ed., 2000) (discussing the role of lawyers in the Silicon Valley as intermediaries in engaging in dealmaking and other activities with respect to entrepreneurial companies); Sandburg, *supra* note 1 (noting that the key to the patent enforcement industry's success "has been a small, yet aggressive, army of lawyers who help enforcers hammer companies with infringement claims. And the attorneys, like the patent enforcement shops they represent, are getting very rich.").

¹⁰² Robert K. Merton, *The Unanticipated Consequences of Purposive Social Action*, 1 AM. SOC. REV. 894, 903 (1936) ("But with the complex interaction which constitutes society, action ramifies, its consequences are not restricted to the specific area in which they were initially intended to center, they occur in interrelated fields explicitly ignored at the time of action . . . It is this usually

property often focus on the intended goals of intellectual property with respect to incentives to invent or create.¹⁰³ Patent and copyright are typically seen as legal regimes that balance competing societal interests between the benefit fostering invention and creation and incentivizing such acts by encouraging innovators to incur the costs of such creation and invention by protecting them from competition.¹⁰⁴

The exercise of intellectual property rights, however, may also result in unintended consequences, some of which may also be undesirable. One source of such undesirable consequences might be incorrect or incomplete assumptions about what actions might be undertaken under a particular framework of intellectual property rules such as might be the case with respect to intangibles paradigm behaviors under tangibles paradigm-derived systems of

unlooked-for reaction which constitutes a most important element in the process of secularization, of the transformation or breakdown of basic value systems.”).

¹⁰³ Lemley, *supra* note 97, at 129 (“The standard justification for intellectual property is *ex ante*: the goal of intellectual property is to influence behavior that occurs before the right comes into being.”); SCOTCHMER, *supra* note 71, at 38 (“Despite its *ex post* defects, the main justification for intellectual property protection is made from the *ex ante* perspective. Intellectual property protection gives innovators an incentive to invest in new knowledge.”); Katherine J. Strandburg, *What Does the Public Get? Experimental Use and the Patent Bargain*, 2004 WIS. L. REV. 81, 90-91 (noting that conventional wisdom holds that patents “are needed to promote the progress of the useful arts because inventive ideas can easily be appropriated by competitors once they are developed. Because inventions often cannot be developed without significant upfront investment, the law must step in to provide a way to recoup such investments or else inventors (or their financial backers) will have insufficient incentive to make research and development investments.”); *see also* Edmund W. Kitch, *the Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266 (1977) (introducing a prospect theory of patents focusing on how patent owners manage further investment in developing and improving their property); *see also* John Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 509 (2004) (“The great success of the prospect theory lies in its establishment of a useful theoretical analogy between patents and real property rights. Edmund Kitch was one of the first theorists to focus attention on the timing and scope of patent grants, and his prospect theory provides the compelling insight that patents, like other property rights, create incentives for their owners to manage further investment in developing and improving the property.”).

¹⁰⁴ *See, e.g.*, James Bessen & Eric Maskin, *Sequential Innovation, Patents, and Imitation* 2 (Nov. 1999) (noting that standard economic rationale for patents is protecting innovators from competition and giving them incentive to incur cost of invention), at www.researchoninnovation.org/patent.pdf.

rules.¹⁰⁵ Such undesirable unintended consequences may be reflected in behaviors that may hinder competition or even undermine and in some instances subvert the intended goals of intellectual property frameworks. Such consequences also underscore the institutional framework within which intellectual property policy is formulated and intellectual property rights created and used.

Understanding the processes by which intellectual property rights are used and enforced thus requires consideration of the unintended consequences of intellectual property frameworks. This is particularly true to the extent that such consequences are undesirable from the perspective of the underlying goals and objectives of intellectual property frameworks.¹⁰⁶ Such consequences may also reflect a multiplicity of behaviors and actions, including strategic uses of intellectual property. Such consequences highlight the fact that an intellectual property grant relates to far more than incentives to create. The actual uses of intellectual property rights in specific business contexts may in fact undermine both the goals of intellectual property right grants and may in some instances have a deleterious impact on innovation or competition or both.¹⁰⁷ As a result, analysis of the full impact of

¹⁰⁵ Jon Elster, *Merton's Functionalism and the Unintended Consequences of Action*, in ROBERT K. MERTON: CONSENSUS AND CONTROVERSY 129, 129 (Jon Clark et al., eds. 1990) (noting that the classic Merton article on unintended consequences does not discuss the most important mechanism through which the actual effects of behavior may differ from the intended ones: "the tendency for people to act on wrong assumptions about what other people will do").

¹⁰⁶ Merton, *supra* note 102, at 895 ("Furthermore, *unforeseen* consequences should not be identified with consequences which are necessarily undesirable (from the standpoint of the actor). For though these results are unintended, they are not upon their occurrence always deemed axiologically negative. In short, undesired effects are not always undesirable effects.").

¹⁰⁷ Jacqueline Lipton, *The Law of Unintended Consequences: The Digital Millenium Copyright Act and Interoperability*, 62 WASH. & L. REV. 487, 489-90 (2005) (discussing some implications of the Digital Millenium Copyright Act for commercial competition in cases where producers of tangible objects such as printer cartridges try to suppress competition using the provisions of this act); Dan L. Burk, *Anticircumvention Misuse*, 50 UCLA L. REV. 1095, 1110-14 (2003) (discussing uses of the Digital Millenium Copyright Act intended to suppress competition); see also Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1971 (2002) ("The interaction between IP and innovation is a complex one. That interaction isn't simply a function of the traditional theory of IP as a mechanism for maintaining

intellectual property rights must take account of patterns of undesirable unintended consequences and understand the incentives that are created by intellectual property rights that are unrelated to acts of creation or invention.¹⁰⁸

4. The Construction of Intellectual Property Frameworks

The realities of the broader social and cultural context within which intellectual property structures are framed suggest that it would be fruitful to assess intellectual property rights as constructions whose social ramifications should be closely examined. Construction refers to the social matrix or fabric around which legal rules such as intellectual property laws are built.¹⁰⁹ This matrix relates to institutional facts or facts by human agreement, which represent the invisible structure of social reality.¹¹⁰ This matrix is perhaps best conceived as an ongoing process by which legal structures come into being and operate. As such, this matrix reflects the fact that “governments, as well as others, act to construct the social structures, or social norms, or . . . the social meanings that surround us.”¹¹¹ Examination of this matrix or fabric might involve synchronic and diachronic aspects of legal language, legal codes, jurisprudence theories, legitimations, norms, representations and associated behaviors.¹¹²

market exclusivity. Rather, any study of IP and innovation must take account of how IP is used in the real world.”).

¹⁰⁸ Stan Liebowitz & Stephen Margolis, *Seventeen Famous Economists Weigh in on Copyright: The Role of Theory, Empirics, and Network Effects* 20 (Dec. 2003) (noting the lack of consideration of “the responsiveness of creative efforts to marginal incentives and the function of ownership of intellectual property beyond the incentive to create”), available at <http://ssrn.com/abstract=488085>.

¹⁰⁹ See IAN HACKING, *THE SOCIAL CONSTRUCTION OF WHAT?* 31, 49 (1999) (examining conceptions of social construction, looking specifically at what is being constructed)

¹¹⁰ See J.R. SEARLE, *THE CONSTRUCTION OF SOCIAL REALITY* 4-7 (1995) (discussing the invisible and complex structure of social reality).

¹¹¹ Lawrence Lessig, *The Regulation of Social Meaning*, 62 U. CHI. L. REV. 943, 947 (1995).

¹¹² PETER L. BERGER & THOMAS LUCKMANN, *THE SOCIAL CONSTRUCTION OF REALITY* 75 (1966) (“For example, the institution of law, is, of course, also represented by legal language, codes of law, theories of jurisprudence and, finally, by the ultimate legitimations of the institution and its norms in ethical, religious, or mythological systems of thought. Such man-made phenomena are

Legal discussions typically ignore the question of constructions in the social reality of law,¹¹³ thus not taking full account of the fact that the legal order is not natural, but rather a “constructed social world that could be constructed differently.”¹¹⁴ The legal order also operates within and in interaction with broader sociocultural frameworks.¹¹⁵ Attention to the broader social and cultural context of intellectual property rules also draws attention to the dynamic aspects of law and legal frameworks as process:¹¹⁶ “[r]eligion and legal institutions, among others, only cease to be bundles of dead or cold rules when they are seen as phases in social processes, as dynamic patterns right from the start.”¹¹⁷

The interactive processes by which intellectual property frameworks are constructed and the social and business milieu in which such frameworks operate are important both independently and in combination. Understanding such interactive processes can also help in constructing a comprehensive picture of the uses of intangibles such as intellectual property rights under the intangibles paradigm. Understanding such processes may also shed light on the actual operation of intellectual property frameworks in specific contexts as well as more generally. Examination of such processes can also be a basis for better understanding of the contexts within which intellectual property rights function, the behaviors associated with such rights and the implications of such behaviors for the broader social and business context.

the awesome paraphernalia that frequently accompany the administration of law . . .”).

¹¹³ LESSIG, *supra* note 111, at 947.

¹¹⁴ PAUL W. KAHN, *THE CULTURAL STUDY OF LAW* 30 (1999); *see also* CLIFFORD GEERTZ, *THE INTERPRETATION OF CULTURES* 6-10 (1973) (discussing a semiotic approach to the study of cultural systems that involves thick description and a “multiplicity of complex conceptual structures, many of them superimposed upon or knotted into one another”); NIKLAS LUHMANN, *LAW AS A SOCIAL SYSTEM* 72-73 (2004) (applying systems theory to law that views the legal system as a subsystem of the social system and noting the “problematic concept of the ambivalent relationship between law and society”).

¹¹⁵ LUHMANN, *supra* note 114, at 74 (“the legal system operates in the form of communication under the protection of boundaries that are drawn by society”).

¹¹⁶ SALLY FALK MOORE, *LAW AS PROCESS: AN ANTHROPOLOGICAL APPROACH* 55 (1978) (“Law and the social context in which it operates must be inspected together.”).

¹¹⁷ VICTOR TURNER, *DRAMAS, FIELDS AND METAPHORS* 37 (1974).

Assessing how intellectual property frameworks are conceptualized in theory and realized in practice is essential to any understanding of intellectual property rights as constructed aspects of social reality. This involves delineating and describing the substantive rights that are part of intellectual property rights legal structures.¹¹⁸ Such structures can be conceptualized as two aspects of rules: normative elements and codes of signification.¹¹⁹ Particularly important in the area of intellectual property is the conception and uses of the resources and assets that underlie intellectual property rights and views concerning the meaning and essence of such resources and assets, both of which have become increasingly laden with difficulty under the intangibles paradigm.¹²⁰

II. INTANGIBLES AND STRATEGIC BEHAVIORS: BUSINESSES AND VALUE MAXIMIZATION UNDER THE INTANGIBLES PARADIGM

A. *Intellectual Property Rights and Strategic Behaviors*

1. Intellectual Property Rights in Theory: Rationales for Intellectual Property Protection

Intellectual property rights may be characterized as integrated structures containing different elements, each of which is a distinct right, but all of which together have a “conceptual unity” that gives “full meaning to the concept of property.”¹²¹ The assortment of

¹¹⁸ Adam Mossoff, *What is Property? Putting the Pieces Back Together*, 45 ARIZ. L. REV. 373, 413-415 (2003) (discussing the importance of defining “the concept of intangible property on its own terms . . . and accounting for the substantive rights subsumed by intellectual property – the right to acquire, use and dispose of one’s creations.”); Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 626 (1998) (noting that tragedy of anticommons suggests that “property theorists and policymakers should pay more attention to the content of property bundles, rather than focusing just on the clarity of rights.”) (citations omitted).

¹¹⁹ See Giddens, *supra* note 98, at xxxi (noting that rules can be understood as consisting of normative elements and codes of signification).

¹²⁰ Arewa, *Knowledge Economy*, *supra* note 2, at 31-46, 54-60 (discussing the implications of the intangibles paradigm for business worldview and practice from the perspective of financial statements and accounting).

¹²¹ Mossoff, *supra* note 118, at 376 (advocating an integrated theory of property instead of bundle or exclusion based theories of property); Kevin Gray, *Property*

rights inherent in intellectual property right constructions gives the holder of an intellectual property right the ability, among others, to control or regulate uses of protected material by preventing an innovation or creation from being copied or otherwise infringed.¹²² To accomplish such protection, intellectual property rights give the holder rights of control that typically enable the holder to exclude other holders and other uses.¹²³ This capacity to exclude is a primary basis of the holder's ability to appropriate returns from an innovation.¹²⁴

Even if an intellectual property right was originally used as a tool to protect an innovation, however, other elements of the intellectual property rights architecture, reflecting other rights inherent in such structures as currently conceived, may be more important factors at different points in time in the process of a holder's wielding of the exclusionary aspect of an intellectual property right. Further, an intellectual property right, once granted, may be used for many other purposes than protection of an innovation. Such uses could include strategic ones from which the holder could gain value. In addition, grants of intellectual property rights entail significant costs, including those associated with strategic behaviors, which may diminish some of the assumed societal benefits of a particular intellectual property architecture.¹²⁵

The costs of particular intellectual property frameworks are often significant under the intangibles paradigm, particularly with

in Thin Air, 50 CAMBRIDGE L. J. 252, ___ (1991) (discussing how to conceptualize property rights given that bundle of rights approach to property is not really accepted).

¹²² Arewa, *Catfish Row*, *supra* note 24, at ___ (discussing control rights of copyright holders).

¹²³ See Mossoff, *supra* note 118, at 414-16 (noting that the exclusionary aspect of intellectual property rights is a formal rather than substantive element); Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1, 44-52 (2004) (discussing three dangers created by the right to exclude in intellectual property law: monopoly loss, innovation bottlenecks and the impoverishment of the public domain, speech and democracy).

¹²⁴ Arewa, *Legal Boundaries*, *supra* note 8, at ___.

¹²⁵ See generally OECD, *supra* note 82 (noting that effect of patents on innovation and diffusion depends on the features of the patent regime).

respect to offensive strategic uses of intangibles,¹²⁶ which are facilitated by the increasing scope of intellectual property rights.¹²⁷ In the accounting area, the intangibles paradigm has resulted in a haze of uncertainty in which disclosure standards for intangibles are unclear and inconsistent and in which financial statements, as a consequence, are uninformative and not necessarily an accurate reflection of economic or business reality.¹²⁸ This has led to the development of space within which companies may, through a particular intangibles paradigm discourse,¹²⁹ present themselves in a particular manner intended to maximize company market valuations.¹³⁰ As part of this presentation process, companies often seek to maximize legal claims to intangibles in the form of intellectual property rights and amplify as much as possible the scope of such intellectual property rights.¹³¹ The legal boundary-making process thus can be an important factor in strategic uses of intellectual property rights by companies, particularly under the intangibles paradigm.¹³²

2. Intellectual Property Rights in Context: Some Implications of Strategic Behaviors

The dominance of knowledge-based intangibles as sources of economic growth and the resulting importance of such resources to businesses have thrust intellectual property into an increasingly prominent position in the business context. The increasing importance and value of intangibles has also intensified pressure for greater certainty in allocation of intellectual property rights.¹³³ The types of firm behaviors that intellectual property rules may

¹²⁶ *Id.* at 9 (noting that strategic patenting “seems to have developed over the past 15 years, notably in the electronics industry.”); *see also* Arewa, *Knowledge Economy*, *supra* note 2, at 30.

¹²⁷ OECD, *supra* note 82, at 9; Hall, *supra* note 76, at 10 (noting that “introducing or strengthening a patent system (lengthening the patent term, broadening subject matter coverage, etc.) unambiguously results in an increase in patenting and in the strategic uses of patents.”).

¹²⁸ *See* Arewa, *Knowledge Economy*, *supra* note 2, at 17-31.

¹²⁹ *Id.* at 63-66, 79-90.

¹³⁰ *Id.*

¹³¹ Arewa, *Legal Boundaries*, *supra* note 8, at ____.

¹³² *Id.*

¹³³ MARGARET M. BLAIR & STEVEN M.H. WALLMAN, UNSEEN WEALTH 73-83 (2001) (discussing changes to existing laws and legal systems to provide greater certainty about rights in intangibles).

facilitate and foster are critical aspects of the operation of intellectual property structures. Such behaviors in turn have and the implications for the economy, the system of intellectual property rules as well as the production of knowledge from which innovations and creations derive. Understanding such behaviors entails examination of the manner of play and how businesses interact with the rules of the game of the intellectual property system from an organizational perspective. This requires recognizing how the market position of firms and firm organizational structure and strategic objectives influence the decision making process surrounding intellectual property choices and decisions concerning the development or cultivation of knowledge assets and resources.¹³⁴ Historical examples suggest that structures of rules that give incumbent corporations power with respect to newcomers are not necessarily welfare enhancing.¹³⁵ This is a critical question for diffusion and future creations, which cannot occur if incumbents have control rights that are too strong.¹³⁶

Assumptions about the rationales for intellectual property are typically decontextualized at two levels. Such discussions largely ignore the social fabric from which inventions and creations emerge, particularly as it relates to the process by which this fabric is woven and changes over time. On the creation side, the implications of a particular legal regime for production of texts and inventions have not been truly assessed in the copyright area, for instance, although some empirical work exists for patents.¹³⁷ This decontextualization extends to consideration of the consequences of legal regimes as well, particularly with regard to the implications of particular allocations of rights for the behavior of holders of such rights, particularly strategic behaviors. The logic

¹³⁴ NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 65, at 32 (noting that “patents have come to occupy a more central role in corporate decision making”).

¹³⁵ See, e.g., RAGHURAM G. RAJAN & LUIGI ZINGALES, SAVING CAPITALISM FROM THE CAPITALISTS 2, 21 (2003) (discussing the fundamental tension between markets and politics and the dual threats to the development of free competitive markets posed by two groups of opponents, the unemployed worker and established industrial incumbents).

¹³⁶ Arewa, *Catfish Row*, *supra* note 24, at ____ (discussing control rights of copyright holders); Strandburg, *supra* note 103, at ____.

¹³⁷ See *supra* notes ____ to ____ and accompanying text.

underlying such behaviors may also reflect assignments of relative values by holders of intellectual property rights that may be different than those assumed in standard justifications for intellectual property rules.¹³⁸ Such variations in relative values can lead to unintended consequences in that holders of intellectual property rights may use them in ways are not entirely consistent with or sufficiently anticipated by underlying intellectual property rationales.

An overriding focus on incentives relating to the initial creation of inventions and cultural texts thus results in insufficient attention to the implications of the exercise of control and other rights with respect to an invention or creation.¹³⁹ A control right is often, among other things, a blocking right that can be used strategically.¹⁴⁰ Thus, even if innovation and creation are valid bases for the establishment of a right, the fact that such a right can also be used strategically may have a continuing and significant influence on behavior.

In fact, innovation or creation may not even be the basis for creating an intellectual property right and a strategic purpose may be dominant from the outset.¹⁴¹ This has serious implications for intellectual property frameworks whose stated basis or rationale may not actually be a significant factor in the uses of such rights by their holders. Economic exclusivity is not necessarily equivalent to legal exclusivity.¹⁴² In a commercial context, increased legal ability to exclude other uses through strong intellectual property rights can greatly serve business interests and the development of businesses and the economy. The flip side of this in the context of intellectual property is that such exclusivity can reinforce the power of existing incumbents and hamper the effective diffusion of knowledge.¹⁴³ They can also in some

¹³⁸ See *supra* notes ___ to ___ and accompanying text.

¹³⁹ Arewa, *Catfish Row*, *supra* note 24, at ___.

¹⁴⁰ *Id.*

¹⁴¹ See Arewa, *Knowledge Economy*, *supra* note 2, at ___.

¹⁴² Gray, *supra* note 121, at 269-92 (distinguishing between resources that are physically nonexclusive, legally nonexclusive and morally nonexclusive).

¹⁴³ See OECD, *supra* note 82, at 9 (“More basically, it has also been asked whether patentability might hamper the diffusion of knowledge, and therefore innovation, notably in these new areas. Other concerns have been raised about

instances be anti-competitive.¹⁴⁴ This is not an argument against exclusivity of rights to property. Clearly the ability to allocate property rights efficiently was a key feature of economic development during the industrial revolution,¹⁴⁵ and in the developed world in general. In contrast, in portions of the developing world, property rights systems may be less effective, which ultimately is a serious impediment to economic development.¹⁴⁶ In the intangibles paradigm, however, the fundamental question of how to allocate ownership of property rights in intangibles and the implications of such allocation choices remain unresolved and contested in many respects.

Although the economics literature has explored the behavioral ramifications of particular intellectual property frameworks in the patent area, less attention has been paid in the legal literature to the strategic context of intellectual property decision making or the other mechanisms that companies actually use to protect innovations, including trade secrets, lead time, rapid time to market and accelerated product development cycles, for example.¹⁴⁷ In addition, “different mechanisms may also be relied upon at different stages in a given innovation process.”¹⁴⁸ This means that detailed empirical understanding about the intellectual property decision making process in specific contexts would enable better appreciation of how the intellectual property system actually functions and the extent to which the operation of this system is consistent with its stated goals and rationales. Whether or not firms actually rely on and need patents to recoup innovation costs

access to basic technologies, and research tools, which seems to have been hindered sometimes by patent holders exercising their right to exclude.”)

¹⁴⁴ See *infra* notes ___ to ___ and accompanying text.

¹⁴⁵ H.I. DUTTON, *THE PATENT SYSTEM AND INVENTIVE ACTIVITY DURING THE INDUSTRIAL REVOLUTION 1750-1852*, at 204 (1984) (noting that the imperfect nature of early patent system in nineteenth century Britain was key to successful economic development because it made diffusion possible).

¹⁴⁶ See HERNANDO DE SOTO, *THE MYSTERY OF CAPITAL* ___ (2002) and HERNANDO DE SOTO, *THE OTHER PATH* ___ (1989).

¹⁴⁷ Hall, *supra* note 76, at 1; WESLEY M. COHEN ET AL., *PROTECTING THEIR INTELLECTUAL ASSETS: APPROPRIABILITY CONDITIONS AND WHY U.S. MANUFACTURING FIRMS PATENT (OR NOT)* ___ (Nat’l Bureau of Econ. Research, Working Paper No. 7552, 2000).

¹⁴⁸ Cohen et al., *supra* note 147, at 7 (noting that firms may rely on secrecy prior to commercialization of a product and subsequently use patents and/or aggressive marketing and lead time to retain competitive advantage).

such as research and development expenditures,¹⁴⁹ the effective strength of patents laws can have a significant influence on firm behavior, as demonstrated by the so-called patent paradox.¹⁵⁰

Even if firms had in the past tended to operate with less intellectual property protection, once such protection becomes available, firms may use, rely on and derive value from such protection.¹⁵¹ The question of whether such protection is actually necessary to encourage innovation is a difficult one that should also be considered from the perspective of the extent to which such protection may hinder diffusion and competition.¹⁵²

Fixing a legal claim in the form of intellectual property to an intangible involves determination of the scope of the asset or boundaries to which control rights should be fixed.¹⁵³ This process

¹⁴⁹ See *infra* notes ___ to ___ and accompanying text

¹⁵⁰ Hall & Ziedonis, *supra* note 90, at 2 (noting that the patent paradox is that greater number of patents filed while at the same time firms rely less on patents to protect intellectual property).

¹⁵¹ Arewa, *Legal Boundaries*, *supra* note 8, at ___.

¹⁵² Strandburg, *supra* note 103, at 91 (noting that the effect of patents on technological progress is complicated by the fact that inventions are beneficial to society both with respect to users or consumers of the invention as well as through use of the inventive idea as a springboard for further invention).

¹⁵³ A significant amount of literature exists in economics concerning the scope of intellectual property rights. See, e.g., Partha Dasgupta & Eric Maskin, *The Simple Economics of Research Portfolios*, 97 *ECON. J.* 581, 587 (1987) (discussing the fact that for much scientific and technical knowledge, input for further advances is in public domain); Howard F. Chang, *Patent Scope, Antitrust Policy, and Cumulative Innovation*, 26 *RAND J. ECON.* 34, ___ (1995); Theon van Dijk, *Patent Height and Competition in Product Improvements*, 44 *J. INDUS. ECON.* 151, ___ (1996) (analyzing patent height or the extent of protection against improvements); Vincenzo Denicolò, *Patent Races and Optimal Patent Breadth and Length*, 44 *J. INDUS. ECON.* 249, ___ (1996) (models optimal patent breadth and length in the context of a patent race); Paul Klemperer, *How Broad Should the Scope of Patent Protection Be?*, 21 *RAND J. OF ECON.* 113, ___ (1990) (exploring tradeoff between patent length and width); Morton I. Kamien & Nancy L. Schwartz, *Patent Life and R&D Rivalry*, 64 *AM. ECON. REV.* 183, ___ (1974) (examining how incomplete appropriability and rivalry factor into a firm's decision about the timing of introducing an innovation); Ted O'Donoghue, Suzanne Scotchmer & Jacques-François Thisse, *Patent Breadth, Patent Life and the Pace of Technological Progress*, 7 *J. ECON. & MGMT STRAT.* 1, ___ (1998) (looking at the determinants of effective patent life, on which the profitability of research and development is dependent); Richard Gilbert & Carl Shapiro, *Optimal Patent Length and Breadth*, 21 *RAND J. ECON.* 106, ___ (1990) (suggesting that patent policy should operate with patent breadth

is dynamic and potentially complex. Further, the owners of such rights may play an important role in defining the scope of such rights.¹⁵⁴

B. *Intangibles Paradigm Business Strategies*

1. Varieties of Strategic Behaviors

Under the intangibles paradigm, the activities of actors such as patent trolls have highlighted the potentially problematic range of strategic intellectual property behaviors.¹⁵⁵ Such behaviors may have been made easier by virtue of gaps in applicability of existing rules largely derived from tangibles paradigm assumptions.¹⁵⁶ In addition, the aggressive patenting behaviors exhibited by patent trolls are becoming more widespread.¹⁵⁷ Increasingly aggressive behaviors in relation to intellectual property also reflect significant changes in corporate strategies in relation to intellectual property that have taken place in recent years.¹⁵⁸

General categories identified in legal discussions, particularly in the patent context, contemplate the existence of such strategic behaviors. Blocking patents, for example, may exist when pioneer patent and an improver may block each other, the scope of the pioneer patent preventing the improver from developing any products, and the improver being able to prevent the pioneer patent holder from incorporating the improvements.¹⁵⁹ Such blocking

adjusting to provide required rewards for innovation); Jerry R. Green & Suzanne Scotchmer, *On the Division of Profit in Sequential Innovation*, 26 RAND J. ECON. 20, ___ (1995) (studying interaction between patent breadth and antitrust policy focusing on how division of profit between sequential innovators depends on patent breadth and opportunities for cost-sharing through licensing); *see also* Robert Merges & Richard R. Nelson, *On The Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 839 (1990) (discussing legal aspects of patent scope); Cohen & Lemley, *supra* note 100, at ___ (discussing legal aspects of intellectual property scope).

¹⁵⁴ Arewa, *Legal Boundaries*, *supra* note 8, at ___.

¹⁵⁵ Such behaviors are increasingly integral aspects of the exercise of intellectual property rights. *See infra* notes ___ to ___ and accompanying text.

¹⁵⁶ *See* Arewa, *Knowledge Economy*, *supra* note 2, at 31.

¹⁵⁷ *See* Ziedonis, *supra* note 35, at 804 (noting that legal disputes over intellectual property are more frequent and costly to defend).

¹⁵⁸ *See supra* notes ___ to ___ and accompanying text.

¹⁵⁹ *See* Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75, 75 (1994).

patents may give the holders of the pioneer patent and the patent containing the improvement holdup rights with respect to one another.¹⁶⁰

The concept of blocking patents can be used to elucidate a broad range of behaviors, including offensive and defensive strategic behaviors intended to block competitive technologies or competitors themselves,¹⁶¹ which may or may not have anything to do with the development of a commercial product based upon an intellectual property right.

Uses of blocking patents and strategic behaviors may involve assertion intellectual property rights (whether such rights actually exist or not) to impede the development of competitive products or companies. Such behaviors may be undertaken for strategic reasons.¹⁶² Other behaviors may involve the use of aggressive or strategic activities to bolster or increase the scope or value intellectual property rights portfolios as part of typical and increasingly pervasive intellectual property portfolio management strategies.¹⁶³

2. Strategic Behaviors and the Manner of Play

Such behaviors focus attention on the maneuvering in which

¹⁶⁰ See Merges & Nelson, *supra* note 153, at 860, 865; see also Merges, *supra* note 159, at ___ (discussing of the reverse doctrine of equivalents as a preferred judicial response to situations in which a breakdown of bargaining has occurred between pioneer inventors and potential improvers); James Bessen, *Holdup and Licensing of Cumulative Innovations with Private Information 1*, at www.researchoninnovation.org/holdup.pdf (noting that increasing scope of intellectual property rights has raised concern about holdups for cumulative innovation and that the possibility of *ex ante* licensing does not eliminate holdup problem in cumulative innovation); Ziedonis, *supra* note 35, at 806 (“Simply put, hold-up occurs when one party is able to expropriate rents from another.”).

¹⁶¹ DEBORA J. HALBERT, RESISTING INTELLECTUAL PROPERTY 3-4 (2006) (“Now more than ever, companies are using intellectual property law as a club to retain monopoly control over an industry or technology. . . Only negative publicity seems to restrain corporate aggression”).

¹⁶² See Merges, *supra* note 159, at ___; Merges & Nelson, *supra* note 153, at ___; Bessen, *supra* note 160, at ___.

¹⁶³ See generally GRANSTRAND, *supra* note 42 (discussing intellectual property management strategies); see also ARORA ET AL., *supra* note 46, at 223-251 (discussing corporate intellectual property and technology management strategies).

companies engage and the tools that they use, including intellectual property frameworks, to achieve their strategic goals. These essentially strategic behaviors are also evident in aggressive litigation tactics, which may be intended in part to intimidate actual or potential infringers, competitive products or prospective competitors of a company. This aggressive litigation approach is evident, for example, with copyright in the strategies employed by the RIAA against file sharers and The SCO Group in its attempts to obtain licensing revenues from Linux users based on an alleged infringement of rights relating to Unix copyrights, both of which target alleged infringers numbered in the thousands.¹⁶⁴

Such behaviors are of concern because intellectual property systems are based on an at least implicit understanding that the manner of play in some way accords with the rules of the game:

Rules are often thought of in connection with games, as formalized prescriptions. The rules implicated in the reproduction of social systems are not generally like this. Even those which are codified as laws are characteristically subject to a far greater diversity of contestations than the rules of the game. Although the use of the rules of the game such as chess, etc. as prototypical of the rule-governed properties of social systems is frequently associated with Wittgenstein, more relevant is what Wittgenstein has to say about children's play as exemplifying the routines of social life.¹⁶⁵

Rules of the game refer to formal legal rules and regulations that constitute intellectual property frameworks. Manner of play refers to how participants subject to such game rules interpret and transform these rules in actual play and the implications of such transformations for the game and consequently the system of rules themselves. Existing rules of the game do not always adequately contemplate the strategic and aggressive behaviors entailed by such manner of play, particularly as evident in intellectual property management practices today. Such behaviors deserve closer scrutiny to understand fully their implications and potential ramifications and also militate in favor of closer examination of one widely stated rationale for intellectual property protection as fostering innovation.

¹⁶⁴ See *supra* notes ___ to ___ and accompanying text. For a discussion of SCO-Linux, see *infra* notes ___ to ___ and accompanying text.

¹⁶⁵ Giddens, *supra* note 98, at 17-18.

3. Intellectual Property Portfolio Management Strategies

Business discourse about intangibles and value maximization strategies for intangibles underscore how many companies actually approach and use intellectual property rights today. Strategic uses of intellectual property rights are thus a prominent feature of the strategic intellectual property management literature, which discusses, analyzes and advises companies concerning the appropriate uses and role of intellectual property rights and other intangibles in business organizations.¹⁶⁶ In this body of work, intellectual property rights have been characterized as “constitutionally enshrined golden eggs” that are just waiting to be packaged for commercial benefit:

Just as food and manufactured goods can be packaged and sold, there are ways to package knowledge for commercial benefit, using the intellectual property laws. . . These are assets protected by specific bodies of laws divided, for example, into patents, trademarks, copyrights and trade secrets. Some of these have been called our “constitutionally enshrined golden eggs,” particularly when used to create product differentiation in an

¹⁶⁶ See, e.g., JULIE L. DAVIS & SUZANNE S. HARRISON, EDISON IN THE BOARDROOM (2001); KEVIN G. RIVETTE AND DAVID KLINE, REMBRANDTS IN THE ATTIC: UNLOCKING THE HIDDEN VALUE OF PATENTS (2000) Suzanne Harrison & Kevin Rivette, *The IP Portfolio as a Competitive Tool in PROFITING FROM INTELLECTUAL CAPITAL: EXTRACTING VALUE FROM INNOVATION* 119-128 (Patrick H. Sullivan ed., 1998); Patrick H. Sullivan, *Extracting Value from Intellectual Property in PROFITING FROM INTELLECTUAL CAPITAL: EXTRACTING VALUE FROM INNOVATION* 103, 105 (Patrick H. Sullivan ed., 1998) [hereinafter, Sullivan *Extracting Value I*]; Patrick H. Sullivan, *Extracting Value from Intellectual Assets in PROFITING FROM INTELLECTUAL CAPITAL: EXTRACTING VALUE FROM INNOVATION* 173-185 (Patrick H. Sullivan ed., 1998)) [hereinafter, Sullivan *Extracting Value II*]; Gordon Petrash, *Intellectual Asset Management at Dow Chemical in PROFITING FROM INTELLECTUAL CAPITAL: EXTRACTING VALUE FROM INNOVATION* 205-220 (Patrick H. Sullivan ed., 1998); Lori Morrison & Paul Germeraad, *Intellectual Asset Management at Avery Dennison in PROFITING FROM INTELLECTUAL CAPITAL: EXTRACTING VALUE FROM INNOVATION* 221-241 (Patrick H. Sullivan ed., 1998); Kari Laento, *Intellectual Asset Management at Nestle in PROFITING FROM INTELLECTUAL CAPITAL: EXTRACTING VALUE FROM INNOVATION* 242-252 (Patrick H. Sullivan ed., 1998); Leif Edvinsson, *Managing Intellectual Capital at Skandia in PROFITING FROM INTELLECTUAL CAPITAL: EXTRACTING VALUE FROM INNOVATION* 279-283 (Patrick H. Sullivan ed., 1998); ROBERT S. KAPLAN & DAVID P. NORTON, STRATEGY MAPS: CONVERTING INTANGIBLE ASSETS INTO TANGIBLE OUTCOMES (2004).

increasingly competitive world where commoditization is becoming dominant.¹⁶⁷

By focusing on the strategic uses of intangibles, the strategic intellectual property literature, which largely discusses patents, exemplifies the fact that intangibles are often viewed and used offensively as strategic weapons.¹⁶⁸

The value of patents as competitive weapons and intelligence tools becomes most evident in the day-to-day transaction of business. Indeed, whether a company is trying to block a competitor's product development plan, [or] gain entry into a hotly contested new market . . . Patents can be potent weapons – and quite possibly the greatest source of competitive intelligence on earth.¹⁶⁹

In advocating such strategic uses, this literature focuses on patents as a means to enhance “a company’s ability to secure and defend sources of marketplace advantage, even in times of rapid technological change.”¹⁷⁰ A major focus of this literature is on the extraction of value from patent portfolios by generating licensing income, as well as the use of patents for positioning in business negotiations and for promotion of competitive advantage.¹⁷¹ This use of intangibles is typically portrayed as more offensive than defensive.¹⁷² Further, patents are described as anticompetitive measures that can be used to exclude others and block competitors from entering a predetermined field.¹⁷³ Offensive uses involve tactical blocking to prevent commercialization of other products:

¹⁶⁷ See Stephen P. Fox, *Intellectual Property Management: From Theory to Practice*, in PROFITING FROM INTELLECTUAL CAPITAL: EXTRACTING VALUE FROM INNOVATION 142, 143 (Patrick H. Sullivan ed., 1998).

¹⁶⁸ See Sullivan, *Extracting Value I*, *supra* note 166, at 104-105 (contrasting two widely held views of patent portfolios as protection, where the goal is exclusion, and patent portfolios as sources of corporate value, which reflects a more aggressive view).

¹⁶⁹ Kevin G. Rivette & David Kline, *Discovering New Value in Intellectual Property*, HARV. BUS. REV. 8 (Jan.-Feb. 2000).

¹⁷⁰ *Id.* at 6.

¹⁷¹ See Sullivan, *Extracting Value I*, *supra* note 166, at 107-110.

¹⁷² *Id.* at 111.

¹⁷³ Meurer, *supra* note 72, at 521 (“Firms often use IP litigation to exclude their rivals from markets.”) (citations omitted); Sullivan, *Extracting Value II*, *supra* note 166, at 181 (discussing patents as anticompetitive measures that exist to block competitors from access to certain fields of technology).

Offensive estates can be clusters of improvement formed in a picket fence or a thicket around the foundation patents of a competitor or a potential licensor. Offensive use usually involves excluding competitors from using the technology or business application for the life of the product.¹⁷⁴

Two specific patent strategies discussed as ways to hinder competitors include clustering and bracketing.¹⁷⁵ Patents are seen as having more value when they bring about greater ability to both exclude and detect infringement.¹⁷⁶ Clustering refers to building a patent wall around a product. Gillette's patenting strategy with respect to its Sensor razor is an example of clustering. Gillette patented 22 separate inventions in connection with the Sensor razor, patenting even the "container that had the proper masculine sound and feel when it was rippled" thus creating "a patent wall with those 22 patents. And they were all interlocking so no one could duplicate that product."¹⁷⁷

Clustering is, however, not an isolated tactic in today's business world and is "not the only way to hamper competitors."¹⁷⁸ Bracketing is used to hem in competitors with an initial market lead:

Imagine that your competitor has invented a new, high-intensity light and has patented the filament. But it turns out that the filament requires a more durable glass bulb and socket housing to absorb the added heat, as well as more heat-resistant shade construction and electrical connectors. New manufacturing processes are required, as is new packaging, because the new-style bulbs can be ruined by the oils from human hands. Your competitor may have patented the filament, but if you patent everything else, then the competitor is locked out of much of the market. That's the essence of bracketing.¹⁷⁹

¹⁷⁴ Sullivan, *Extracting Value I*, *supra* note 166, at 111.

¹⁷⁵ Rivette & Kline, *supra* note 150, at 6; *see also* Carlos M. Correa, *Internationalization of the Patent System and New Technologies* 11, Conference on the International Patent System, World Intellectual Property Organization, Geneva, March 25-27, 2002 (noting offensive and defensive patent strategies); GRANSTRAND, *supra* note 42, at 220-22 (noting a variety of patent strategies including blanketing, flooding, fencing, surrounding and combination into patent networks).

¹⁷⁶ Sullivan, *Extracting Value II*, *supra* note 166, at 181.

¹⁷⁷ Rivette & Kline, *supra* note 150, at 6.

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

The strategic intellectual property management literature highlights the complexity of manners of play in the intellectual property arena, which in turn sheds light on the actual operation of intellectual property frameworks. This literature highlights the close relationship between intellectual property frameworks and competition. The effects of intellectual property on competition are largely a function of manner of play and how holders of intellectual property rights are permitted to exercise such rights.

Under the intangibles paradigm, the nature of the underlying knowledge asset or resource is becoming increasingly important, particularly since intellectual property rights are often used strategically. As companies gain new intellectual property rights, it is not at all uncommon to see immediate strategic uses of such rights. This is by no means a new phenomenon under the intangibles paradigm, but has likely increased because the stakes involved in intellectual property ownership rights have become increasingly important for more companies in a variety of industries.¹⁸⁰ The consequences of this for competition are potentially quite significant.

C. *Strategic Behaviors and Intellectual Property in Historical Perspective*

Strategic uses of intellectual property are also evident historically. As is the case today, such behaviors often had significant anti-competitive underlying goals. In 1777, for example, when English courts made clear that the Statute of Anne¹⁸¹ applied to publishers of music,¹⁸² a series of lawsuits ensued in which music sellers attempted to use this new interpretation of the Statute of Anne strategically to eliminate competitors.¹⁸³

¹⁸⁰ See Arewa, *Knowledge Economy*, *supra* note 2, at 6-10 discussing the increasing importance of intangibles for corporations and broader society).

¹⁸¹ The British Statute of Anne is generally regarded as the first copyright statute. 8 Ann., c. 19 (Copyright 1709). See also MARK ROSE, *AUTHORS AND OWNERS* 4 (1993) (noting that the Statute of Anne introduced the notion of a limited term of protection and recognized authors as possible proprietors of their works, but was also in part a legislative extension of regulatory practices of the London guild of printers and booksellers).

¹⁸² *Bach v. Longman*, 98 Eng. Rep. 1274, 1275 (Ct. 1777) (finding that a musical composition is a writing within the Statute of Anne).

¹⁸³ See David Hunter, *Music Copyright in Britain to 1800*, 67 *MUSIC & LETTERS* 269, 278-82 (1986); John Small, *J.C. Bach Goes to Law*, 126 *MUSICAL TIMES*

In the late nineteenth and early twentieth centuries, strategic uses of patents were evident in a number of industries, including gramophones, electrical lighting and the auto industry.¹⁸⁴ A series of patent wars occurred in the nineteenth century following the invention of gramophone technology.¹⁸⁵ These wars were resolved after the turn of the twentieth century, when the major recording companies pooled their patents, which provided them with oligopolistic control of the industry.¹⁸⁶

Thomas Edison's incandescent lighting patent profoundly influenced the industry until its expiration, and the broad Edison patent slowed the pace of technical advances in incandescent lighting.¹⁸⁷ This points out that broad patents can significantly influence the development of technology and industry structure and the nature of competition within industries. The industrial structure and nature of competition with respect to incandescent light bulb technology may be contrasted with two other sectors of the electrical industry, where broad patents were invalidated and where technological innovation bloomed.¹⁸⁸

The early auto industry also experienced strategic uses of patents. When Henry Ford organized the Ford Motor Company:

the automobile industry was dominated by the Association of Licensed Automobile Manufacturers (ALAM), a select group of makers of gasoline automobiles who were attempting to monopolize automobile manufacturing in the United States through control of a patent on the gasoline automobile that had

526, 526-29 (1985); Nancy A. Mace, *Haydn and the London Music Sellers: Forster v. Longman & Broderip*, 77 *MUSIC & LETTERS* 527, 527-29 (1996); Ronald J. Rabin & Steven Zohn, *Arne, Handel, Walsh and Music as Intellectual Property: Two Eighteenth-Century Lawsuits*, 120 *J. ROYAL MUSICAL SOC'Y* 112, 112-14 (1995).

¹⁸⁴ See Julio H. Cole, *Patents and Copyrights: Do the Benefits Outweigh the Costs?*, 15 *J. LIBERTARIAN STUD.* 79 (2001) (discussing a number of historical examples of strategic uses of patents); see also Peter Drahos & John Braithwaite, *Intellectual Property, Corporate Strategy, Globalisation: TRIPs in Context*, 20 *WIS. INT'L L. J.* 451, 452-455 (2001/2002) (discussing role of corporate strategic patent behaviors historically).

¹⁸⁵ Reebee Garofalo, *From Music Publishing to MP3: Music and Industry in the Twentieth Century*, 17 *AM. MUS.* 318, 325 (1999).

¹⁸⁶ *Id.*

¹⁸⁷ Merges & Nelson, *supra* note 153, at 885-87.

¹⁸⁸ *Id.* at 887-88.

been awarded in 1895 to George B. Selden, a New York patent attorney.¹⁸⁹

The ALAM companies (which accounted for 80 percent of the industry's total output prior to 1908) were committed to maintaining high unit profits through producing high-priced cars for a limited market. ALAM also tried to set production quotas and to freeze new entrances into automobile manufacturing.¹⁹⁰ ALAM denied Henry Ford a license to manufacture gasoline automobiles.¹⁹¹ Ford and other manufacturers who did not receive licenses from ALAM operated under a different business model that focused on the mass production of more inexpensive automobiles.¹⁹² After Ford began producing cars anyway, ALAM sued Ford for infringement of the Selden patent.¹⁹³ The suit was decided in favor of Ford, and ALAM disintegrated.¹⁹⁴ It is not clear whether the Selden patent hindered technological progress in the automobile industry.¹⁹⁵

During the twentieth century, strategic uses of patents were evident in a number of industries, including radio, airplane manufacturing and plain paper copying. For example, patents were used in the early commercial development of radio to gain market control, and research and research funds, instead of being used to promote "progress," were used to pursue patents that were then used to maintain a monopoly position.¹⁹⁶

In the airplane manufacturing industry, the U.S. government helped resolve competing patent claims by requesting that

¹⁸⁹ James J. Flink, *Henry Ford and the Triumph of the Automobile*, in TECHNOLOGY IN AMERICA 177, 181 (Carroll W. Pursell, Jr. ed., 2d ed. 1990).

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

¹⁹² *Id.* at 182.

¹⁹³ *Id.* at 182.

¹⁹⁴ *Id.*

¹⁹⁵ Merges & Nelson, *supra* note 153, at 890.

¹⁹⁶ See Leonard S. Reich, *Research, Patents, and the Struggle to Control Radio: A Study of Big Business and the Uses of Industrial Research*, 51 BUS. HIST. REV. 208, 208 (1977) (noting that patents were used in the early commercial development of radio to gain market control, and research and research funds, instead of being used to promote "progress," were used to pursue patents that were then used to maintain a monopoly position); see also Merges & Nelson, *supra* note 153, at 891-893.

competitors enter into a cross-licensing agreement.¹⁹⁷ After manufacturers of airplanes (deriving from patents filed by the Wright Brothers and another aviation pioneer, Glenn Curtiss) were unable to resolve litigations involving competing patent claims just prior to the entry of the U.S. into World War I, the secretaries of the war and navy requested and airplane manufacturers agreed to enter into a cross-licensing agreement. Although it was entered into to resolve competing patent claims, the agreement did not protect firms from competition.¹⁹⁸ However, good reason exists to “believe that the Wright patent significantly held back the pace of aircraft development in the United States by absorbing the energies and diverting the efforts of people like Curtiss.”¹⁹⁹

In the plain paper copier industry, Xerox used patents to prevent entry into the plain paper copier market by patenting “every imaginable feature of the copier technology.”²⁰⁰ When IBM and Litton entered the plain paper copier market in 1972, “Xerox sued to block entry under literally hundreds of patents. IBM had spent millions to ‘invent around’ Xerox’s major patents – with 25 percent of the budget being spent on patent counsel, not research and development.”²⁰¹ Later entrants depended on antitrust countersuits rather than on plans to defend the patent suits.²⁰² The Federal Trade Commission eventually “forced Xerox to license patents to *all* entrants at nominal costs.”²⁰³ Although Xerox was highly innovative during its monopoly period, the innovations undertaken by entrants who were at last able to enter the plain paper copier market freely were of a different cast than the Xerox innovations, being oriented toward the “user interface” (e.g., automated technical features and paper feed devices) rather than being characterized by being “in the copier.”²⁰⁴ The Xerox example suggests that the manners in which holders of patents wield them strategically may influence the nature and type of

¹⁹⁷ See George Bittlingmayer, *Property Rights, Progress, and the Aircraft Patent Agreement*, 31 J. L. & ECON. 227, 230-233, 240, 248 (1988).

¹⁹⁸ *Id.*

¹⁹⁹ Merges & Nelson, *supra* note 153, at 891.

²⁰⁰ Timothy F. Bresnahan, *Post-Entry Competition in the Plain Paper Copier Market*, 75 AM. ECON. REV. 15, 15 (1985).

²⁰¹ *Id.*

²⁰² *Id.* at 16.

²⁰³ *Id.*

²⁰⁴ *Id.* at 18.

competition within a particular competitive space.

More recently, companies have used the anticircumvention provisions of the Digital Millennium Copyright Act (DMCA) strategically against potential competing technologies.²⁰⁵ These strategic uses were not used to protect innovation or prevent unauthorized copying or distribution of copyrighted works, rather, noting with respect to the Lexmark, Streambox and AiboPet cases, this anticircumvention right under the DMCA was used to “suppress competing technology by preventing interoperability with products that include technical protections.”²⁰⁶

These cases highlight the fact that strategic uses of intellectual property are not at all uncommon and that the scope and uses of intellectual property rights grants can influence behavior and market structure.²⁰⁷ Examples such as those from the airplane manufacturing, radio, automobile and other examples, suggest that “the granting of broad patents in many cases has stifled technical advance and that where technical advance has been rapid there almost always has been considerable rivalry.”²⁰⁸ Some industries may, however, in the long run be less vulnerable to the effects of

²⁰⁵ Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (Oct. 28, 1998) (codified at 17 U.S.C. §1201 et seq.).

²⁰⁶ Lipton, *supra* note 107, at 487-90; Burk, *supra* note 107, at 1110-14; FREE EXPRESSION POLICY PROJECT, “THE PROGRESS OF SCIENCE AND USEFUL ARTS”: WHY COPYRIGHT TODAY THREATENS INTELLECTUAL FREEDOM: A PUBLIC POLICY REPORT 32 (2003) (“The DMCA has also become a weapon for companies seeking to squelch competition.”). *See also* Lexmark Int’l v. Static Control Components Inc., 253 F. Supp. 2d 943 (E.D. Ky 2003); Static Control Components Inc. v. Dallas Semiconductor Corp., 2003 U.S. Dist. LEXIS 12313 (D. Minn. 2003); RealNetworks v. Streambox, 2000 U.S. Dist. LEXIS 1889 (W.D. Wash. Jan 18, 2000); Universal Studios v. Reimerdes, 82 F. Supp. 2d 211 (S.D.N.Y. 2000), *aff’d sub nom Universal City Studios, Inc. v. Corley*, 273 F.3d 429 (2d Cir. 2001); Sony Computer Entertainment America v. Game Masters, 87 F. Supp. 2d 976 (N.D. Cal. 1999). *See also* Glynn S. Lunney, Jr., *The Death of Copyright: Digital Technology, Private Copying, and the Digital Millennium Copyright Act*, 87 VA. L. REV. 813 (2001).

²⁰⁷ *See* Hall, *supra* note 76, at ___; Merges & Nelson, *supra* note 153, at 877 (“[g]iven the way that humans and organizations think and behave, we believe we are much better off with considerable rivalry in invention than with too little.”).

²⁰⁸ Merges & Nelson, *supra* note 153, at 877.

strategic behaviors.²⁰⁹

III. INTANGIBLES, INNOVATION AND COMPETITION:
MARKETS AND MARKET POWER

A. *Intangibles, Innovation and the Development of Markets
for Technology*

Strategic behaviors are thus not new in the intangibles paradigm. The intangibles paradigm is, however, distinctive in combining the changing nature of sources of value with the development of markets for technology. This changing context suggests that the implications of the intangibles paradigm for innovation and competition are potentially quite complex. In addition, grants of intellectual property rights cannot be fully assessed without taking account of the nature of the markets in which inventions or creations might be disseminated.²¹⁰ The predominance of intangibles and ICTs has changed how companies conduct their businesses. Globalization and deregulation are underlying factors and have contributed to increased demand for and uses of intangibles and ICTs.²¹¹

Intangibles and ICTs can clearly contribute to and promote innovation.²¹² In the knowledge economy era, global markets for technologies have grown rapidly.²¹³ How such markets operate

²⁰⁹ See DAVID EVANS & RICHARD SCHMALENSEE, *PAYING WITH PLASTIC: THE DIGITAL REVOLUTION IN BUYING AND BORROWING* ___ (1999) (noting that in network industries, the dominance of industries with important scale or learning economies is typically not permanent).

²¹⁰ See SCOTCHMER, *supra* note 71, at 38 (noting that intellectual property rights impose the costs of invention on its users, which is “particularly convincing for innovations with a narrow clientele, such as computer games or other whimsical things, but has less force for innovations with widely dispersed benefits.”).

²¹¹ LEV, *supra* note 51, at 8-13 (noting that globalization, deregulation and increased competition are factors in the increasing predominance of intangibles); ARORA ET AL., *supra* note 46, at 231 (noting that globalization has increased the demand for technologies).

²¹² LEV, *supra* note 51, at 8-13; ARORA ET AL., *supra* note 46, at 231.

²¹³ ARORA ET AL., *supra* note 46, at 2 (“Over the past ten to fifteen years, there has been a rapid growth in a variety of arrangements for the exchange of technologies or technological services, ranging from R&D joint ventures and partnerships, to licensing and cross-licensing agreements, to contracted R&D . . . all available evidence suggests that the trade in technologies is more common than it was in the past.”).

and influence the innovation process is a critical question today. The influence of developing markets for ICTs and intangibles on innovation is at least in part a function of the rules of the game in relation to intellectual property. The manner of play or the ways in which market participants actually use such rules for their benefit is a critical question in considering the impact of intellectual property rules on innovation and competition in the knowledge economy era.

To the extent that assumptions and rules of the game from the tangibles paradigm do not fully contemplate actual uses of intellectual property under the intangibles paradigm, greater leeway may exist for market participants to engage in strategic and other behaviors that are not fully addressed by existing legal frameworks. For example, the revenue extraction licensing strategies of companies such as IBM and Texas Instruments has been characterized as defying convention wisdom,²¹⁴ “which holds that an innovator can best profit from innovations by commercializing the innovations itself.”²¹⁵ This conventional wisdom vision of the ways in which innovators can profit from innovation assumes that firms that license are either less efficient at exploiting an invention or license their technology as a de facto standard.²¹⁶ This view does not, however, explain actual licensing behaviors in the technology marketplace under the intangibles paradigm.²¹⁷

More specifically, this view of innovation and the incentives to license does not fully take account of firms that consciously adopt a strategy of licensing in order to generate revenues, a use that may have little to do with innovation.²¹⁸ These behaviors are reflected in the significant increase in licensing revenues that has occurred

²¹⁴ ARORA ET AL., *supra* note 46, at 235-36 (noting the increasing extent of intellectual property management strategies evident at companies such as IBM, whose patent licensing revenues increased from \$30 million in 1990 to \$1 billion in 1998, and Texas Instruments, whose licensing revenues increased to \$600 million in 1995 and whose revenues from licensing in some years have exceeded income from normal operations).

²¹⁵ *Id.* at 171 (citations omitted).

²¹⁶ *Id.* at 171-72.

²¹⁷ *Id.* at 172 (discussing licensing behaviors).

²¹⁸ *Id.* at 172 (noting that the convention wisdom has some validity but does not fully explain the kind of licensing behaviors that are exhibited today).

over the last 20 years in a wide variety of industries, including the chemical, semiconductor and electronics industries.²¹⁹

The development of markets for technologies has changed the incentives of established producers to license their technologies.²²⁰ These behaviors reflect that fact that as technology markets have grown, the presence of several firms that may own substitutable technologies is now common in many industries.²²¹ The existence of multiple firms is important for understanding licensing behavior and the ways in which firms actually use intellectual property rights.²²²

One model of firm licensing has identified two effects of licensing on licensor profits: the revenue effect, which corresponds with rents earned by the licensor in the form of licensing revenues, and the rent dissipation effect, which is evident in the erosion of profits due to another firm (the licensee) competing in the product market.²²³ In a market with only one producer, “the rent dissipation effect typically dominates the revenue effect,”²²⁴ which means that the prospective licensor has no incentive to license.²²⁵ This would mean that the incumbent could earn monopoly profits by not licensing its invention and producing the commercial product itself.²²⁶ In a market with two incumbent producers, the prospective licensor does not fully internalize the rent dissipation effect, which influences the competitive structure of the market itself: “incumbent firms compete to supply not only their products, but also their technologies.”²²⁷ The extent to which incumbents license products will depend on a number of factors, including transaction costs, relative bargaining power, product differentiation and other factors.²²⁸ The rent dissipation effect may depend on the

²¹⁹ *Id.* at 173-75.

²²⁰ *Id.* at 178.

²²¹ *Id.*

²²² *Id.* at 179 (noting that the introduction of multiple technology holders is very important for understanding licensing behaviors).

²²³ *Id.*

²²⁴ *Id.*

²²⁵ *Id.* (noting that the prospective licensor would earn monopoly profits if it does not license and would earn at most the sum of duopolistic profits if it licenses and thus has no incentive to license).

²²⁶ *Id.* (noting that the incumbent would not license).

²²⁷ *Id.*

²²⁸ *Id.*

production and commercial capabilities of the licensor.²²⁹ Further, large, well-established producers “have less to gain from licensing and more to lose from competition.”²³⁰

In technology markets with multiple firms, competition in product markets can create strategic incentives to license, which can strengthen competition in the product market.²³¹ At the same time, technology holders may also have incentive to engage in collusion and anticompetitive practices.²³²

This model suggests that patents and licensing may be used to both enhance competition as well as hinder competition. Consequently, stronger intellectual property rights may in certain instances facilitate innovation and the development of markets for technology, but may in other circumstances hinder innovation.²³³ The limitations of the conventional wisdom in giving a comprehensive picture of such markets is in part due to the importance of competition in product markets that influence strategic incentives to license.²³⁴

In addition to potentially facilitating the development of markets for technology, stronger intellectual property rights can influence firm behaviors in other ways and lead to increased extractive and strategic behaviors.²³⁵ Stronger intellectual property rights and greater uses of such rights in a particular industry can also lead to companies undertaking aggressive patenting strategies as a defensive measure to protect against being fenced in or subject to risk of hold up.²³⁶ Stronger intellectual property rights do not,

²²⁹ *Id.*

²³⁰ *Id.*

²³¹ *Id.* at 192-93 (noting that competition in the product market creates a strategic incentive to license).

²³² *Id.* at 193; PETER DRAHOS WITH JOHN BRAITHWAITE, INFORMATION FEUDALISM 165-80 (2002) (discussing cartelism and protectionism).

²³³ ARORA ET AL., *supra* note 46, at 195; NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 65, at 35 (“Thus, where innovators are followers, increasing patent strength could increase or it could reduce their incentives to innovate.”).

²³⁴ ARORA ET AL., *supra* note 46, at 195.

²³⁵ Hall, *supra* note 76, at 8-11.

²³⁶ Ziedonis, *supra* note 35, at 805 (examining the conditions under which “an aggressive patenting strategy is an alternative mechanism that firms use to avoid being ‘fenced in’ by owners of technologies used, perhaps unknowingly, in the design and manufacture of their products”) NATIONAL ACADEMY OF SCIENCES

however, necessarily lead to more local innovation.²³⁷ In addition, strong intellectual property rights can be associated with and even encourage business worldviews and practices that focus on exclusion and protection rather than competition and innovation.²³⁸

B. *Intangibles, Intellectual Property and Competition*

How intellectual property frameworks interface with markets thus has important implications for competition and the interface between intellectual property law and competition law.²³⁹

Innovation is an important factor in competitiveness and economic growth.²⁴⁰ In addition, competition can often enhance and promote innovation: “competition often yields the first best . . . diminishing costs of replication can increase, rather than decrease, the incentive

REPORT, *supra* note 65, at 2 (“In some cases patenting appears to have departed from its traditional role, as firms build large portfolios to gain access to others’ technologies and reduce their vulnerability to litigation.”).

²³⁷ Lee G. Branstetter, *Do Stronger Patents Induce More Local Innovation?*, 7 J. INT’L ECON. L. 359, 360-62 (2004); *see infra* notes ___ to ___ and accompanying text..

²³⁸ Susan K. Sell, *Post-Trips Developments: The Tension Between Commercial and Social Agendas in the Context of Intellectual Property*, 14 FLA. J. INT’L L. 193, 193 (2002) (“TRIPS institutionalized a conception of IP based on protection and exclusion rather than competition and diffusion.”).

²³⁹ Suzzette Rodriguez Hurley, *Failing to Balance Patent Rights and Antitrust Concerns: The Federal Circuit’s Holding in In re Independent Service Organizations Antitrust Litigation*, 13 FED. CIR. B.J. 475, 475-76 (2004) (“Federal courts have disagreed regarding how to strike a balance between the antitrust and patent interests, reaching varying conclusions on these issues .”) (citations omitted); Ghosh, *supra* note 82, at 1382 (“the administration of patents should be guided by the goals of competition policy.”); R. Hewitt Pate, *Refusals to Deal and Intellectual Property Rights*, 10 GEO. MASON L. REV. 429, 429 (2002) (“Intellectual property and antitrust laws share a common objective--to encourage innovation, industry, and competition.”); Louis Kaplow, *The Patent-Antitrust Intersection: A Reappraisal*, 97 HARV. L. REV. 1813, 1813 (1984) (noting the continual flux and confusion in the intersection between patent law and antitrust law).

²⁴⁰ Susan DeSanti & William Cohen, *Competition to Innovate: Strategies for Proper Antitrust Assessments*, in EXPANDING THE BOUNDARIES OF INTELLECTUAL PROPERTY: INNOVATION POLICY FOR THE KNOWLEDGE ECONOMY 317, 317 (Rochelle Dreyfuss, Diane L. Zimmerman & Harry First, eds. 2001) (“Innovation is enormously important to the increased productivity and global competitiveness of U.S. companies and to economic growth in general.”); Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA L. REV. 1575, 1576 (2003) (“Patent law is our primary policy tool to promote innovation.”).

for creative activity”.²⁴¹ The economic development of the Silicon Valley provides further support of the potential importance of competition in enhancing innovation.²⁴²

Since one aspect of intellectual property involves regulation of uses of protected works, inventions and materials, how holders control uses of protected works and the ways in which legal frameworks recognize and mediate such claims is important in the overall operation of such frameworks.²⁴³ Consequently, considering competition and innovation suggests that how holders of intellectual property rights wield such rights can be of great importance in the extent to which intellectual property frameworks realize their goals of incentivizing innovation and creation. The business practices that have become increasingly predominant in the intangibles paradigm in many respects contradict such goals. The increased value attributable to intangibles generally in the intangibles paradigm business world has also encouraged business behaviors that focus on extractive and strategic uses of intellectual property such as patents at times at the expense of innovation and competition:

On the patent front, more time and energy seems to be spent on nuisance and defensive patenting of the obvious than on innovation. Individuals exploit the ignorance of patent examiners by patenting ideas already in widespread use in hopes of collecting licensing fees from a few large companies; large corporations patent and cross-license everything imaginable, both to protect themselves against greenmail and to suppress entry into their industry. That cross-licensing and “protection of intellectual property” can be instrumental in promoting collusion within an industry seems transparent.²⁴⁴

²⁴¹ Boldrin & Levine, *supra* note 71, at 210; DeSanti & Cohen, *supra* note 240, at 323 (“Competition’s role in stimulating innovation is not confined to high-tech or research-intensive industries.”).

²⁴² ANNALEE SAXENIAN, REGIONAL ADVANTAGE: CULTURE AND COMPETITION IN SILICON VALLEY AND ROUTE 128, at 2 (1996) (“The [Silicon Valley] region’s dense social networks and open labor markets encourage experimentation and entrepreneurship. Companies compete intensely while at the same time learning from one another about changing markets and technologies through information communication and collaborative practices; and loosely linked team structures encourage horizontal communication among firm divisions and with outside suppliers and customers.”).

²⁴³ Arewa, *Catfish Row*, *supra* note 24, at ____.

²⁴⁴ Boldrin & Levine, *supra* note 71, at 210.

Consequently, how intellectual property rules operate in and influence market dynamics both locally and internationally deserves greater attention.²⁴⁵ This is particularly true since the effective breadth of intellectual property protection can have significant influence on both competition and sequential innovation.²⁴⁶

C. *The SCO-Linux Dispute: New Technologies, Competition and Cumulative Knowledge*

1. SCO and the Development of Linux

The SCO-Linux dispute demonstrates the extent to which the scope of an intellectual property entitlement may be subject to manipulation and strategic uses, particularly in the context of technology shifts. The increasing adoption of open source software by businesses is an important technological background to the SCO-Linux controversy.

Open source software refers to software that was developed on a basis where free access was given to code, “from the operating system on up.”²⁴⁷ Richard Stallman, who began the Free Software Foundation in 1985, was a force at the outset of the open source movement when, in 1984, he started developing an open source operating system.²⁴⁸ GNU, which stands for GNU’s not Unix, was to have been the basis for this open source code world.²⁴⁹ Linux was initially developed by Linus Torvalds, a student at the University of Helsinki, who began working on Linux in 1991.²⁵⁰ Torvalds then sent an open call out to programmers interested in

²⁴⁵ See, e.g., David W. Opperbeck, *Patents, Essential Medicines and the Innovation Game*, 58 VAND. L. REV. 501, 503, 526-27 (2005) (noting that differences in demand elasticity in developed and developing country markets for essential technologies can influence patent pricing and the amount of extracompetitive profits that a patent owner can obtain).

²⁴⁶ See James B. Kobak, Jr., *Intellectual Property, Competition Law and Hidden Choices Between Original and Sequential Innovation*, 3 VA. J. L. & TECH 6, ____ (1998) (noting that questions about the breadth of intellectual property protection have profound consequences for competition policy and future innovation).

²⁴⁷ See LESSIG, *CODE*, *supra* note 49, at 104.

²⁴⁸ *Id.*

²⁴⁹ *Id.*

²⁵⁰ *Id.*

developing an alternative to Unix.²⁵¹ This open development enabled programmers to modify and add to the Linux kernel.²⁵² Linux was developed in part by combining Stallman's GNU operating system with Unix.²⁵³ By 1998, Linux was increasingly being seen as a competitor to the Microsoft operating system. Linux is distributed under a General Public License (GPL).²⁵⁴

The SCO-Linux dispute highlights how a holder of or entity with the right to enforce a copyright may seek to expand the effective scope of the right and attempt to extract licensing revenues from exercise of previously unrecognized rights. SCO asserts that Linux includes copies of segments of the Unix code in which SCO has rights.²⁵⁵ As a result, SCO claims that it is entitled to receive licensing revenues from all users of Linux.

Unix generally refers to a very large family of computer operating systems (numbering in the hundreds) patterned on (but not necessarily derivative works of) the ancestral Unix invented by AT&T Bell Labs in 1969 (referred to as "Unix-family" operating systems).²⁵⁶ Unix is also used more specifically to describe only the Unix operating systems derived from the original Bell Labs Unix ("genetic Unix").²⁵⁷ Finally, the term Unix is also a trademark of The Open Group, a technical standards organization, and may be used to describe "any operating system (whether genetic-Unix or not) that has been verified to conform to the published Unix standard ("trademark Unix")."²⁵⁸ Neither SCO nor its predecessor entities has ever owned the UNIX trademark. Linux has been characterized as a Unix-family operating system but is neither genetic Unix nor a trademark Unix.²⁵⁹

²⁵¹ *Id.*

²⁵² Shane Johnson, *Linux Code Red*, SALT LAKE CITY WEEKLY (Jan. 22, 2004).

²⁵³ LESSIG, CODE, *supra* note 49, at 105.

²⁵⁴ *Id.*

²⁵⁵ For a discussion of the basis of SCO's claims, see *infra* notes 264 to 276 and accompanying text.

²⁵⁶ See Eric Raymond & Rob Landley, *OSI Position Paper on the SCO-vs-IBM Complaint 5*, Open Source Institute, at <http://www.opensource.org/sco-vs-ibm.html> (hereinafter, "OSI Position Paper").

²⁵⁷ *Id.*

²⁵⁸ *Id.*

²⁵⁹ *Id.*

2. The SCO-Linux Dispute

On March 6, 2003, The SCO Group,²⁶⁰ then a Linux distributor,²⁶¹ sued IBM Corp. for \$1 billion.²⁶² SCO's claim arose out IBM's fostering of Linux technology. The suit charged IBM with trade secret misappropriation with respect to SCO's proprietary Unix source code.²⁶³ In May 2003, SCO followed up its IBM suit with letters sent to approximately 1,500 companies warning these companies that using Linux infringed on certain rights held by SCO with regard to Unix copyrights.²⁶⁴ The May letter included statements such as:

We believe that Linux is, in material part, an unauthorized derivative of UNIX. . . Many Linux contributors were originally UNIX developers who had access to UNIX source code distributed by AT&T and were subject to confidentiality agreements, including confidentiality of the methods and concepts involved in software design. We have evidence that portions of UNIX System V software code have been copied into Linux and that additional other portions of UNIX System V software code have been modified and copied into Linux seemingly for the purposes of obfuscating their original source.²⁶⁵

²⁶⁰ The SCO Group was Caldera Systems, Inc., a Delaware corporation that does business in the name The SCO Group. The stockholders of Caldera approved the corporate name change to The SCO Group, Inc. on May 16, 2003. *Amendment No. 2 to Form S-3 of The SCO Group, Inc. 2* (filed Feb. 11, 2004), SEC File No. 333-110556 (hereinafter, "SCO, S-3 Amendment No. 2").

²⁶¹ The SCO Group announced that it was suspending distribution of Linux at the time of the IBM lawsuit, although Linux kernel was apparently available for download from SCO's website through July 2003. *See infra* note 291.

²⁶² Caldera Systems, Inc. d/b/a The SCO Group v. International Business Machines Corporation, Third Judicial District of Salt Lake County, State of Utah (filed Mar. 6, 2003), Case No. 030905199 (alleging misappropriation of trade secrets, unfair competition and interference with contract). This case was removed by IBM to federal court on March 25, 2003. Filings in this ongoing litigation are available at <http://www.thescogroup.com/ibmlawsuit/>. An overview of the actions in this complex case involving multiple overlapping lawsuits from a source sympathetic to the open source software movement is available at <http://www.lemis.com/grog/sco.html>.

²⁶³ *See infra* notes ___ to ___ and accompanying text.

²⁶⁴ *See* Letter from The SCO Group to commercial Linux customers dated May 12, 2003 (hereinafter, "SCO May Letter"). This letter has been removed from the SCO website, but has been posted at <http://www.advogato.org/article/659.html>.

²⁶⁵ *Id.*

SCO sought \$32 for each embedded system using Linux versions 2.4 and above.²⁶⁶ In its May 2003 letter, SCO further noted that it intended to “aggressively protect and enforce its rights” and that “Legal liability that may arise from the Linux development process may also rest with the end user.”²⁶⁷ A complicating factor in SCO’s claim with respect to Unix is that SCO does not appear to actually own the Unix copyrights but may have obtained some enforcement rights as a result of Novell’s sale of its Unix business to SCO’s predecessor company, the Santa Cruz Operation.²⁶⁸ The interpretation of the Novell Agreement is a key question underlying SCO’s assertion of rights.²⁶⁹ Novell is now a distributor of Linux and is countering SCO’s assertions in the SCO Letter. SCO, which was formerly Caldera Systems, is described as having acquired “some rights to Unix when it bought the operating-systems division from the original Santa Cruz-based SCO.”²⁷⁰ Caldera Systems renamed itself SCO after the takeover.²⁷¹

²⁶⁶ See Rick Merritt, *SCO Wants \$32 for Each Embedded Unix Device*, EE Times (Aug. 11, 2003), at <http://www.eetimes.com/story/OEG20030806S0025>.

²⁶⁷ See SCO May Letter, *supra* note 264.

²⁶⁸ See Asset Purchase Agreement between the Santa Cruz Operation, Inc. and Novell, Inc. dated as of Sept. 19, 1995, at <http://www.thescogroup.com/novell/> (hereinafter, “Novell Agreement”).

²⁶⁹ The controversy specifically relates at least in part to how to interpret Schedules 1.1(a) – Assets and Schedule 1.1(b) – Excluded Assets to the Novell Agreement, which contain the assets being sold and excluded from the sale, respectively. Schedule 1.1(a).I. states that the acquired assets include “All rights and ownership of UNIX and UnixWare”, while Schedule 1.1(b).V. specifically excludes all patents, copyrights and trademarks, except for trademarks in UNIX and UnixWare, from the purchase. This language suggests that SCO did not actually acquire any direct ownership rights to Unix intellectual property other than the UNIX and UnixWare trademarks. However, certain other language in the agreement is unclear and may give SCO certain rights with respect to the Unix business. See Novell Agreement, at Schedule 1.1(a).IV. II (defining sale as including “[a]ll of Seller’s claims against any parties relating to any right, property or asset included in the Business.”). The definition of the “Business” may be one aspect of the Novell Agreement that may give SCO some rights. Novell Agreement, Recital A (defining the “Business” as the “business of developing a line of software products currently known as Unix and UnixWare, the sale of binary and source code licenses to various versions of Unix and UnixWare, the support of products and the sale of other products which are directly related to Unix and UnixWare.”).

²⁷⁰ See SCO May Letter, *supra* note 264.

²⁷¹ Matt Loney, *SCO takes Linux Licensing Overseas*, CNET News.com (Jan. 14, 2004), at http://news.com.com/2100-7344_3-5140761.html?tag=nefd_top.

Many of the 1,500 companies approached by SCO in May 2003 already have Unix licenses.²⁷² One week after SCO sent this letter, Novell, which is basing future operating system products on Linux,²⁷³ stated that it had never sold SCO any Unix copyrights and patents, which may be accurate given the terms of the acquisition documents.²⁷⁴ As a result, SCO's arguments appear to be largely based on its enforcement rights with respect to Unix copyrights, which enforcement rights SCO may have acquired from Novell. In addition to potentially not actually owning the copyrights it alleged were infringed, SCO's claim of infringement of Unix copyrights was made more puzzling by the fact that its IBM suit did not allege that IBM had infringed these copyrights but instead relied on claims based on an appropriation theory. SCO also did not initially show any proof of the alleged copying.²⁷⁵ On January 20, 2004, SCO filed a slander of title action against Novell relating to the Novell's statements concerning the Unix copyright dispute.²⁷⁶

In August 2003, IBM filed an answer that included countersuits against SCO.²⁷⁷ IBM has characterized SCO's actions as an "attempt to profit from its limited rights to a very old UNIX operating system by introducing fear, uncertainty and doubt into

²⁷² Stephen Shankland, *Contract Illuminates Novell-SCO Spat*, CNET News.com (June 4, 2003), at <http://news.com.com/2100-1016-1013229.html?tag=n1> (noting that while the remains of the original SCO became Tarantella).

²⁷³ *Id.*

²⁷⁴ See *supra* note 264. A set of documents relating to the SCO-Novell dispute is available on Novell's website at <http://www.novell.com/licensing/indemnity/legal.html>.

²⁷⁵ Shankland, *supra* note 272. When SCO did show proof, it was to stock market analysts. See *infra* notes 286, 293 and 296.

²⁷⁶ The SCO Group, Inc. v. Novell, Inc., Third Judicial District of Salt Lake County, State of Utah (filed Jan. 20, 2004), Case No. 040900936. Information concerning the Novell lawsuit is available at <http://www.thescogroup.com/novell/>.

²⁷⁷ See Defendant IBM's Answer to the Amended Complaint and Counterclaim-Plaintiff IBM's Counterclaims against SCO (filed Aug. 6, 2003), D. Utah, at http://www.thescogroup.com/ibmlawsuit/ibm_counterclaims.pdf (denying SCO's claims, listing multiple defenses, including failure to state a claim, lack of standing, laches, running of statute of limitation, waiver, estoppel, unclean hands, federal preemption and improper venue and countersuing SCO for misuse of purported rights to extract windfall profits for unjust enrichment and patent infringement).

the marketplace.”²⁷⁸ RedHat, a leading Linux distributor, also sued SCO in August 5, 2003.²⁷⁹ On December 4, 2003, SCO issued an open letter concerning the Linux legal controversy.²⁸⁰ SCO followed up in January 2004 by taking its controversial licensing strategy overseas.²⁸¹ In January 2004, SCO also wrote letters to members of Congress discussing the threat of open source software in a way that touches upon and reflects many of the basic points of contention in the intellectual property rights arena today.²⁸² In March 2004, SCO sued two of the companies, DaimlerChrysler

²⁷⁸ Clint Boulton, *IBM Counter Sues SCO Group over Linux*, Internetnews.com (August 7, 2003)

²⁷⁹ RedHat issued a press release on August 4, 2003 relating to this case filed in Delaware District Court. See Red Hat Takes Aim at Infringement Claims (Aug 4, 2003) at http://www.redhat.com/about/presscenter/2003/press_sco.html (announcing suit against SCO to “to demonstrate that Red Hat's technologies do not infringe any intellectual property of SCO and to hold SCO accountable for its unfair and deceptive actions and announce establishment of litigation fund for Linux dispute.”). After denying SCO’s request to have the suit dismissed, the Delaware District Court put this case on hold in April 2004 pending the outcome of the SCO-IBM litigation.

²⁸⁰ In this letter (hereinafter, the “SCO Open Letter”), SCO refers to the Intellectual Property Clause of the U.S. Constitution and asserts that the GPL under which Linux is distributed violates the U.S. Constitution. In this letter, SCO firmly positions itself and proprietary technologies as necessary for continued growth and development of the global software industry, noting that the *Eldred* case entailed rejection of arguments similar to those used by the open source movement. The letter mentions RedHat, a major Linux distributor, specifically by name and includes a reference to the RedHat website at http://www.redhat.com/legal/patent_policy.html. The SCO Open Letter is available at <http://www.thescogroup.com/copyright/>. See *Eldred v. Ashcroft*, 537 U.S. 186 (2003) (upholding Copyright Term Extension Act).

²⁸¹ Loney, *supra* note 264.

²⁸² In these congressional letters, dated January 8, 2004, SCO asserts that open source software is not at all original (having “gained many of its capabilities through the illegal incorporation of code ‘borrowed’ from the rightful owners”) and that such software poses a threat to the U.S. information technology industry (each “Open Source installation displaces or pre-empts a sale of proprietary, licensable and copyright-protected software. This means fewer jobs, less software revenue and reduced incentives for software companies to innovate, international competitive position (referring to fact that a growing number of countries are requiring that government entities use Open source software instead of software such as Unix or Windows) and national security (the availability of Open Source software over the Internet “has the potential to provide our nation’s enemies or potential enemies with computing capabilities that are restricted by U.S. law”), at http://www.osaia.org/letters/sco_hill.pdf.

and AutoZone, to which it had previously sent licensing letters.²⁸³

3. SCO, Intellectual Property Portfolio Management Strategies and Contested Rights

The reaction to SCO's claims has been largely quite negative.²⁸⁴ SCO's tactics do reflect a dominant intellectual property portfolio management strategy used today whereby companies attempt to secure streams of licensing revenue from existing intellectual property rights. The fact that SCO is using such tactics is evident in the statements of SCO officials when they describe their overall strategic approach. Darl McBride, the Chief Executive Officer of SCO, told *The Economist*, for example:

Immediately, he says, he started thinking about "how to monetise our assets"—ie, Caldera's [SCO's] rights to Unix . . . Sure enough, says Mr. McBride, he soon found "massive and widespread violation" of Caldera's [SCO's] intellectual property in the Linux code. At a more general level (and surprisingly for a Linux distributor), he found the entire free-software trend "communistic", he says: "we don't get the whole free-lunch thing."²⁸⁵

SCO's timing, however, also appears to reflect a tactic of a market incumbent or aspiring market incumbent seeking to delay or

²⁸³ The SCO Group, Inc. v. Autozone, Inc., First Amended Complaint Jury Demand (D. Nev. March 2004) (claiming copyright infringement based on AutoZone's use of Linux operating system that is alleged to infringe on SCO's exclusive rights to its proprietary Unix System V operating system technology), at <http://www.thescogroup.com/iplawsuit/AZComplaint.pdf>; The SCO Group, Inc. v. DaimlerChrysler Corporation, Complaint and Jury Demand (Circuit Court, Oakland County, Mich. March 2004) (claiming breach of contract based on alleged refusal of DaimlerChrysler Corporation to provide contractually required certificates of compliance with respect to DaimlerChrysler's use of Unix System V requested by SCO), at <http://www.thescogroup.com/iplawsuit/DCComplaint.pdf>.

²⁸⁴ See, e.g., *Why SCO Won't Show the Code*, at <http://lwn.net/Articles/45019> (reflecting postings discussing the SCO Linux assertions). Since SCO has launched its new Linux strategy, its website has been attacked repeatedly. Johnson, *supra* note 252. One of the targets of the Mydoom worm denial of service attacks was the SCO website, which was shut down as a result of these attacks. Jeff Pauline, *MyDoom Takes Down SCO Website*, Silicon.com (Feb. 2, 2004), at <http://www.silicon.com/software/security/0,39024655,39118120,00.htm>.

²⁸⁵ *Of Monkeys and Penguins*, THE ECONOMIST, Aug. 28, 2003, at http://www.economist.com/displaystory.cfm?story_id=2020889

otherwise hinder the development of new and competing technologies.²⁸⁶ Linux has only recently gained significant support from major technology companies, including IBM, Novell and Hewlett-Packard.²⁸⁷ In making assertions against Linux at the particular point in time that it chose, SCO may have inflicted some damage on Linux and may have had a negative impact on the competitive position of Linux by making prospective Linux users more cautious about implementing Linux-based technologies for fear of litigation.²⁸⁸ A relationship may also exist between SCO and Microsoft, a major vendor of proprietary software technologies and a fierce opponent of open source, nonproprietary technologies such as Linux,²⁸⁹ which has “struggled unsuccessfully to stem the Linux tide for several years.”²⁹⁰

Significant questions exist concerning the strength of SCO’s Unix claims.²⁹¹ The Open Source Initiative, for example, has issued a detailed position paper on the SCO-IBM litigation and outlined specifically why many of SCO’s claims in the amended complaint filed June 16, 2003 are not valid.²⁹² One analyst, having seen the source code that SCO claims is copied, says that the documents

²⁸⁶ Peter Williams, *SCO Action Creates Bad Feeling in Market*, Vnunet.com (May 19, 2003), at <http://www.vnunet.com/News/1140962> (noting that analysts believe that SCO lawsuits and other actions may slow gathering momentum of Linux, even though analysts are dismissive of SCO’s chances of winning its legal case).

²⁸⁷ Novell and Hewlett-Packard have responded to the SCO actions by announcing that they will indemnify Linux customers. Johnson, *supra* note 252.

²⁸⁸ Scott Bekker, *Analysis: SCO Takes on Linux*, ENTNews (May 22, 2003), at <http://www.entmag.com/news/article.asp?EditorialsID=5821>.

²⁸⁹ Microsoft was one of the first companies to enter into a license agreement with SCO, giving it \$10 million in license fees in May 2003. Johnson, *supra* note 252. In addition, Microsoft is alleged to have helped SCO get \$86 million in financing, leading some to suggest that SCO’s legal moves are part of a Microsoft attack strategy against Linux technology. See Bob Mims, *A Microsoft, SCO link?: Memo suggests software giant is aiding lawsuit for rights to Linux system*, SALT LAKE TRIB. (Mar. 6, 2004), at <http://www.sltrib.com/2004/mar/03062004/business/business.asp>.

²⁹⁰ Bekker, *supra* note 288 (describing Linux as having crept up on Microsoft, “challenging its stranglehold on the server market by offering better prices, performance, security and reliability . . . several Linux companies are positioning themselves to take a stab at Microsoft’s 94 percent hold on desktop operating systems. It’s a sign that the open-source software development model is edging out Microsoft’s proprietary model Johnson, *supra* note 252).

²⁹¹ See, e.g., Moglen, *supra* note 30.

²⁹² OSI Position Paper, *supra* note 263, at 4.

provided to him by SCO appear supportive of SCO's claims.²⁹³ Most other assessments range from skeptical to extremely negative.²⁹⁴ The lack of certainty concerning the basis of SCO's claims underscores the potential indeterminacy of claims that may occur in cases involving intangibles.

The motivations of SCO in launching its aggressive actions remain a subject of speculation. Many characterize SCO as a company that failed to adapt to changing technology and is now trying to stifle competition by preventing the adoption of new technologies or compensate for an ineffective business model by extracting value from an existing technology.²⁹⁵ SCO's own contributions to Linux and actions with respect to Unix source code complicate the situation further.²⁹⁶ Prior to launching its new Linux strategy, SCO (then Caldera) was trying to marry Unix and Linux in a novel strategy intended to synergize the two systems.²⁹⁷ Through at least July 21, 2003, Linux kernel source under GPL was available from

²⁹³ Thor Olavsrud, *Analyst: Linux Kernel Code Seems to be Copied*, Earthwebnews.com (August 7, 2003), at <http://news.earthweb.com/dev-news/article.php/2245911> (quoting Deutsche Bank Securities analyst Brian Skiba, who asserts that direct and near exact duplicate source code appears between versions of Linux and Unix).

²⁹⁴ See OSI Position Paper, *supra* note 263; Moglen, *supra* note 291; Greg Lehey, *SCO's Evidence of Copying Between Linux and UnixWare*, at <http://www.lemis.com/grog/SCO/code-comparison> (looking at code to assess SCO case for infringement and states that code on which SCO bases its assertions has been obsolete for decades); *SCO's Evidence: This Smoking Gun Fizzles Out*, at <http://www.catb.org/~esr/writings/smoking-fizzle.html> (looking at SCO's evidence and code and describing SCO case as dead on arrival); Bruce Perens, *Analysis of SCO's Las Vegas Slide Show*, at <http://www.perens.com/SCO/SCOSlideShow.html>. A number of websites and blogs also include ongoing discussions about the SCO-Linux dispute. See, e.g., <http://sourcefrong.net/weblog/issues/sco-vs-linux>

²⁹⁵ Johnson, *supra* note 252 (noting that SEC filings show that SCO had hundreds of millions of dollars of losses from 1994 to 2002). The fiscal year ended Oct. 31, 2003 was the first full profitable year in SCO's operating history. The profitability in 2003 was a result of the SCOSource licensing initiative reflected in the letters sent to Linux customers in 2003. See SCO, S-3 Amendment No. 2, *supra* note 260, at 3.

²⁹⁶ Robert McMillan, *SCO Shows Linux Code to Analysts*, LinuxWorld.com (June 10, 2003), at <http://www.linuxworld.com/story/32702.htm> (noting that SCO, for instance, has been an active contributor to and distributor of Linux kernel source in the past).

²⁹⁷ Johnson, *supra* note 252.

SCO's FTP website.²⁹⁸

The history of the development of Unix family operating systems has some bearing on the current SCO controversy, including the outcome of a lawsuit between USL, BSDI and the University of California Berkeley.²⁹⁹ This is particularly true since some

²⁹⁸ Moglen, *supra* note 30, at 4 (noting that SCO has commercially distributed Linux for years).

²⁹⁹ BSD, Berkeley Software Distribution, which began in 1977, is the name given to distributions of source code at the University of California, Berkeley that were originally extensions to genetic Unix. BSD is an open source genetic Unix, but is not trademark Unix. For an overview of BSD, see *Explaining BSD* at <http://www.lemis.com/bsdpaper.html>; *What is BSD?* at <http://www.tribug.org/bsd.html>. On April 20, 1992, Unix Systems Laboratories, Inc. ("USL"), then owner of the Unix business now owned by SCO, sued Berkeley Software Design Inc. ("BSDI"), a distributor of a computer software product known as BSD/386, in New Jersey District Court. See *Unix Systems Laboratories, Inc. v. Berkeley Software Design, Inc.*, Complaint, Civil Action No. 92-1667, at <http://cm.bell-labs.com/cm/cs/who/dmr/bsdi/920420.complaint.txt>. The first Amended Complaint added defendants, including the Regents of the University of California, asked for an injunction against BSDI and the University of California and expanded USL's claims to include federal and statutory common law and contractual rights. See *Unix Systems Laboratories, Inc. v. Berkeley Software Design, Inc.*, First Amended Complaint, Civil Action No. 92-1667 (filed July 24, 1992), at <http://cm.bell-labs.com/cm/cs/who/dmr/bsdi/920724.complaint.txt>. The USL actions alleged that the University of California was distributing a computer operating system that substantially copied Unix system source code to persons who were not authorized licensees of USL. BSDI was alleged to have used this same Unix system source code to publicly distribute a commercial computer operating system. The parties (which at this point included Novell as successor to USL) ended up settling on February 4, 1994, with BSDI agreeing "to substitute a port of the University of California's forthcoming new release to be known as 4.4 BSD(Lite) for BSD/386. For a limited period of time, BSDI may continue to distribute its BSD/386 product, although certain portions of the code may be distributed in binary form." BSDI Press Release (Feb. 6, 1994), available at <http://groups.google.com/groups?selm=2j45fl%24jb%40BSDI.COM>. The February 1994 settlement agreement is not public, but part of USL's motivation for settlement may have been the fact that substantial portions of USL's Unix code had been derived from the University of California's BSD code without payment and without proper attribution (copyright notices appear to have been removed). These are allegations reflected in a countersuit filed by the University of California in California state court. See *Regents of the University of California v. USL*, Superior Court of California, Alameda County, No. 717864-3 (filed Aug. 6, 1993), at http://cm.bell-labs.com/cm/cs/who/dmr/bsdi/930610.ucb_complaint.txt. In addition, the New

interpret SCO's current statements as indicating that it intends to take action against BSD,³⁰⁰ which may mean that Apple, whose OS X operating system is based on BSD, is a future target.

4. SCO, Diffusion and Competition: Intellectual Property Rights and Sources of Value

The actions of SCO with respect to Linux have little to do with innovation but rather focus on crystallizing intellectual property rights. SCO's actions also reflect claims that may be intended to prevent diffusion of a competing technology in a market in which SCO was not able to compete effectively. One way to interpret SCO's current strategy is as one that attempts to compensate for the failure of a business model by moving towards an extractive model that involves wringing maximum benefits from prior inventions of others in which SCO had no involvement. The fact that these inventions were cumulative ones in which many parties played a role underscores the consistent tension between communal creations and individual proprietary interests in the products of such creations that is so characteristic of the operation of intellectual property frameworks under the intangibles paradigm.

SCO's assertions and use of copyright represents an aggressive use of common strategic intellectual property tactics promoted by the strategic intellectual property literature and increasingly used by companies today. In undertaking this strategic course, SCO has initiated four separate litigations and are involved in a fifth litigation. Through much of 2004, SCO continued to threaten

Jersey District Court Judge had issued a preliminary opinion refusing to grant USL's request for an injunction. See Opinion of District Judge Debevoise, March ___, 1999, at <http://cm.bell-labs.com/cm/cs/who/dmr/bsdi/930303.ruling.txt>. The filings from this litigation are available at <http://cm.bell-labs.com/cm/cs/who/dmr/bsdi/bsdisuit.html>. The Apple Macintosh Mac OS X operating system is based on BSD, FreeBSD, NetBSD and OpenBSD. Jeremy C. Reed, *SCO and the USL vs. BSDI Lawsuit*, BSD NEWSLETTER (Nov. 2003), at <http://www.bsnewsletter.com/2003/11/News111.html>. Some assert that SCO's claims are very similar to those made by AT&T, the plaintiff in the earlier BSD case, which AT&T lost. See Perens, *supra* note 294.

³⁰⁰ See Joe Barr & Chris Preimesberger, *Why SCO will soon be going after BSD*, Newsforge.com (Nov. 18, 2003), at <http://www.newsforge.com/business/03/11/18/1742216.shtml>.

further such actions, but has since announced that it will not undertake any more suits.³⁰¹ Intellectual property frameworks, as currently conceived, do not adequately address this type of behavior with any significant degree of expediency. Through the threat of litigation and aggressive litigation tactics, SCO has in fact persuaded a number of companies to pay the license fees so as to avoid litigation, despite the fact that many of SCO's claims remain largely unsubstantiated.

The value of the intellectual property rights it asserts are connected to SCO's strategic vision and quest for profitability. This value, however, has very little if anything to do with innovation. SCO's aggressive tactics have clearly been orchestrated within an eye toward the value of SCO's stock. Prior to the announcement of its IBM lawsuit, between October 29, 2002 and March 5, 2003, the day before it announced its suit, SCO's stock had traded for an average price of \$1.43 per share.³⁰² From the time of announcement of the IBM suit in March 2003 until April 2004, SCO's stock traded at an average price of \$11.43 per share, an increase in average stock price of close to 700%.³⁰³ The fact that SCO first showed the allegedly infringing source code to stock market analysts reflects SCO's market-driven strategy. A big part of the value that the assertion of Unix enforcement rights gives SCO relates to SCO's market capitalization. This is an example of how companies can derive value intangibles in a way that gives

³⁰¹ Robert McMillan, *SCO CEO: No Need to Sue More Customers*, INFOWORLD (Aug. 2, 2004), at

http://www.infoworld.com/article/04/08/02/HNscoforumnosue_1.html (noting mounting financial losses, partially from high legal fees, sluggish sales of the SCOsource Linux licensing program and a flagging Unix business).

³⁰² This figure is based on closing trading prices on the Nasdaq SmallCap Market (symbol SCOX). The minimum price of SCO's stock during this time period was \$1.09 and the maximum \$2.26.

³⁰³ This figure is calculated based on closing trading prices between March 6, 2003 and April 29, 2004. The minimum price of SCO's stock during this time period was \$2.07 and the maximum \$20.50. This average price reflects a serious price decline in April 2004 after BayStar Capital, an investor in SCO, indicated that it felt SCO needed a management change to obtain a management more focused on the Linux litigation and with less focus on Unix technology. BayStar asked to redeem the \$20 million it had invested in SCO in October 2003. See Stephen Shankland, *BayStar: SCO Needs New Management*, CnetNews.com (Apr. 21, 2004), at http://news.com.com/2100-1014_3-5197398.html?tag=nefd.top. The news about the BayStar request sent SCO's stock price down by 13%.

incentive to value maximizing behaviors with respect to intangibles that may be asserted based on even the most tenuous of intellectual property rights claims.

Although SCO's stock has since declined in value, SCO and its principals have benefited significantly from these positive market effects. SCO corporate insiders sold stock worth close to \$4.5 million between March 10, 2003 and April 2004.³⁰⁴ Some have asserted that one motivation for the IBM lawsuit was a desire by SCO to be acquired by IBM.³⁰⁵ SCO's strategy was an important factor in its being able to attract investors, and SCO was able to close a \$50 million investment round in October 2003.³⁰⁶ Part of SCO's strategy has been to vigorously attack the open source movement at all levels, through appeals to Congress, open letters to the public, court cases and aggressive licensing letters.³⁰⁷

Once rights such as those claimed by SCO are asserted, the current intellectual property rights climate means that multiple litigations may ensue, all being initiated with at times less ability, because of verifiability issues, to understand the basis of competing claims. The use of intellectual property rights in this fashion is of concern because it imposes immense transaction costs while having little productive benefit in terms of creation, invention or diffusion of technologies and may effectively operate as an anticompetition force. The current system of intellectual property rules does not

³⁰⁴ The figure for insider sales is calculated based on gross sales by SCO officers, directors and stockholders who are subject to Section 16 reporting requirements. In instances where insiders did a simultaneous exercise of a stock option and sale, the net proceeds were on average 86% of gross sale proceeds. Section 16 requires that officers, directors and beneficial owners of more than 10% of any class of equity security registered under Section 12 of the Securities Exchange Act must file reports disclosing their transactions in all equity securities of the issuer. The information concerning insider trading activity was compiled from and calculated based on Form 3, 4 and 5 filings between March 2003 and April 2004. *See* Section 16 of the Securities Exchange Act of 1934, 15 U.S.C. § 78p; *see also* 17 C.F.R §§ 249.103, 249.104 and 249.105 (2005) (authorizing Forms 3, 4 and 5).

³⁰⁵ Peter Williams, *SCO Lawsuit Could End in IBM Buyout*, VNUnet.com (Mar. 3, 2003), at <http://www.vnunet.com/News/1139406> (speculating that SCO lawsuit was an invitation to IBM to make an acquisition offer).

³⁰⁶ *See* SCO Press Release, *The SCO Group Closes \$50 Million Equity Financing* (Oct. 16, 2003), at <http://ir.sco.com/ReleaseDetail.cfm?ReleaseID=120229>.

³⁰⁷ *See supra* notes ___ to ___ and accompanying text)

effectively deal with such manners of play in an expedient fashion.³⁰⁸

At the core of the SCO-Linux dispute is a controversy about the nature and ownership of the knowledge underlying intellectual property rights relating to Unix code. Part of the disagreement is rooted in different approaches to the development of software code as reflected in the open source versus proprietary software methods of producing software. Although SCO participated actively in the open source development of Linux, as an entity asserting rights with respect to Unix copyrights and the alleged infringement of Unix by Linux, it is now seeking to establish the existence of proprietary rights in Unix that are infringed by Linux in order to extract licensing revenues on account of these Unix rights. Although these are not atypical actions in today's context, they raise questions concerning the vision of authorship and invention inherent in the assertion of intellectual property rights structures. This also raises issues in relation to behaviors of holders of intellectual property rights that may have little to do with innovation but that are instead connected to strategic and extractive activities. These types of actions make it very difficult to sustain a notion of intellectual property as a tool of innovation. Instead, they highlight the need for intellectual property frameworks to address more effectively the uses of intellectual property in strategic weapon mode.

D. *Intangibles, Behavioral Constraints and Competition: Liability Rules and Market Power*

The uses of intellectual property rights in the knowledge economy suggest that a true transition to the intangibles paradigm may in some instances require recalibration of existing frameworks. This recalibration should involve reconsideration of constraints on holders of intellectual property rights in light of today's environment of new and potential changing business contexts, business practices and technology products and markets.

³⁰⁸ See Andrew P. Morriss, *Miners Vigilantes & Cattlemen: Overcoming Free Rider Problems in the Private Provision of Law*, 33 LAND & WATER REV. 581, 606 (1998) (noting that speed of dispute resolution in nineteenth century American West contributed to effectiveness of private law systems developed by miners).

In the case of patents, this will require more thoughtful consideration prior to granting patents of what types of patents should be issued as well as close attention to the potential scope of claims within such patents. This would thus entail greater attention to the quality of patents being granted.³⁰⁹ More generally, once intellectual property rights come into being, greater attention should be paid to the ways in which the market power of intellectual property rights holders can and should be limited,³¹⁰ particularly in instances where competition may be hindered through strategic and other exclusionary behaviors. A shift from property rules to greater uses of liability rules in intellectual property frameworks is one way in which the effective market power of holders of intellectual property rights might be limited in certain instances.³¹¹ Such liability rule approaches would permit borrowing (or breach) and thus could promote diffusion while ensuring the inventors and creators receive compensation for such

³⁰⁹ Adam B. Jaffe & Josh Lerner, *INNOVATION AND ITS DISCONTENTS* 178-81 (2004) (suggesting a patent policy reform strategy that focuses on ensuring the quality of the PTO examination process); FTC REPORT, *supra* note 64, at 5 (“Poor patent quality and legal standards and procedures that inadvertently may have anticompetitive effects can cause unwarranted market power and can unjustifiably increase costs. Such effects can hamper competition that otherwise would stimulate innovation.”).

³¹⁰ Ian Ayres & Paul Klemperer, *Limiting Patentees’ Market Power without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies*, 97 MICH. L. REV. 985, 993 (1999) (noting that changing the probability of enforcement of patents by introducing greater uncertainty in enforcement can limit patentee market power in welfare enhancing ways).

³¹¹ Olufunmilayo B. Arewa, *From J.C. Bach to Hip Hop: Musical Borrowing, Copyright and Cultural Context*, 84 N.C. L. REV. 547, 629-41 (2006) (suggesting that compulsory license liability rule frameworks be adopted for hip hop sampling); Arewa, *Catfish Row*, *supra* note 24, at ___ (discussing the adoption of conceptions of unfair use in copyright based on liability rule assumptions); Olufunmilayo B. Arewa, *Copyright, Borrowing and Unfair Use: Narratives, Formulaic Cultural Production and Intertextuality* ___ (2006) (manuscript on file with author) (discussing ways in which liability rule concepts could be incorporated into copyright doctrine); ARORA ET AL., *supra* note 46, at 269 (suggesting that the law allow for “efficient breach” by letting people infringe patents and leaving the courts to decide a fair royalty); Machlup, *supra* note 71, at 13 (noting that compulsory license is one potential cure for patent abuses); Janice M. Mueller, *Patent Misuse Through Capture of Industry Standards*, 17 BERKELEY TECH. L.J. 623, 664-68 (2002) (proposing compulsory license as a remedy for nondisclosure of patent rights pertinent to industry standards).

breach.³¹²

CONCLUSION

The increasing scope of intellectual property protection in the last few decades can be seen partly as coming out of the need to create stable legal structures in a dynamic and increasingly intangibles-centered economy. This seeming stability is, however, illusory in that it may create instability and other problems with regard to the behaviors engendered and costs incurred. Such costs might be incurred as a result of legal structures increasingly used by incumbent enterprises to stifle competitive technologies and potential competing firms as well as divergent meanings and interpretations.

The consequences of legal rules such as intellectual property laws for behavior and the legal, business and sociocultural impact of such laws need to be considered more carefully. The intangibles paradigm combined with strategic intellectual property behaviors brings into question some fundamental assumptions that underlie intellectual property law. The fact that intellectual property is used as strategic weapon as opposed to innovative tool, it weighs in favor of having less intellectual property protection or at least in some instances tempering the power of those holding intellectual property rights. When intellectual property is used principally as strategic weapon, stronger intellectual property protection often does not necessarily encourage innovation, and such strong protection can in fact promote strategic behavior.³¹³ In other instances, intellectual property rights can promote diffusion and innovation.³¹⁴ In the case of patents, the extent to which such patent protection is actually used to protect innovation may also vary depending on the context of the industry and industrial organization.³¹⁵

³¹² Arewa, *Catfish Row*, *supra* note 24, at ___ (outlining ways in which copyright holders would be compensated for uses for copyrighted works but would in certain instances have less control over uses of such works).

³¹³ See *infra* notes ___ to ___ and accompanying text.

³¹⁴ ARORA ET AL., *supra* note 46, at 117 (“However, our analysis suggests that stronger IPRs can enhance the efficiency of technology transfers, and hence encourage the diffusion of technology, including parts of the technology that patents do not protect.”).

³¹⁵ Edwin Mansfield, *Patents and Innovation: An Empirical Study*, 32 *Mgmt Sci.*

One consequence of the increasing importance of intangibles to business has been a tendency toward increased intellectual property protection and a systematic bending of the intellectual property system toward the protection of commercial interests. This movement is particularly problematic when those protected by intellectual property use such intellectual property claims to engage in strategic behaviors and other activities characteristic of the intellectual property strategic weapon model.

In the copyright area, copyright thickets are increasingly a problem and copyright infringement claims potential quite variable.³¹⁶ Similar problems may be evident in the patent area.³¹⁷ As a result, attempts by holders of intellectual property maximize extractive

173 (1986); Merges & Nelson, *supra* note 153, at ___; NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 65, at 2 (“The benefits of patents in stimulating innovation appear to be highly variable across technologies and industries, but there has been little systematic investigation of the differences.”).

³¹⁶ Meurer, *supra* note 72, at 513 (“First, the scope of IP rights is highly variable. Reasonable judges often disagree on the interpretation of a patent claim. The standard for trademark infringement, likelihood of consumer confusion, is inherently noisy. Copyright law asks the fact-finder to make a difficult subjective decision whether the defendant unlawfully appropriated the plaintiff’s expressive work. Besides vague standards for infringement, trials often feature conflicting expert testimony about matters relevant to the scope of an IP right. Compounding these problems is the risk of error by judges and juries. Trial errors are difficult to dispel in IP litigation.”); VAIDHYANATHAN, *supra* note 49, at 1-4, 81-116 (discussing copyright clearances in the movie industry); FEP, *Fair Use*, *supra* note 94 (discussing limitations in the effective use of the fair use defense that may result from aggressive enforcement of intellectual property rights); William W. Fisher III, *Reconstructing the Fair Use Doctrine*, 101 HARV. L. REV. 1659, 1693 (1988) (noting that disarray in fair use doctrine “impairs the ability of the creators and users of intellectual products to ascertain their rights and to adjust their conduct accordingly.”) (citations omitted).

³¹⁷ See FTC REPORT, *supra* note 64, at 6 (discussing thickets of overlapping patent rights); Carl Shapiro, *Navigating the Patent Thicket: Cross Licensing, Patent Pools, and Standard Setting* (March 2001), available at <http://faculty.haas.berkeley.edu/shapiro/thicket.pdf> (considering whether our patent system “is in danger of imposing an unnecessary drag on innovation by enabling multiple rights owners to ‘tax’ new products, processes and even business methods”); *but see* Ronald J. Mann, *Do Patents Facilitate Financing in the Software Industry*, 83 TEX. L. REV. 961, 967-68 (2005), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=510103 (finding in empirical study that the development of young firms in the software industry is not significantly constrained by the existence of large patent portfolios in the hands of incumbent firms).

value and the scope of ownership rights to preclude others and block the ability of others to utilize underlying knowledge resources may ultimately have an adverse effect on competition as well as innovation.

The primary goal of an intellectual property system should be the promotion of behaviors consistent with the rationales underlying the system. This process involves consideration of the broader context in which intellectual property rules operate and empirical understanding of how such rules interact with the existing social fabric. This will permit assessment of the extent to which desired behaviors are realized in practice.

When we build our intellectual property arena, various parties will come and play in our arena, taking advantage of all opportunities available to them. Such is the nature of business strategy and practice under the intangibles paradigm. Given the context within which our current intellectual property system is rooted, the majority of players will be business interests. These interests will no doubt have lobbied to have the field built in the first place and may have even been effective in having the rules of the game molded to suit their particular interests or concern. If we establish a system of intellectual property rights and permit the rules of the play to tolerate a manner of play shaped not by a conception of fair play, but by the strategies and tactics that may undermine and even subvert the purposes of such rules, the uses intellectual property rights may increasingly act in opposition to the essential reasons for their grant.