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WHY IS EVERYONE AFRAID OF IP LICENSING?

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I. INTRODUCTION

Legal scholars have tended to view the licensing of intellectual property rights¹ with skepticism, calling for judicial and legislative intervention to protect the public domain against encroachment by

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1. For purposes of brevity, I will use “licensing” to refer to the licensing of intellectual property rights.

licensors.² The Supreme Court now appears to agree. Out of four Supreme Court decisions pertaining to licensing since 2006, three affirmed precedents that bolster constraints on licensing and one reversed a precedent that had relaxed those constraints.³ Scholars' and the Court's skeptical view relies on the concern that licensing can be used to expand the IP grant crafted by Congress, the Patent & Trademark Office, and the courts. The renewed drive to enhance constraints on licensing runs counter to historical trends that have tended in the opposite direction. IP law has progressively attenuated doctrines that limit licensing;⁴ modern antitrust law emphasizes the efficiencies generated by licensing;⁵ and lower courts have largely resisted calls to invalidate mass-market software licenses.⁶

Skepticism toward licensing overlooks the fundamental role it plays in the commercialization process that delivers an innovation to market. Specifically, licensing promotes three core objectives that lie at the heart of real-world content and technology markets. First, licensing permits firms to customize supply chains so as to allocate commercialization functions to the least-cost provider of each function. Second, licensing permits firms to devise diversification strategies that spread the extreme risk of innovation projects. In particular, licensing supports the hub-and-spoke formations that recur across innovation markets, in which larger firms bear production and distri-

2. The literature is extensive. See generally Christina Bohannon, *Copyright Preemption of Contracts*, 67 MD. L. REV. 616, 621, 631, 634–35 (2008) (describing commentators' views in favor of invalidating contracts that upset the "delicate balance" of copyright law); Frank Easterbrook, *Contract and Copyright*, 42 HOUS. L. REV. 953, 954 (2005) (observing that scholars widely advocate limiting the ability to contract over IP assets). Not all scholars subscribe to this approach. For a representative exception, see generally Sean M. O'Connor, *IP Transactions as Facilitators of the Globalized Innovation Economy*, in WORKING WITHIN THE BOUNDARIES OF INTELLECTUAL PROPERTY (Rochelle Dreyfuss et al. eds., 2010).

3. For decisions that bolstered constraints on licensing, see *Kimble v. Marvel Entertainment, LLC*, 135 S. Ct. 2401 (2015) (patent license is unenforceable beyond the statutory term); *Kirtsaeng v. John Wiley & Sons, Inc.*, 133 S. Ct. 1351 (2013) (first sale doctrine applies to copies of copyrighted works made outside the U.S.); *Quanta Computer, Inc. v. LG Electronics, Inc.*, 553 U.S. 617 (2008) (patent exhaustion doctrine applies in a conditional sale); *Medimmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2006) (licensee not required to terminate or materially breach its license in order to bring a suit challenging the validity of the licensed patent). For the sole decision that relaxed constraints on licensing, see *Bowman v. Monsanto Co.*, 133 S. Ct. 1761 (2013) (holding that exhaustion doctrine did not permit a licensee-farmer to reproduce patented seeds in violation of the terms under which the seeds had been licensed). I do not include another licensing-related decision, *Costco Wholesale Corp. v. Omega S.A.*, 562 U.S. 40 (2010), because it resulted in a 4-4 split.

4. See *infra* Part II.

5. See DEPARTMENT OF JUSTICE & FEDERAL TRADE COMMISSION, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY: PROPOSED UPDATE 7–8 (2016); DEPARTMENT OF JUSTICE & FEDERAL TRADE COMMISSION, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY 4–5 (1995).

6. See Bohannon, *supra* note 2, at 622; Easterbrook, *supra* note 2, at 954.

bution risk and smaller technology and content originators bear development risk. Third, licensing enables firms to divide innovation assets into sub-assets that can be deployed across multiple parameters in space and time. These “fractionalization” strategies yield efficiency and distributive gains by expanding access across the full spectrum of budget constraints and valuation intensities in the user population.

The skeptical view approaches licensing as a threat to the social bargain that underlies IP rights. This is misguided — licensing implements that social bargain through the commercialization process without which an innovation could not reach market. Failure to take this point seriously has perpetuated formalistic rules that frustrate efficient transactions, compelling the market to engineer second-best arrangements or leading courts to create ad hoc exceptions to avoid economically absurd outcomes. By contrast, antitrust law has essentially recognized this same point for several decades, largely rejecting per se prohibitions on certain licensing practices in favor of “rule of reason” approaches that assess competitive effects on a case-specific basis. It is time for IP law to consider a similar nuanced approach. Academic commentators have long called for courts and legislatures to protect the public domain against overreaching by licensors. The Court now seems to be listening. It may be wiser to consider how to protect the market against overreaching by courts and legislatures.

The organization of this Article is as follows. Part II describes legal doctrines that have historically restricted licensing freedom in IP markets. Part III proposes a new approach to licensing as a tool for structuring supply chains in content and technology markets. Part IV applies that framework to revisit legal restrictions on certain licensing practices, especially as compared with antitrust treatment of those same practices. Part V concludes.

II. HISTORICAL AND RESIDUAL SKEPTICISM TOWARD LICENSING

The skeptical view tracks long-standing legal doctrines that restrict licensing. While courts have relaxed the application of some of these doctrines, they continue to impede IP transactions. The principal limitations are discussed below, namely: (A) copyright law’s doctrine of indivisibility; (B) patent law and copyright law’s versions of the exhaustion doctrine; (C) trademark law’s prohibitions against “naked” licensing and “assignments in gross”; and (D) patent law and copyright law’s versions of the misuse doctrine.

A. Doctrine of Indivisibility

In 1891, the Supreme Court adopted the “doctrine of indivisibility,” which deemed a license anything other than a complete assignment of the rights covered by a patent.⁷ In 1908, a federal court extended this principle to copyright.⁸ As observed in the Nimmer treatise on copyright, this precedent, as interpreted in light of the Copyright Act of 1909⁹, effectively made it “impossible to assign anything less than the totality of rights commanded by copyright.”¹⁰ A transfer of less than all of a copyright risked being deemed a license rather than an assignment, in which case two adverse consequences could follow. First, the licensee might not have had standing to independently sue infringers.¹¹ Second, if the licensee published an unregistered work without giving copyright notice in the owner’s name, the work could fall into the public domain.¹² Despite practitioners’ repeated observations that this formalistic doctrine did not conform to market practice,¹³ the development of contractual detours around the doctrine,¹⁴ legislative efforts to amend the statute¹⁵, and some courts’ efforts to limit or skirt the doctrine entirely,¹⁶ it was not explicitly abolished until the Copyright Act of 1976.¹⁷ Nonetheless, the doctrine still casts a shadow over copyright transfers: in 2002, the Ninth Circuit applied what it viewed as a surviving element of the doctrine of indivisibility to bar a copyright licensee from engaging in resale transactions without the licensor’s consent.¹⁸

7. *Waterman v. Mackenzie*, 138 U.S. 252, 255–56 (1891).

8. *Dam v. Kirk La Shelle Co.*, 166 F. 589 (C.C.S.D.N.Y. 1908), *aff’d* 175 F. 902 (2d Cir. 1910).

9. Act of Mar. 4, 1909, ch. 320, § 42.

10. 3 MELVILLE B. NIMMER & DAVID NIMMER, *NIMMER ON COPYRIGHT* § 10.01[A] (2010).

11. *See* THE SUBCOMMITTEE ON PATENTS, TRADEMARKS AND COPYRIGHTS OF THE COMM. ON THE JUDICIARY, 86TH CONG., STUDY NO. 11, *DIVISIBILITY OF COPYRIGHTS* 12–15, 17–18 (Comm. Print 1957) [hereinafter *Kaminstein*] (authored by Abraham L. Kaminstein).

12. This derived from the principle under the 1909 Act that copyright could only be maintained if proper notice accompanied publication. *See* *Dam v. Kirke La Shelle Co.*, 175 F. 902, 906 (2d Cir. 1910).

13. *See* *Kaminstein*, *supra* note 11, at 17–18.

14. MARSHALL A. LEAFFER, *UNDERSTANDING COPYRIGHT LAW* 213 (6th ed. 2014).

15. *See* *Kaminstein*, *supra* note 11, at 9–10.

16. PAUL GOLDSTEIN, *GOLDSTEIN ON COPYRIGHT* § 5.1.1 (3rd ed. 2005).

17. The Copyright Act of 1976 established the principles of “unlimited alienability of copyright” and “divisibility of copyright.” 17 U.S.C. §§ 101, 201(d)(1)–(2). Those changes enabled the assignment of any interest, whether full or partial, in a copyright. The Act also clarified that exclusive assignees have standing to bring an infringement cause of action. 17 U.S.C. §§ 101, 201(d) (2005). Similarly, patent case law has held that exclusive licensees of fewer than all rights in a patent have standing to sue for infringement. *See* *Intellectual Prop. Dev., Inc. v. TCI Cablevision of Cal., Inc.*, 248 F.3d 1333, 1342 (9th Cir. 2001).

18. *Gardner v. Nike, Inc.*, 279 F.3d 774, 780–81 (9th Cir. 2002).

B. Exhaustion (or First Sale) Doctrine

The exhaustion doctrine (and its copyright analogue, the first sale doctrine) provide that, upon the first sale of an article embodying a patent or copyright, the IP holder can no longer assert legal control over the article's subsequent use or distribution. Courts adopted the doctrine in patent law in 1852¹⁹ and copyright law in 1908²⁰ (codified by Congress in 1909²¹). In copyright, owners must engage in contractual fictions that characterize sale transactions as licenses to avoid triggering a "first sale." While courts typically honor this drafting trick,²² some residual uncertainty persists. In patent, the exhaustion doctrine compels patent holders to engage in contractual detours in order to control use of a patented technology throughout a supply chain. As the Supreme Court suggested in 2008 (effectively reversing a Federal Circuit precedent in place since 1992²³), a sale of an article embodying a patent is deemed to have exhausted the patent even if the sale is subject to a contractual condition.²⁴ Under this reasoning, patent holders that wish to exert downstream control in a supply chain have two imperfect strategies to avoid exhaustion. First, the patentee can eliminate the supply chain and vertically integrate forward to the point of sale — an infeasible proposition in many if not most technology markets. Second, the patentee can maintain the supply chain but distribute the IP-embedded product subject to a license that sets the terms on which the licensee may use the product or distribute it to any sub-licensees.²⁵ Properly structured, this contracting device approximates, but does not match, the legal certainty that would be achieved through the more potent combination of patent plus contract.

19. *Bloomer v. McQuewan*, 55 U.S. 539, 549–550 (1852).

20. *Bobbs-Merrill v. Straus Co.*, 210 U.S. 339, 350–351 (1908).

21. Copyright Act of 1909, Pub. L. No. 60-349, 35 Stat. 1075 (repealed 1976). For the current statutory provision, see 17 U.S.C. § 109(a).

22. *See, e.g., Vernor v. Autodesk, Inc.*, 621 F.3d 1102, 1108 (9th Cir. 2010) (holding that first sale doctrine only triggered in case of "outright sale" without significant limitations on transfer or use).

23. *Mallinckrodt Inc. v. Medipart Inc.*, 976 F.2d 700, 709 (Fed. Cir. 1992) (holding that first sale doctrine not triggered in case of sale subject to a contractual condition).

24. *Quanta Comput., Inc. v. LG Elecs., Inc.*, 553 U.S. 617 (2008) (finding exhaustion even though sale of patented technology was made subject to certain contractual conditions).

25. This is sometimes known as "chain contracting." It is an imperfect solution because it effectively requires the cooperation of downstream licensees to enforce the terms of use with respect to any sub-licensees located at points further downstream on the supply chain. *See* John F. Duffy & Richard Hynes, *Statutory Domain and the Commercial Law of Intellectual Property*, 102 VA. L. REV. 1, 58–60 (2016).

C. Naked Licensing; Assignments in Gross

Historically, trademark law effectively prohibited the licensing of trademarks except in connection with the transfer of the associated business.²⁶ While the Lanham Act of 1946 abandoned this approach,²⁷ trademark licensors still can run afoul of the ban on “naked licenses,” which requires that licensors exercise adequate control over licensees. In a 2011 Seventh Circuit decision, application of this doctrine resulted in abandonment of a mark that had been in continuous use by the owner and its predecessors for almost 50 years.²⁸ Relatedly, transfers of ownership in trademark can run afoul of the “assignment in gross” doctrine, which requires that any transfer include the goodwill or business associated with the mark.²⁹ While transfer agreements typically avoid this issue by a recital of the underlying goodwill (and courts have been receptive to this practice), this is not foolproof since courts occasionally apply the doctrine to invalidate assignments.³⁰

D. Patent and Copyright Misuse

The misuse doctrine, which courts have implied in patent and copyright law, bars the enforcement of licenses that “improperly” exploit the underlying IP right. This imprecisely defined claim is especially potent since, when successful, it results not only in invalidation of the license but also the underlying IP right until the misuse is corrected, thereby barring (at least temporarily) the patentee from injunctive relief or monetary damages for any claimed infringement.³¹ Some courts have taken the view that the misuse doctrine requires a showing of market power, as would be required under the “rule of reason” standard in antitrust law.³² This approach effectively extends the 1988

26. *See, e.g.,* MacMahan Pharm. Co. v. Denver Chem. Mfg. Co., 113 F. 468, 474–75 (8th Cir. 1901) (“[a] trademark cannot be . . . licensed, except as incidental to a transfer of the business or property in connection with which it has been used”).

27. 60 STAT. 429, 433; 15 U.S.C. §§ 1055, 1127 (1946) (recognizing that registered mark may be used “legitimately” by the registrant’s “related companies,” defined to mean any entity whose use of a mark is controlled by the registrant).

28. *Eva’s Bridal Ltd. v. Halanick Enters., Inc.*, 639 F.3d 788 (7th Cir. 2011) (affirming finding of trademark abandonment, on ground that licensor failed to exercise adequate quality control over licensee). The Ninth Circuit has similarly found naked licenses due to lack of control over licensee, resulting in trademark abandonment. *See Freecycle Sunnyvale v. The Freecycle Network*, 626 F.3d 509 (9th Cir. 2010); *Barcamerica Int’l v. USA Trust & Tyfield Imps., Inc.*, 289 F.3d 589 (9th Cir. 2002).

29. 15 U.S.C. § 1060(a)(1) (2012) (section 10 of the Lanham Act).

30. *See Irene Calboli, Trademark Assignment “With Goodwill”: A Concept Whose Time Has Gone*, 57 FLA. L. REV. 771, 795–96 (2005).

31. *See, e.g.,* C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1372 (Fed. Cir. 1998).

32. *See Windsurfing Int’l Inc. v. AMF Int’l Inc.*, 782 F.2d 995, 1001–02 (Fed. Cir. 1986) (requiring showing of anticompetitive effect in patent misuse claim); *USM Corp. v. SPS Technologies, Inc.*, 694 F.2d 505, 511–12 (7th Cir. 1982) (suggesting that misuse claims should be “tested by conventional antitrust principles”).

Patent Misuse Reform Act,³³ which required a showing of market power in the case of a patent misuse claim relating to a tying practice.³⁴ While this approach, adopted most explicitly in the Federal Circuit and the Seventh Circuit, appears to have drastically reduced the success rate of the patent misuse defense, the doctrine continues to be asserted as an affirmative defense in a significant number of cases.³⁵ Moreover, in a 2015 decision involving the legality of post-term royalties in a patent license, the Supreme Court upheld precedent deeming this practice to be a per se case of patent misuse.³⁶

E. Summing Up: Why the Law Thinks It Should Restrict Licensing

Legal restrictions on licensing flow from the traditional conception of an IP right as a social bargain between the state and the innovator. That bargain seeks to provide the innovator with an exclusive franchise just sufficient to generate a return to cover the cost of innovation plus a margin that covers the innovator's opportunity cost of capital. If this initial bargain is used as the reference point, then licensing is inherently suspect since it appears to be an attempt by the IP holder to use contract to renegotiate that bargain to its advantage. If that is the case, then the law should police the substance of IP licenses to protect public ordering against private ordering. Hence, some scholars admonish courts that relax these limitations for failing to understand the "logic" of IP law.³⁷ In the ensuing discussion, I will argue that it would be best to focus on policing the application of IP licensing law to protect private ordering against public ordering.

III. A NEW VIEW OF IP LICENSING

The skeptical view of licensing ignores four simple "facts of life" about innovation markets. First, an innovation cannot earn a positive return unless it is embedded in a viable product delivered at a competitive cost to market. Second, successful commercialization requires that some entity place at risk significant capital and expertise. Third, the innovator is often not the individual or entity best suited to under-

33. Act of Nov. 19, 1988 § 201, 102 Stat. 4676.

34. This refers to any practice in which the sale of one item is conditioned on the purchase of another item.

35. See Daryl Lim, *Patent Misuse and Antitrust: Rebirth or False Dawn?*, 20 MICH. TELECOMM. & TECH. L. REV. 299, 313 (documenting increase in number of misuse cases); *id.* at 322–329 (documenting decline in success of misuse claims) (2014).

36. See *Kimble et al. v. Marvel Entm't, LLC*, 135 S. Ct. 2401 (2015) (upholding *Brulotte v. Thys Co.*, 379 U.S. 29 (1964), which had held that royalty obligations extending beyond the statutory term are unlawful per se).

37. See, e.g., Stephen L. Carter, *The Trouble with Trademark*, 99 YALE L.J. 759, 760 (1990) ("[t]he deterioration of the prohibition on transfers in gross is a reflection of the continuing judicial misunderstanding of the theoretical underpinnings of trademark law").

take the commercialization process. Fourth, in the vast majority of cases, any IP-protected asset faces competition from actual or potential substitutes, in which case it is the market, not the IP holder, that sets the terms of exchange — a well-established fact,³⁸ as recognized by the antitrust agencies in 1995³⁹ and subsequently by the Supreme Court in 2006.⁴⁰ As I have shown elsewhere, even the holders of IP rights relating to dominant technology standards often surprisingly face competition from actual or potential substitutes.⁴¹

If we keep in mind these key factors, then IP rights shift from being principally an exclusionary mechanism by which to limit use and capture rents to being an enabling mechanism by which markets attract users and achieve commercialization as efficiently as possible. It is through the interaction between IP rights and contract in licensing transactions that this enabling function is implemented. As I propose in Section III.A below, licensing can be best understood as a transactional tool by which IP holders craft the supply chains that deliver innovations to market. Three welfare gains can result from use of this tool. First, as I argue in Section III.B, licensing enables firms to select the sequence of “make/buy” transactions that deliver innovations (or products and services embodying innovations) at the lowest possible cost. Second, as I argue in Section III.C, licensing enables firms to diversify the extreme risk inherent to innovation projects in content and technology markets. Third, as I argue in Section III.D, licensing enables firms to segment IP assets based on temporal, geographic and market parameters, which can lower financing costs, facilitate market entry and expand user access.

A. Licensing as Design Tools

From a transactional perspective, licensing is a tool to construct supply chains that can deliver to market the least-cost combination of innovation and non-innovation inputs. As Figure 1 illustrates, the universe of licensing transactions can be organized based on two vectors: (i) one/two-way and (ii) vertical/horizontal. This generates four possibilities, although in practice two-way vertical licensing transactions appear to be uncommon (hence, only three configurations are shown below). Each licensing relationship can connect two business entities (“B2B”), which can operate vertically or horizontally, or a business

38. For supporting evidence, see *infra* note 51.

39. See DEPARTMENT OF JUSTICE & FEDERAL TRADE COMMISSION, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY: PROPOSED UPDATE 6 (2016); DEPARTMENT OF JUSTICE & FEDERAL TRADE COMMISSION, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY 4 (1995).

40. *Ill. Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 45 (2006).

41. See Jonathan M. Barnett, *From Patent Thickets to Patent Networks: The Legal Infrastructure of the Digital Economy*, 55 JURIMETRICS 1, 39–42 (2014).

entity and a consumer (“B2C”), which will typically operate vertically. A horizontal B2B transaction typically involves a knowledge-sharing exchange among two or more entities. A vertical B2C transaction typically involves a one-way relationship between (i) a business entity, which holds an innovation asset, and (ii) an end-user who consumes that asset or an intermediate user who embeds that asset in a consumption good or service.

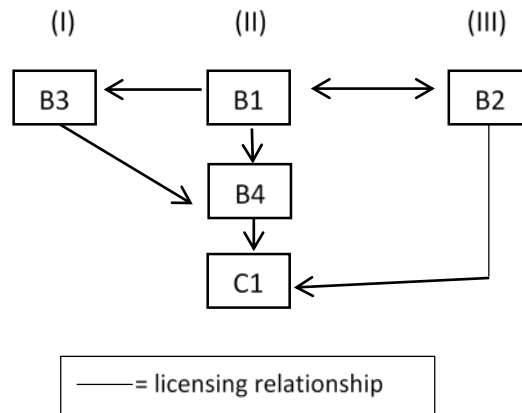


Figure 1: The Licensing Universe

The graphic illustrates two fundamental functions of IP licenses: (i) exchange and (ii) control. As shown in the two-way, horizontal relationship (B1:B2), IP licenses enable knowledge sharing between two or more entities. As shown by the one-way horizontal (B1:B3) and one-way vertical relationships (B1:B4; B2:C1), IP licenses can also enable IP holders to regulate access at other points on the supply chain. In general, IP holders can use licenses as tools to configure the supply chain leading from the IP asset to production and then distribution into the target market of a good or service that embodies that asset. For example, in supply chains (I) and (II), entities “B3” and “B1” have used the license to construct a partially disintegrated supply chain involving two steps to reach the end-user via entity “B4,” which may be a distributor or an intermediate user that embodies the IP asset in a good or service. By contrast, in supply chain (III), entity “B2” has constructed a fully integrated supply chain and uses the license to control usage by end-users.

B. Licensing and Supply Chain Design

To monetize its R&D investment, an innovator must execute a sequence of tasks to achieve commercialization and reach the target

market. The holder of the IP asset can elect to execute any such task in-house or retain a third party to execute it. This is the familiar make/buy decision that sets the boundaries of the firm in the tradition of Ronald Coase and Oliver Williamson.⁴² If “make” elections predominate, then an integrated supply chain results and firm scope expands. If “buy” elections predominate, then a disintegrated supply chain results and firm scope shrinks. Mixed combinations of make/buy elections result in hybrid supply chains and intermediate levels of firm scope.

This framework is illustrated in Figure 2 using entity “B1.” In this scenario, B1 has performed the R&D and wants to commence commercialization. The decision procedure is now straightforward. B1 will select “buy” if it can execute the remaining commercialization tasks at a lower cost relative to the third party represented by B2, resulting in fully integrated supply chain (II). B1 will select “make” if the outside third party, B2, can execute one of the remaining commercialization tasks (in this case, production services) at a lower cost (holding quality constant), resulting in partially disintegrated supply chain (I). Alternatively, B2 may have a cost advantage with respect to both production and distribution services, resulting in more fully disintegrated supply chain (III). In both disintegrated supply chains (I) and (III), licensing relationships enable the “make” transaction between the IP holder and the third-party supplier.

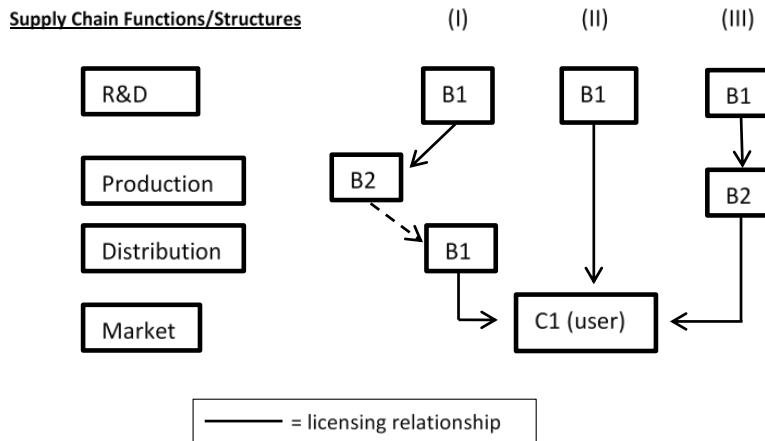


Figure 2: Supply Chain Structures in IP Markets⁴³

42. See generally OLIVER E. WILLIAMSON, *MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS* (1975); Ronald H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386 (1937).

43. Note that the line B2:B1 is dashed to indicate that B2 is delivering product to B1 rather than entering into a new licensor-licensee relationship.

In an ideal world of zero transaction costs, markets converge on a mix of make/buy decisions, and corresponding firm structures, that minimize total innovation and commercialization costs, maximizing net social and private gains. In the real world, however, transaction costs are always positive. In particular, Coase emphasized that procuring inputs from third parties inherently involves search, negotiation, and implementation costs that may make it prohibitive to do so, pushing the relevant transaction back inside the confines of the firm.⁴⁴ In the case of a technology or content market, those procurement costs encompass the costs that must be incurred to protect an innovation asset against expropriation by a third-party supplier of capital, expertise, or some other commercialization input.

It is precisely at this point that the combination of IP rights and contract plays a valuable role. The holder of the innovation asset can use its IP rights, together with a license, to regulate its relationship with third parties that might otherwise pose an expropriation risk. While repeat-play incentives may sometimes constrain expropriation, those incentives are unobservable in the case of a new supplier and, even in the case of an old supplier, may not be reliable if the expected one-time return from defecting from a “no-expropriation” norm is sufficiently large relative to the forfeited expected returns from continued conformity.⁴⁵ A legal environment that supplies robust IP rights and license enforcement minimizes expropriation risk and enables firms to delegate commercialization functions in any circumstance where third parties can execute any such function more efficiently than the delegating firm. The result is a continuously adaptive supply chain that allocates (and reallocates) supply-chain functions to the most efficient providers.

Qualcomm, a leader in the semiconductor industry, has illustrated this concept. Qualcomm has progressively shed its hardware manufacturing functions and concentrated its efforts in the most upstream portions of the technology supply chain.⁴⁶ In particular, Qualcomm has focused on innovating chip designs, which it patents and then licenses to downstream manufacturing partners, who embed those chips in

44. See Coase, *supra* note 42, at 390–392.

45. For a fuller analysis of this point, see Jonathan M. Barnett, *Three Quasi-Fallacies in the Conventional Understanding of Intellectual Property*, 12 J.L. ECON. & POL’Y 1, 10–12 (2016).

46. In 1998, Qualcomm sold its wireless infrastructure business. See *Ericsson and Qualcomm Reach Global CDMA Resolution*, QUALCOMM PRESS (Mar. 25, 1999), <https://www.qualcomm.com/news/releases/1999/03/25/ericsson-and-qualcomm-reach-global-cdma-resolution> [<https://perma.cc/ZRP6-QE5R>]. In 2002, Qualcomm sold its cellular handset business. See *Qualcomm narrows focus, sells handset business*, CNET (Jan. 2, 2002), <http://www.cnet.com/news/qualcomm-narrows-focus-sells-handset-business/> [<https://perma.cc/LN9H-99VR>].

handsets for the smartphone market and other end-user devices.⁴⁷ In other segments of its business, Qualcomm enters into agreements with third parties (known as “foundries”) for manufacturing chips based on Qualcomm’s designs, after which it recovers the chips for packaging and delivery to customers.⁴⁸ Qualcomm has relied on the combination of patents and contract to move up the technology supply chain and shift downstream commercialization functions to more efficient partners. This business model is reflected by its research intensity (R&D expenditures as a percentage of sales): 21% as of 2015, as compared to 5 to 8% for integrated hardware manufacturers such as Sony (5.6%), Panasonic (5.9%), Samsung (7.4%), and Toshiba (5.2%).⁴⁹

Qualcomm is not alone. It is widely observed that contemporary information technology markets operate through structures that dis-aggregate upstream R&D and product development functions from downstream production and distribution tasks.⁵⁰ To be clear, the common use of these partially disintegrated structures does not mean that the combination of robust IP rights plus licensing freedom necessarily pushes supply chain functions into the market or that the movement from the firm to the market is a normatively preferred outcome. Partial to complete vertical disintegration merely constitutes a portion of the organizational spectrum that is opened up as the costs of enforcing IP rights and licenses decline. Under those conditions, firms can select among all potential providers of any supply chain function to achieve the most efficient delineation of firm boundaries. That proposition has a negative implication: as the costs of enforcing IP rights or licenses increase, firm boundaries may deviate away from the most efficient structure. Specifically, legal regimes that fail to supply robust IP rights and/or reliably enforce licenses may drive firms to adopt structures that are overly integrated, thereby inflating innovation and commercialization costs and failing to maximize net value.

C. Licensing and Risk Diversification

Any firm that seeks to extract value from innovation must bear the high risk of failure inherent to innovation projects. Both content and technology environments are characterized by an extremely

47. QUALCOMM INC., FORM 10-K (ANNUAL REPORT) (2014), at 3 (showing Qualcomm licenses its wireless communication technologies to 260 licensees, including all leading wireless device and infrastructure manufacturers).

48. *See id.* at 5–6 (describing relationship between QCT, a Qualcomm division that develops integrated circuits, and foundry suppliers).

49. All figures calculated based on information disclosed in companies’ annual financial statements.

50. *See* Timothy J. Sturgeon, *Modular Production Networks: A New American Model of Industrial Organization*, 11 *INDUS. & CORP. CHANGE* 451, 456–64 (2002).

skewed distribution of net returns.⁵¹ That is, the overwhelming majority of innovation projects yield a net negative return while a small portion yields an exceptional net positive return. Like any other supply chain function, the holder of the innovation asset must allocate the risk of project failure to the parties that can bear it most efficiently, minimizing financing costs and maximizing the net value generated through innovation and commercialization. Here too licensing is critical.

1. Diversification and Extreme Skew

Firms finance hundreds of millions of dollars for major motion pictures⁵² and almost a billion dollars on average for biopharmaceutical projects,⁵³ which in each individual case have a low chance of reaching a successful outcome. Firms' willingness to undertake these high-risk projects relies on the familiar concept of portfolio diversification. By investing in a portfolio of projects with sufficiently uncorrelated outcomes, a firm can expect that the gains on the few "winning" projects will offset and exceed the losses on the many "losing" projects. Diversification can take place internally, externally, or through a mix of both strategies. A firm that pursues internal diversification — which corresponds to the *firm* category in the tradition of Coase and Williamson⁵⁴ — must construct a diversified portfolio of innovation projects, which it then executes independently. A firm that pursues external diversification — which corresponds to the *market* category — contracts with other firms to undertake all or part of the innovation process, typically involving financing in exchange for an interest in the outside firm's project. As is typical in market-based transactions, external diversification inherently involves the use of licensing in order to manage an external portfolio of investment projects and regulate information flow among parties with potentially adverse interests.

51. See generally F.M. Scherer & Dietmar Harhoff, *Technology Policy for a World of Skew-Distributed Outcomes*, 29 RES. POL'Y 559 (2000); F.M. Scherer, Dietmar Harhoff & Jorg Kukies, *Uncertainty and the Size Distribution of Rewards from Innovation*, 10 J. EVOLUTIONARY ECON. 175 (2000). For a review of data showing extreme skew in content markets, see Jonathan M. Barnett, *Copyright Without Creators*, 9 REV. L. & ECON. 389, 398–399 (2013).

52. See Richard Verrier, *MPAA Stops Disclosing Average Costs of Making and Marketing Movies*, L.A. TIMES (Apr. 1, 2009), <http://articles.latimes.com/2009/apr/01/business/fi-cotown-mpaal> [<https://perma.cc/UR4Q-9SD5>].

53. See Joseph A. DiMasi, Ronald W. Hansen & Henry G. Grabowski, *The Price of Innovation: New Estimates of Drug Development Costs*, 22 J. HEALTH ECON. 151, 166 (2003).

54. See *Ill. Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 45 (2006).

2. Illustrations: Diversification and Organizational Form

Two examples from content and technology markets can illustrate the relationship between diversification strategies, licensing, and organizational form.

a. Motion Pictures

From the 1920s until the 1940s, Hollywood primarily operated under the “studio system,” which involved vertically integrated entities that handled all tasks relating to the motion picture production and distribution process. Through this system, each studio financed, produced, distributed and exhibited a large portfolio of motion pictures, which enabled the studio to diversify the risk inherent to any individual release.⁵⁵ This approximates the *firm* category. Starting in the 1950s and through the present, Hollywood has migrated to a vertically disintegrated model in which the studio primarily finances and distributes films produced by smaller production companies.⁵⁶ This approximates the *market* category. Whereas Hollywood had diversified project-specific risk through an internal portfolio, it now tends to achieve that objective through a partially external portfolio. This structural transformation accounts for the critical role played by licensing in modern-day Hollywood: once the studio system unraveled, relationships between studios, production companies, exhibitors and other entities required a licensing infrastructure to regulate information flow among unrelated parties.

b. Biopharmaceuticals

Bringing a new pharmaceutical product to market is a formidable enterprise. After completing R&D and product development, the firm must undergo the FDA testing process and then undertake a labor-intensive marketing and distribution process. Until the 1970s, the pharmaceutical industry had been characterized by large vertically integrated entities that performed these tasks in-house.⁵⁷ This approximates the *firm* category. Since that time, the industry has undergone an organizational transformation and now often operates under structures that exhibit features characteristic of the *market* category. Cur-

55. See Jonathan M. Barnett, *Hollywood Deals: Soft Contracts for Hard Markets*, 64 DUKE L.J. 605, 652–53 (2015). For the authoritative account of the studio system, see THOMAS SCHATZ, *THE GENIUS OF THE SYSTEM: HOLLYWOOD FILMMAKING IN THE STUDIO ERA* (2010).

56. See Barnett, *supra* note 55, at 653.

57. See Timothy F. Howe, *Financing Biotechnology Research: A Firsthand Perspective*, in *SCIENCE AND CENTS: EXPLORING THE ECONOMICS OF BIOTECHNOLOGY* 119 (John V. Duca & Mine K. Yucel eds., 2002).

rently, biopharmaceutical products are often commercialized following a sequence in which (i) a university technology transfer office negotiates the outflow of academic research to a start-up entity; and (ii) the start-up bargains with a combination of venture capitalists and pharmaceutical firms to fund further development and execute the capital-intensive clinical trials and marketing and distribution functions required to reach market.⁵⁸ Like the structural transformation in the movie industry, the movement toward partially external diversification necessitates a licensing infrastructure to manage information flow among upstream entities, which mostly supply R&D inputs, and downstream pharmaceutical firms, which mostly supply commercialization inputs.

3. How Licensing Promotes Diversification

Making movies and developing drugs would not seem to have much in common. Yet both industries exhibit commonalities in diversification strategies and organizational forms. Figure 3 shows a hub-and-spoke structure applicable to both markets: a handful of large firms (“Big Pharma” or the “studios”) fund product innovation by a larger population of smaller firms. The smaller upstream partner delivers innovation inputs while the larger upstream partner provides distribution and marketing services (and, in the pharmaceutical market, testing services to secure FDA approval). These hub-and-spoke structures depend on IP rights plus licensing to regulate information flow between upstream and downstream partners. Without those legal inputs, the smaller upstream firm would be exposed to expropriation risk. In response, it would be compelled to adopt more integrated structures that avoid high-risk transactions with third parties. Given that the market evidently prefers the hub-and-spoke structure, legal constraints on licensing that make it difficult for firms to use this structure almost certainly inflict an efficiency loss in the form of increased commercialization costs.

58. See Toby E. Stuart et al., *Vertical Alliance Networks: The Case of University-Biotechnology-Pharmaceutical Alliance Chains*, 36 RES. POL'Y 477, 477–478 (2007); Gary P. Pisano, *The Governance of Innovation: Vertical Integration and Collaborative Arrangements in the Biotechnology Industry*, 20 RES. POL'Y 237, 239–241 (1991).

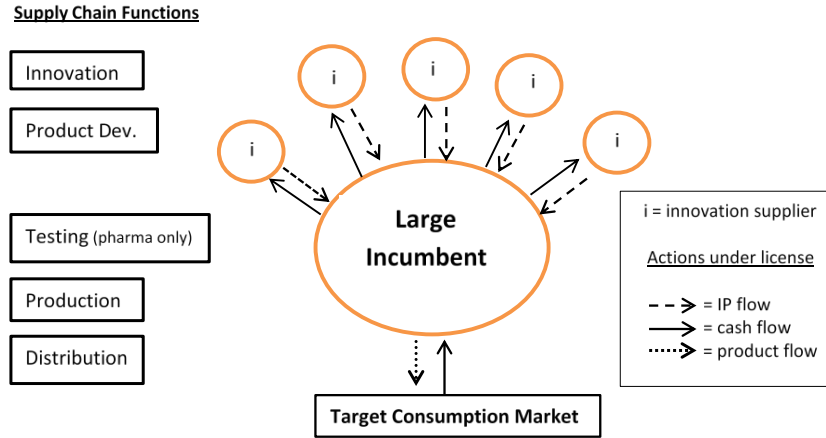


Figure 3: Hub-Spoke Structure in Motion Picture and Biopharmaceutical Markets

D. Licensing and Fractionalization

So far I have implicitly assumed that an IP holder has a one-shot opportunity to deliver its R&D or creative asset to market. Based on that assumption, we could reduce the IP holder’s decision calculus to a series of make/buy decisions along each point of a *single* supply chain. In real-world markets, the IP holder faces a more complex decision set. The holder can divide any innovation asset into sub-assets and then distribute those sub-assets along three parameters: geography, markets, and time. To execute this “fractionalization” strategy, the IP holder constructs *multiple* supply chains in parallel for each sub-asset or packages of sub-assets.⁵⁹ With respect to each of those supply chains, the IP holder faces the make/buy election: it can elect to directly distribute goods embodying the sub-assets (“make”) or it can use licenses to contract with third parties for purposes of distributing those goods in selected markets (“buy”). Figure 4 depicts this menu of fractionalization strategies in simplified form.

59. Henry Smith has analyzed how IP rights support innovation by organizing information into modular structures that reduce delineation and enforcement costs, which facilitates the commercialization of informational assets. See Henry Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1745–46, 1773–74 (2007). I focus more specifically on how firms create sub-modules out of IP rights in order to maximize the net value generated by firms’ IP assets.

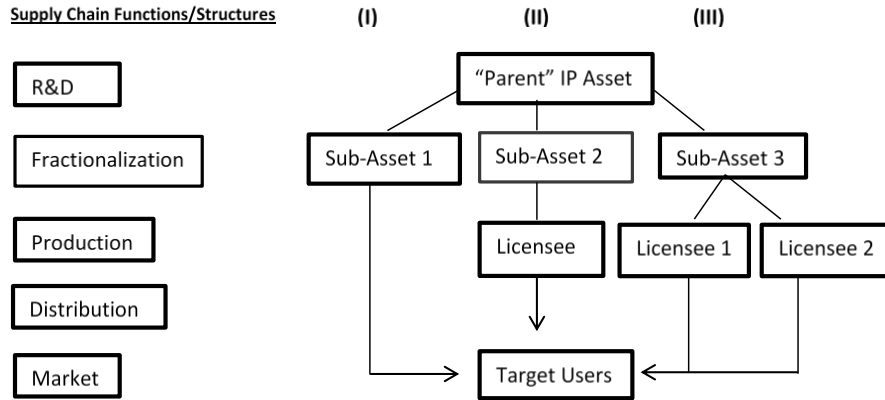


Figure 4: Supply-Chain Structures for a Fractionalized IP Asset

Any firm that elects the “buy” option with respect to one or more sub-assets — that is, elects to execute some portion of the supply chain for that sub-asset through third parties (exclusively in the case of supply chain (II) or nonexclusively in the case of supply chain (III)) — relies on a legal infrastructure that enables the divisibility and transferability of IP assets. When that predicate is not met (which, at least in copyright law, is not always the case⁶⁰), IP holders’ fractionalization strategies may be limited. As a result, the IP holder may be forced to license out its IP assets as a single bundle or, when expropriation risk is high, to avoid licensing and deliver its selected sub-assets into the market through a vertically integrated production and distribution structure (supply chain (I) in Figure 4 above).

1. Fractionalization Strategies

We can now combine fractionalization with risk diversification and supply chain design to observe how licensing transactions can be used to construct the transactional infrastructure for an innovation environment. Figure 5 below, which shows a typical release schedule for a feature film, has two important features. First, it exhibits a disintegrated supply chain that uses licensing to allocate production, distribution, and exhibition functions to multiple entities, each presumably being the least-cost provider at each point on the supply chain. In particular, licensing transactions regulate the relationship between the independent production firm and its studio partner, which funds production and executes distribution, and the relationship between the studio, the exhibitor, and the other entities to which the studio distrib-

60. See *supra* Section II.A.

utes the film. Second, in the exhibition and distribution stages of the supply chain, the IP holder has used licensing transactions to disaggregate the IP asset across temporal, geographic, and market parameters, enabling the holder to distribute the asset across a spectrum of valuation intensities and budget constraints. The interaction between IP rights and contractual licenses supports these temporal, market, and geographic divisions of the innovation asset.

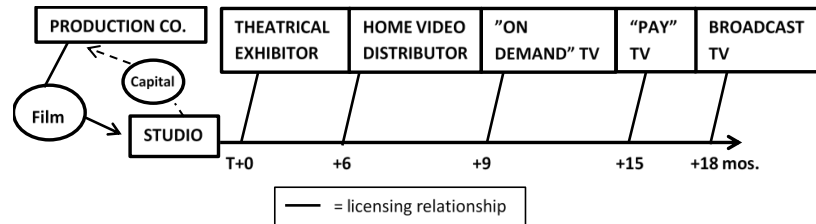


Figure 5: Supply-Chain Optimization, Diversification, and Fractionalization⁶¹

2. Why Fractionalization is (Mostly) Good

Fractionalization strategies advance the commercialization of innovation projects in two respects: (i) they promote external financing and (ii) they enable market segmentation. This can yield both positive efficiency and distributive effects.

a. Financing

Breaking up an IP asset facilitates external financing by enabling an intermediary to sell the sub-assets to outside investors, distributors and other parties, each of which may operate under a different risk tolerance and budget constraint. This structure is widely used in the film industry through “presale” transactions. In a presale transaction, a production company licenses some or all of the distribution rights to a domestic studio and/or foreign distributors in advance of completion of the film. The transaction provides the producer with capital and shifts the risk to a party that is better suited to bear it.⁶² In the absence of reliable IP rights and license enforcement, the ability to engage in presale transactions and similar financing structures would be con-

61. This timeline is based on JEFFREY C. ULIN, THE BUSINESS OF MEDIA DISTRIBUTION: MONETIZING FILM, TV AND VIDEO CONTENT IN AN ONLINE WORLD 30–36 (2009). Current timelines in the motion picture industry may differ due to the growth of online distribution channels (both authorized and unauthorized).

62. For more detailed discussion of the financing structures described above, see *id.* at 91–97.

strained and that same project might only be feasibly undertaken by large entities that have self-funding and self-insurance capacities.

b. Market Segmentation

Fractionalization strategies — especially strategies that offer different versions of a product over time — enable the IP holder to engage in price discrimination that segments the target consumer population among higher and lower-valuation groups. This practice has important advantages from a social point of view. Perfect price discrimination eliminates the deadweight loss that would arise if the IP holder engaged in uniform pricing, suppressing efficient sales to lower-valuation users located at the lower portion of the demand curve. Even in the more realistic case of imperfect price discrimination, where the IP holder charges variable prices tailored to some extent to each user's valuation point and budget constraint, access is restored to a greater portion of the demand curve and deadweight loss is reduced. Hence, the entertainment industry's standard windowing strategies — typically implemented through a series of time-delayed licensing contracts — can yield both attractive efficiency and distributive gains. By delaying release of a creative property and varying prices across distribution channels, the IP holder implements a non-uniform price schedule that approximates the declining valuation or increasing budget constraints of the target audience. This form of time-based price discrimination — which is indicative of a broader range of price-discrimination strategies over non-time parameters⁶³ — has only one potential disadvantage from a social point of view. Namely, it disadvantages higher-valuation consumers located toward the upper portion of the demand curve (from whom consumer surplus is transferred and converted to producer surplus). To the extent that those higher-valuation consumers tend to have weaker budget constraints (that is, are wealthier), this distributive effect would be immaterial.⁶⁴

63. The same progressive distributional effects arise in the case of spatial fractionalization. For example, the increased ability to disaggregate musical content in a digital context has enabled distributors to offer users a vastly increased inventory of “singles” and other lower-cost packages, as compared to the historical practice that had primarily offered albums and other higher-cost packages of musical content.

64. To be clear, the net aggregate efficiency effects of price discrimination in any particular market are a function of the distribution of price elasticities in the consumer population, which will determine the size of the output-enhancing effect from price discrimination at the lower-valuation portion of the demand curve as compared to the size of the output-depressing effect at the higher-valuation portion of the demand curve. To the extent that output-enhancing effects offset or exceed output-depressing effects, price discrimination is likely to yield an outcome that is attractive both from an efficiency perspective (because it expands output) and a distributive perspective (because it expands output specifically for more budget-constrained consumers). For discussion, see R. Preston McAfee, *Price Dis-*

IV. REEVALUATING IP LICENSING LAW

The discussion above has identified how firms use licensing to construct efficient structures for undertaking commercialization in technology and content markets. Those descriptive observations have a normative implication. If IP licensing typically plays an efficient enabling function, then the law should adopt a restrained approach toward existing limitations on licensing. The rationale is simple. If licensing is principally a means by which to assemble complementary IP and non-IP inputs, then the law should generally facilitate those transactions. Implementing this approach with respect to any of IP law's specific existing limitations on licensing requires detailed analysis beyond the scope of this paper. However, understanding licensing's enabling function in innovation markets provides a foundation for implementing such an approach in general.

A. The Sylvania Precedent: Antitrust Lessons for IP Law

To a certain extent, courts have already adopted this proposed policy of restraint toward existing limitations on licensing. As noted previously, courts widely honor contractual fictions — for example, nominal recitations of goodwill in trademark assignments⁶⁵ and nominal characterizations of sales of copyright-protected products as licenses⁶⁶ — that enable parties to detour around IP law's limitations on licensing. Judges' willingness to respect these transactional detours suggests that courts in IP cases often implicitly appreciate what courts in antitrust cases have recognized explicitly since the Supreme Court's landmark 1977 decision in *Continental Television, Inc. v. GTE Sylvania, Inc.*⁶⁷ Prior to *Sylvania*, antitrust law had imposed a hodgepodge of per se rules against certain vertical restraints (including certain types of IP licenses) between upstream and downstream entities in a supply chain. In *Sylvania*, the Court addressed just such an ad hoc doctrine — namely, a rule under which a vertical territorial restriction effected through a sale transaction was deemed per se illegal, even though the same restriction effected through a consignment transaction was subject to no more than potential liability under the rule of reason standard.⁶⁸ The *Sylvania* court rejected this formalistic distinction and, in doing so, relied on scholarly arguments that vertical restraints between suppliers and retailers often or typically generate

crimination, in 1 ABA SECTION OF ANTITRUST LAW, ISSUES IN COMPETITION LAW AND POLICY 465, 480–84 (2008).

65. See *Bloomer v. McQuewan*, 55 U.S. 539, 549–550 (1852).

66. See 60 STAT. 429, 433; 15 U.S.C. §§ 1055, 1127 (1946).

67. *Continental T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36 (1977).

68. See *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365, 379–80 (1967).

efficiency gains.⁶⁹ Additionally, the Court observed that discouraging vertical arrangements may induce upstream entities to integrate forward, thereby expanding firm scope and limiting entry opportunities by specialized firms located at downstream segments of the supply chain.⁷⁰ Based on these rationales, the Court mandated use of the rule of reason standard for assessing the legality of all “non-price” vertical restraints⁷¹, which has subsequently been extended to price-based vertical restraints.⁷² Antitrust law now typically applies this nuanced standard to IP licensing practices in general, which consequently operate under a significantly reduced risk of antitrust liability.⁷³ Given the strength of the rationales behind the *Sylvania* precedent, which has been applied and extended in nearly 40 years of antitrust jurisprudence, IP law’s failure to adopt a similarly nuanced approach toward existing limitations on licensing freedom seems anachronistic.

B. *The IP Licensing Time Warp*

IP law effectively continues to bluntly categorize licensing practices into “per se legal” and “per se illegal” categories that perpetuate the arbitrary doctrines of pre-*Sylvania* antitrust thinking. Consider the exhaustion doctrine: if an IP transaction is nominally structured as a sale, then the IP holder’s exclusive distribution rights lapse; however, if the same transaction is nominally structured as a license, then those rights persist.⁷⁴ This tracks the same arbitrary distinction between sale and consignment transactions rejected almost 40 years ago in *Sylvania*! IP law’s per se-style prohibitions ignore the fact that licenses typically generate efficiency gains by enabling transactions among suppliers of complementary innovation and non-innovation inputs. Even if subject to judicial qualification in practice,⁷⁵ those per se-style

69. *See Sylvania*, 433 U.S. at 54–57. In particular, the Court adopted scholarly arguments that vertical territorial restrictions can have positive efficiency effects by enabling downstream retailers to internalize the gains from investing in promotional and other support services for the upstream supplier.

70. *See id.* at 57 n.26 (“To the extent that a per se rule prevents a firm from using the franchise system to achieve efficiencies . . . the rule creates an incentive for vertical integration into the distribution system, thereby eliminating to that extent the role of independent businessmen”).

71. *See id.* at 57.

72. *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 896–900 (2007).

73. *See* DEPARTMENT OF JUSTICE & FEDERAL TRADE COMMISSION, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY 16 (1995) (“In the vast majority of cases, restraints in intellectual property licensing arrangements are evaluated under the rule of reason.”). This language is unchanged in the proposed 2016 update to the guidelines. *See* DEPARTMENT OF JUSTICE & FEDERAL TRADE COMMISSION, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY: PROPOSED UPDATE 16 (2016).

74. *See supra* Section II.B.

75. *See supra* Section II.A.A. Doctrine of Indivisibility

prohibitions may induce a legal “chilling effect” that pushes innovators to execute commercialization internally (the *firm* option in the Coasean framework discussed earlier⁷⁶) even if doing so through licensing relationships with third parties (the *market* option) would be less costly. That not only raises commercialization costs but also may frustrate entry by smaller firms who cannot execute commercialization independently. While certain licensing practices may sometimes impose net efficiency losses (in the exceptional cases in which the IP holder exerts market power), a “rule of reason”-style treatment would enable courts to disentangle those circumstances from the typical case in which licensing generates net efficiency gains.⁷⁷ While the Supreme Court has recently rejected proposals to import the rule of reason approach into IP licensing law,⁷⁸ this approach has been considered by Congress⁷⁹ and has been effectively adopted by some circuits with respect to the patent misuse doctrine.⁸⁰

V. CONCLUSION

Prevailing academic views, now endorsed by the Supreme Court, tend to favor preserving and even enhancing IP law’s constraints on licensing transactions in order to “protect” innovation. This view has things backward. A legal infrastructure consisting of reliably enforced IP rights and licenses supplies the institutional preconditions that enable markets to efficiently design supply chains, allocate innovation and commercialization risk, and segment innovation assets across a broad population of users and financing sources. IP law’s residual per se-style constraints on licensing are incompatible with the efficient role typically played by licensing relationships in innovation markets, as has long been recognized by antitrust agencies and courts. While further analysis is required before recommending modifications to any

76. See *Ill. Tool Works Co. v. Indep. Ink, Inc.*, 547 U.S. 28, 45 (2006).

77. For similar suggestions but with respect specifically to the first sale doctrine, see Herbert Hovenkamp, *Post-Sale Restraints and Competitive Harm: The First Sale Doctrine in Perspective*, 66 N.Y.U. ANN. SURV. AM. L. 487, 537–538 (2011). Note that rule of reason analysis in the IP context requires distinguishing between short-term and long-term efficiency effects, given that IP rights rest on a policy tradeoff between those effects. While short-term efficiency effects disfavor enforcing the license or the underlying IP right, long-term efficiency effects may favor precisely the opposite action.

78. See *Kimble v. Marvel Entm’t, LLC*, 135 S. Ct. 2401, 2411 (2015) (rejecting application of rule of reason to determine legality of a post-term royalty obligation in a patent license).

79. For discussion, see Robert P. Merges, *Reflections on Current Legislation Affecting Patent Misuse*, 70 J. PAT. & TRADEMARK OFF. SOC’Y 793, 794–95 (1988). Congress ultimately adopted legislation that required a showing of market power in the case of a patent misuse claim relating to a tying practice. See *supra* note 34.

80. For appellate court decisions that have largely adopted this approach, see *Windsurfing International, Inc. v. AMF Inc.*, 782 F.2d 995, 1001–02 (Fed. Cir. 1986) and *USM Corp. v. SPS Technologies, Inc.*, 694 F.2d 505, 511–12 (7th Cir. 2012).

specific licensing doctrine, any economically reasonable analysis must seek to facilitate, rather than frustrate, the enabling function of licensing arrangements in content and technology markets. IP law's treatment of licensing is due for an upgrade.