A BRIEF HISTORY OF FRAND: ANALYZING CURRENT DEBATES IN STANDARD SETTING AND ANTITRUST THROUGH A HISTORICAL LENS

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> "[The defendant shall] grant to any applicant there-for absolutely unrestricted licenses or sublicenses to manufacture, use, and sell without any conditions except that a *reasonable and nondiscriminatory royalty* may be charged . . . ."
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> *United States v. American Bosch Corp.* (S.D.N.Y. 1942)[1]

> "There are no new problems in the law, only forgotten solutions[,] and the issues which arose yesterday will always arise again tomorrow."
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> *Shell Oil Co. v. United States* (Fed. Cir. 2014)[2]

A great deal has been written about the commitments that firms make to standards-development organizations (SDOs) to license their patents on terms that are "fair," "reasonable," and "non-discriminatory" (FRAND).[3] Over the

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1 1940–1943 Trade Cas. (CCH) ¶ 56,253, 1942 WL 82620 (S.D.N.Y. Dec. 29, 1942).

2 751 F.3d 1282, 1284 n.1 (Fed. Cir. 2014) (Wallach, J.) (quoting Jeremy Rabkin & Ariel Rabkin), *Navigating Conflicts in Cyberspace: Legal Lessons from the History of War at Sea*, 14 CHI. J. INT'L L. 197, 198 (2013) (quoting Evan J. Wallach, *Partisans, Pirates, and Pancho Villa: How International and National Law Handled Non-State Fighters in the "Good Old Days" Before 1949 and that Approach's Applicability to the "War on Terror,"* 24 EMORY INT'L L. REV. 549, 552–53 (2010))). Thanks to Hal Wegner for pointing out this apt quotation in his popular patent law blog, Wegner's Writings, www.laipla.net/category/wegners-writings/.

3 I use the term FRAND to refer both to "reasonable and non-discriminatory" terms, as well as "fair, reasonable and non-discriminatory" terms, two competing formulations that do not seem to have a meaningful difference. *See, e.g.*, U.S. Dep't of Justice & U.S. Patent & Trademark Office, Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments 1 n.2 (2013), www.justice.gov/atr/public/guidelines/290994.pdf ("Com-

past few years, FRAND commitments have been the subject of numerous judicial decisions,[4] agency enforcement actions,[5] and Congressional hearings,[6] as well as countless scholarly articles.[7]

Nearly all of the recent analysis reviews these commitments de novo, starting either from the basic economic assumptions and goals underlying the standard-setting process (efficiency gains and the reduction of opportunism and patent hold-up) or the presumed understanding of the parties (SDOs and patent holders) that voluntarily establish FRAND commitments. These analytical approaches do much to illuminate the rationale for, and contours of, modern FRAND commitments. Yet there is a long and rich history of patent licensing

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mentators frequently use the terms [RAND and FRAND] interchangeably to denote the same substantive type of commitment.").

[4] Innovatio IP Ventures LLC Patent Litig., 921 F. Supp. 2d 903, 907 (N.D. Ill. 2013); Findings of Fact and Conclusions of Law, Microsoft Corp. v. Motorola, Inc., 2013 U.S. Dist. LEXIS 60233 (W.D. Wash. Apr. 25, 2013); Opinion and Order, Apple, Inc. v. Motorola, Inc., 886 F. Supp. 2d 1061 (W.D. Wis. 2012). For a summary of all U.S. FRAND-related litigation through 2012, see Jorge L. Contreras, *Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing*, 79 ANTITRUST L.J. 47, app. A (2013) [hereinafter Contreras, *Fixing FRAND*] (cataloging FRAND litigation through 2012).

[5] Decision and Order, Motorola Mobility LLC, FTC Docket No. C-4410 (July 23, 2013), www.ftc.gov/os/caselist/1210120/130724googlemotorolado.pdf [hereinafter FTC Google Order]; Statement of the Fed. Trade Comm'n, Robert Bosch GmbH, FTC File No. 121-0081 (Nov. 26, 2012); Case COMP/M.6381—Google/Motorola Mobility, Comm'n Decision (Feb. 13, 2012), *available at* ec.europa.eu/competition/mergers/cases/decisions/m6381_20120213_20310_2277480_EN.pdf.

[6] *Int'l Trade Comm'n and Patent Disputes, Hearing Before the Subcomm. on Intellectual Property, Competition, and the Internet of the H. Comm. on the Judiciary*, 112th Cong. (July 18, 2012) (Serial No. 112-143); *Abusive Patent Litigation: The Impact on American Innovation and Jobs, and Potential Solutions, Hearing before the Subcomm. on Courts, Intellectual Property, and the Internet of the H. Comm. on the Judiciary*, 113th Cong. (Mar. 14, 2013) (Serial No. 113-13).

[7] For recent scholarly commentary on the content and substance of FRAND commitments see, for example, NAT'L RESEARCH COUNCIL, PATENT CHALLENGES FOR STANDARD-SETTING IN THE GLOBAL ECONOMY: LESSONS FROM INFORMATION AND COMMUNICATIONS TECHNOLOGY 52–69 (Keith Maskus & Stephen A. Merrill eds., 2013) [hereinafter NAS REPORT]; Dennis W. Carlton & Allan L. Shampine, *An Economic Interpretation of FRAND*, 9 J. COMPETITION L. & ECON. 531 (2013); Contreras, *Fixing FRAND, supra* note 4; Joseph Farrell, John Hayes, Carl Shapiro & Theresa Sullivan, *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L.J. 603, 616 (2007); Richard J. Gilbert, *Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations*, 77 ANTITRUST L.J. 855 (2011); Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CALIF. L. REV. 1889 (2002); Doug Lichtman, *Understanding the RAND Commitment*, 47 HOUS. L. REV. 1023, 1033 (2010); Joseph Scott Miller, *Standard Setting, Patents, and Access Lock-In: RAND Licensing and the Theory of the Firm*, 40 IND. L. REV. 351, 357 (2007); Anne Layne-Farrar, A. Jorge Padilla & Richard Schmalensee, *Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of FRAND Commitments*, 74 ANTITRUST L.J. 671 (2007); J. Gregory Sidak, *The Meaning of FRAND—Part I: Royalties*, 9 J. COMPETITION L. & ECON. 931 (2013); Daniel G. Swanson & William J. Baumol, *Reasonable and Non-Discriminatory (RAND) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1 (2005).

commitments made *outside* the standard-setting context, years before this approach was adopted by SDOs, that is seldom mentioned today.

From World War II through the 1970s, courts issued more than one hundred decrees ordering patent holders to license their patents on terms that were fair, reasonable and non-discriminatory.[8] These orders were typically issued as remedies in antitrust cases involving the perceived abuse of patents, and were characteristic of the most aggressive period of U.S. antitrust enforcement.[9] And while the reasoning that led to the imposition of these mid-century licensing decrees may not reflect current antitrust enforcement policies, the interpretations given to the licensing commitments themselves by mid-century courts, agencies, and litigants are relevant to today's discussion of FRAND commitments. Yet this history has, for the most part, been lost, and its ramifications remain largely unexplored.[10]

In this article, I trace the historical development of antitrust patent licensing orders and consider how they inform current debates regarding FRAND commitments in the standard-setting context. I argue that the licensing orders arising in these cases shed much-needed light on questions only now re-emerging in the FRAND debate: the degree to which courts should intervene in the determination of reasonable royalty rates; the appropriateness of arbitration as a means for determining FRAND royalty rates; the extent to which royalty-free patent licensing may be "reasonable" in some situations; the effects of a potential licensee's refusal to accept a patent holder's license offer; the appropriateness of non-financial licensing terms, such as reciprocity requirements, in FRAND licenses; and the need to ensure that FRAND licenses are granted on a uniform and non-discriminatory basis, even when such licenses are cloaked in confidentiality protections. Thus, while there are clearly differences between FRAND commitments imposed by judicial decree and those entered voluntarily by parties to facilitate product standardization, their similarities, and the analysis offered over the years by courts, enforcement agencies and private firms, should not be ignored.

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[8] *See* Richard A. Posner, *A Statistical Study of Antitrust Enforcement*, 13 J.L. & ECON. 365, 388–89, tbl.17 (1970) (counting 60 reasonable-royalty decrees issued between 1940 and 1969). A number of additional decrees were entered after Judge Posner's compilation was made in 1970. A complete list of remedial patent licensing decrees entered through 2013 is contained *infra* Appendix B.

[9] *See* Christina Bohannan & Herbert Hovenkamp, *IP and Antitrust: Reformation and Harm,* 51 B.C. L. REV. 905, 908–09 (2010) (describing and critiquing expansionist U.S. antitrust enforcement policy during this period); Andrew I. Gavil, *Moving Beyond Caricature and Characterization: The Modern Rule of Reason in Practice*, 85 S. CAL. L. REV. 733, 738 (2012).

[10] For one welcome, albeit brief, discussion, see Simon Steel, *RAND Obligations Outside the SSO Setting: Some Perspectives from History and Analogy*, ANTITRUST & COMPETITION POLICY BLOG (Oct. 17, 2013), lawprofessors.typepad.com/antitrustprof_blog/2013/10/non-sso-patent-commitments-and-pledges-symposium-simon-steel-comments.html.

I. WHY FRAND?

A. FRAND Commitments in Standard Setting

1. *Understanding FRAND Commitments*

Standards promoting product interoperability are often developed collaboratively by market participants within SDOs. Once such technical standards are released, firms may make significant investments in research and development, manufacturing, training and marketing, relying on the promise of broad interoperability across a product category (a situation often referred to as lock-in). In such cases, the cost of switching from the standardized technology to an alternative technology may be prohibitive, dramatically increasing the patent holder's leverage in any ensuing negotiation. This phenomenon has been termed patent hold-up and is discussed extensively in the literature.[11]

In response to the perceived threat of patent hold-up, many SDOs have adopted formal policies that impose one or both of the following obligations on participants: (1) an obligation to disclose patents essential to implementation of a standard, and/or (2) an obligation to license such patents on FRAND terms.[12] FRAND policies are intended, among other things, to assure vendors that they will be able to obtain licenses under patents held by the firms involved in development of the standard. While the precise royalty rates and other terms required by FRAND commitments are seldom specified in SDO policies,[13] the commitment still, in theory, offers market participants a general level of comfort that the royalty burden will not be prohibitive and, more importantly, that licenses will not be withheld altogether. FRAND policies today are common features of the standard-setting environment.[14]

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[11] *See* sources cited *supra* note 7.

[12] *See* NAS Report, *supra* note 7, at 4 ("For most SSOs . . . the minimum goal of their IPR policies is to ensure that all essential patent claims are reasonably known to the participants and are available for licensing under a FRAND or a similar framework minimizing the potential for *ex post* hold-up and royalty stacking."); U.S. Dep't of Justice & Fed. Trade Comm'n, Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition 42 (2007) ("Many SSOs have developed policies to mitigate hold up. The provisions of such SSO policies fall, broadly speaking, into two nonexclusive categories: disclosure rules and licensing rules."); Am. Bar Ass'n, Standards Development Patent Policy Manual 31–85 (Jorge L. Contreras ed., 2007) [hereinafter ABA Patent Policy Manual].

[13] The generality and imprecision of these commitments has led to disputes and an abundance of commentary. *See* sources cited *supra* notes 5–7.

[14] *See* Rudi Bekkers & Andrew Updegrove, *A Study of IPR Policies and Practices of a Representative Group of Standards Setting Organizations Worldwide* 89 tbl.13 (2012), *available at* sites.nationalacademies.org/xpedio/groups/pgasite/documents/webpage/pga_072197.pdf (indicating that of ten major SDOs studied, eight explicitly specify FRAND licensing as an option in their IPR policies); Brad Biddle, Andrew White & Sean Woods, *How Many Standards in a Laptop? (and Other Empirical Questions)*, *in* Int'l Telecomm. Union Telecomm. (ITU-T) Standardization Sec., Kaleidoscope Acad. Conf. Proc. 123 fig.2 (2010), *available at*

2. *The First SDO FRAND Policies*

Organized industry standardization in the United States is often traced to the formation of the American Engineering Standards Committee (AESC) in 1916.[15] This influential body included representatives from the five major engineering societies of the day—electrical (AIEE), mechanical (ASME), civil (ASCE), materials (ASTM), and mining (AIME)—and three governmental agencies—the Bureau of Standards and the Departments of War and the Navy.[16] AESC and its successor, the American Standards Association (ASA), coordinated standardization activities in a wide range of industries and helped to shape U.S. standardization policy throughout the 20th century.

The ASA was long aware that patents could be obtained on standardized technologies and, while disfavored, ASA permitted SDOs to include patented technologies in standards as early as 1932, so long as "monopolistic tendencies" were avoided.[17] However, it was not until 1956, the year of the first consent decree in the government's massive antitrust suit against AT&T and Western Electric,[18] that the ASA Board of Directors began to consider a formal policy requiring the licensing of patents covering standardized technologies.[19] Such a policy was formally adopted by ASA three years later, in 1959.[20] The ASA policy permitted the approval of American National Standards covered by patents, so long as the patent holder offered to license the relevant patents to others on "reasonable terms." The 1959 ASA policy provided, in full:

> 11.6 Patents. Standards should not include items whose production is covered by patents unless the patent holder agrees to and does make available to any interested and qualified party a license on *reasonable terms* or unless

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papers.ssrn.com/sol3/papers. cfm?abstract_id=1619440 (finding that 75% of the laptop computer standards studied were subject to a RAND commitment and 22% were royalty-free); Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CALIF. L. REV. 1889, 1906 (2002) (noting that of 36 SDO patent policies studied, 29 contained FRAND licensing requirements and 3 more encouraged FRAND licensing).

[15] *See* ANDREW L. RUSSELL, OPEN STANDARDS AND THE DIGITAL AGE: HISTORY, IDEOLOGY, AND NETWORKS 63 (2014).

[16] *Id.*

[17] *See* Am. Standards Ass'n, Minutes of Meeting of Standards Council (Nov. 30, 1932) (¶ 2564, Relation of Patented Designs or Methods to Standards), *available at* publicaa.ansi.org/sites/apdl/Reference%20Documents%20Regarding%20ANSI%20Patent%20Policy/01-Nov1932RelationsOfPatentedDesignsASA.pdf ("[A]s a general proposition patented designs or methods should not be incorporated in standards. However each case should be considered on its merits, and if a patentee be willing to grant such rights as will avoid monopolistic tendencies, favorable consideration to the inclusion of such patented designs in a standard might be given").

[18] *See infra* Part III.G.

[19] *ASA Policies on Standardization—Draft for Consideration by Board of Directors*, BD 569, AM. STANDARDS ASS'N (Mar. 26, 1956) [hereinafter ASA 1956 Policy].

[20] AM. STANDARDS INST., *Procedures of American Standards Association* (1959).

> other unpatented competing items are included within the standards and the patented item would suffer were it left out.[21]

The ASA changed its name in 1969 to the American National Standards Institute (ANSI).[22] Today, ANSI serves in multiple roles as the representative of private sector standardization in the United States and the accreditor of SDOs as developers of American National Standards.[23] While ANSI is not itself an SDO, it represents the United States at international bodies such as the International Organisation for Standardisation (ISO).[24] Among ANSI's requirements for accredited SDOs, which are embodied in its *Due Process Requirements for American National Standards*, are rules regarding the way that accredited SDOs must handle patents held by their participants.[25]

The ASA/ANSI patent policy has evolved over the years, and today all ANSI-accredited SDOs must require patent holders who participate in the SDO to license their patents essential to SDO standards on terms that are no less favorable than FRAND.[26] But despite these policies, it was not until the mid-1990s, with the FTC's case against Dell Computer,[27] that a broader awareness of SDO patent policies began to emerge within the industry. And it was not until the early 2000s, with the well-known series of cases against semiconductor design firm Rambus, Inc., that the current interest in FRAND commitments began in earnest.[28] By that time, the antitrust patent licensing decrees of the mid-20th century were largely forgotten.

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[21] *Id.* (emphasis added).

[22] *See* RUSSELL, *supra* note 15, at 63 (noting also an intermediate name change in 1966 to the United States of American Standards Institute (USASI)).

[23] *See American National Standards—Value of the ANS Designation*, AM. NAT'L STANDARDS INST., publicaa.ansi.org/sites/apdl/Documents/News%20and%20Publications/Brochures/Value%20of%20the%20ANS.pdf (last visited Mar. 27, 2015) ("An American National Standard (ANS) is a document that has been sponsored by an ANSI-Accredited Standards Developer, achieved consensus, met ANSI's *Essential Requirements*, and been approved by the Institute."). There are currently more than 200 ANSI-accredited American National Standards developers. *Standards Activities Overview*, AM. NAT'L STANDARDS INST., www.ansi.org/standards_activities/overview/overview.aspx?menuid=3 (last visited Mar. 27, 2015).

[24] *ANSI: Historical Overview*, AM. NAT'L STANDARDS INST., www.ansi.org/about_ansi/introduction/history.aspx?menuid=1 (last visited Mar. 27, 2015).

[25] *ANSI Essential Requirements: Due Process Requirements for American National Standards*, AM. NAT'L STANDARDS INST., § 3.1.1 (Jan. 2015).

[26] *See id.* § 3.1.1(b) (stating that American National Standards (ANS) may include technologies covered by known patents, so long as the relevant SDO receives a written assurance from the patent holder that a license will be made available either without consideration or on reasonable terms "that are demonstrably free of any unfair discrimination.").

[27] Dell Computer Corp., 121 F.T.C. 616 (1995) (alleging that Dell failed to disclose patents covering a standard that Dell had helped to create in violation of the patent disclosure requirements of an SDO).

[28] As has been extensively recounted in the literature, Rambus participated in the Joint Electron Device Engineering Council (JEDEC), a voluntary SDO developing standards for dynamic random access memory (DRAM). JEDEC participants were required to license their patents to

B. FRAND COMMITMENTS AND COMPULSORY LICENSING

FRAND commitments are sometimes compared with compulsory licensing of patents. A FRAND commitment obligates[29] a patent holder to grant licenses to others on terms that are fair, reasonable, and non-discriminatory. A compulsory license, on the other hand, is a government-imposed measure that requires a patent holder to grant licenses to others on specified royalty rates and other terms. These two legal constructs differ in significant and obvious ways. Most importantly, FRAND commitments are made *voluntarily* by participants in standards-development activities, among other things, to induce others to adopt their patented technology in a standard, whereas compulsory licenses are imposed by governmental action against the will of the patent holder, usually to remedy a wrong or to address a pressing public need, such as the under-supply of an important vaccine.[30]

Administrative orders for compulsory licensing of patents have been rare in the United States, even though authorized under certain limited statutory regimes.[31] Courts, however, have been more willing to compel the licensing of patents. For example, a court's refusal to enter a permanent injunction against the continuing manufacture or sale of an infringing product effectively permits the infringement to continue, usually at a royalty rate determined in the proceeding.[32] While these cases are not usually identified with compulsory licensing, their effect is comparable.[33] More pertinent to the present discussion, courts in antitrust cases have in the past issued patent licensing orders to remedy the use of patents that were believed to further anticompetitive arrangements.[34]

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implementers of JEDEC standards on FRAND terms. Rambus, through a pattern of allegedly deceptive behavior, did not disclose certain patents covering JEDEC standards. Rambus, Inc. v. Infineon Techs. AG, 318 F.3d 1081 (Fed. Cir. 2003); Rambus, Inc., FTC Docket No. 9302, 2006 WL 2330117, at *53 (Aug. 2, 2006), *rev'd*, 522 F.3d 456 (D.C. Cir. 2008).

[29] The legal enforceability of FRAND commitments in the standard-setting context is a fraught topic and beyond the scope of this article. *See* Jorge L. Contreras, *A Market Reliance Theory for FRAND Commitments and Other Patent Pledges*, __ UTAH L. REV. __ (forthcoming 2015) [hereinafter *Market Reliance*], *available at* papers.ssrn.com/sol3/papers.cfm?abstract_id=2525947.

[30] *See generally* JAY DRATLER, LICENSING OF INTELLECTUAL PROPERTY § 3.03 (2006 update); CHRISTOPHER R. LESLIE, ANTITRUST LAW AND INTELLECTUAL PROPERTY RIGHTS 574–75 (2011).

[31] *See, e.g.*, Bayh-Dole Act of 1980, Atomic Energy Act (42 U.S.C. § 2183(c)); Clean Air Act (42 U.S.C. § 7608). Compulsory licensing of musical compositions and digital performance rights is mandated under the U.S. Copyright Act and occurs on a widespread basis (17 U.S.C. §§ 115–116).

[32] *See* eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388 (2006) (establishing that a permanent injunction need not issue automatically following a finding of patent infringement).

[33] *See* James Packard Love, *Recent Examples of the Use of Compulsory Licenses on Patents*, KEI Research Note 2 (Mar. 31, 2007) (calling out the denial of injunctions in patent cases as compulsory licensing), *available at* www.keionline.org/misc-docs/recent_cls_8mar07.pdf.

[34] *See* cases discussed *infra* Part II.

Despite the differences between FRAND commitments and compulsory licensing orders, the resulting commitments look surprisingly similar, both in terms of content and procedural implementation. That is, each licensing commitment covers a defined set of patents, requires the patent holder to grant licenses to some defined community of users, and establishes high-level criteria for those licenses. What's more, the standard defining those terms, particularly royalty levels, is essentially the same: FRAND. Thus, despite the differing *origins* of patent licensing orders (remedies for anticompetitive conduct) and FRAND commitments (voluntary promises), the large body of interpretation and analysis of the content and procedural elements of these historical patent licensing orders by courts, agencies, and private firms can help to illuminate the interpretation and enforcement of their close kin, FRAND commitments, today.[35]

II. THE FIRST PATENT LICENSING DECREES[36]

A. Injunctive Decrees in Antitrust Cases

When the government brings an antitrust action against a private firm, it may seek civil and criminal remedies including monetary damages, fines, imprisonment, and injunctions prohibiting the continuation of anticompetitive activity. Such an injunction usually takes the form of an order or decree entered by the trial court. The scope of an antitrust injunctive decree can be as broad as necessary "to bring about the dissolution or suppression of an illegal combination that restrains interstate commerce."[37] As such, an antitrust decree, which must account for effects on the public and the marketplace, is considered a more sweeping form of relief than injunctive relief between private litigants.[38]

If the government and the defendants agree on the terms of the desired order prior to or during the course of litigation, they may stipulate the terms of a "consent decree," which will then be submitted to the court for entry into the record. Though not fully adjudicated, a consent decree has the legal force of

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[35] Some commentators have suggested that compulsory licensing remedies may, themselves, be useful to address abuses of the standardization process. *See, e.g.*, ABA Section of Antitrust Law, Handbook on the Antitrust Aspects of Standard Setting 176–84 (2d ed. 2011) (summarizing literature in this regard); Janice M. Mueller, *Patenting Industry Standards*, 34 John Marshall L. Rev. 897, 929–34 (2001) (discussing compulsory licensing as a remedy for failure to disclose patents essential to a standard). An analysis of these proposals is beyond the scope of this article.

[36] Throughout this article the terms "order" and "decree" are used interchangeably.

[37] Northern Sec. Co. v. United States, 193 U.S. 197, 346 (1904).

[38] Philip Marcus, *Patents, Antitrust Law and Antitrust Judgments Through* Hartford-Empire, 34 Geo. L.J. 1, 37 (1945).

an adjudicated decision, enforceable upon pain of contempt.[39] If, on the other hand, the defendants deny the allegations brought by the government or otherwise do not agree to the terms of the proposed order, the parties may litigate and the court may fashion a decree based on its assessment of the case and the parties' respective arguments. Such a decree is termed a "contested decree."

Injunctive decrees in antitrust cases generally seek to remedy a harm caused by anticompetitive conduct and to prevent its recurrence. Thus, in price-fixing cases, remedial decrees may simply prohibit further price fixing. In monopolization cases, a decree may require a firm to divest certain business units or subsidiaries, or prohibit it from carrying on a particular business within certain markets. And when competitors have unlawfully conspired to reduce competition, a remedial decree may seek to enable competition where it was previously restrained.[40]

Thus, in the 1912 *Terminal Railroad* case, when 38 defendants conspired to prevent their competitors from utilizing "every feasible means of railroad access to St. Louis," including its only two rail bridges and ferry service, the Supreme Court struck down the arrangement as an unlawful restraint of trade.[41] As a remedy, the Court ordered the defendants to open membership in their association to "any existing or future railroad" on "such *just and reasonable terms* as shall place such applying company upon a *plane of equality* in respect of benefits and burdens with the present proprietary companies."[42] Moreover, if a competitor did not elect to become a member of the association, the defendants were ordered to permit it to use their terminal facilities "upon such *just and reasonable terms and regulations* as will, in respect of use, character and cost of service, place every such company upon as nearly an *equal plane* as may be with respect to expenses and charges as that occupied by the proprietary companies."[43] Thus, even though it did not involve patents, the decree in *Terminal Railroad* can be seen as a precursor to the

[39] United States v. Swift & Co., 286 U.S. 106, 115 (1932). Though the use of consent decrees in antitrust cases can be traced to 1906, United States v. Otis Elevator Co., 21 CCH, Decrees & Judgments in Fed. Antitrust Cases 107 (N.D. Cal. 1906), they did not come into widespread use until a new policy initiative by the Attorney General in 1938. Maxwell S. Isenbergh & Seymour J. Rubin, *Antitrust Enforcement Through Consent Decrees*, 53 HARV. L. REV. 386, 387–88 (1940). By the end of the 1950s, consent decrees had become "[t]he most widely used antitrust remedy in federal civil enforcement . . . ." John J. Flynn, *Consent Decrees in Antitrust Enforcement: Some Thoughts and Proposals*, 53 IOWA L. REV. 983, 983–85 & n.3 (1968).

[40] *See generally,* Posner, *supra* note 8, at 385–86 (classifying and quantifying such remedial measures).

[41] United States v. Terminal R.R. Ass'n of St. Louis, 224 U.S. 383, 391–97 (1912). This case is generally viewed as the origin of the "essential facilities" doctrine in the United States. *See* Intergraph Corp. v. Intel Corp., 195 F.3d 1346, 1356 (Fed. Cir. 1999).

[42] 224 U.S. at 411 (emphasis added).

[43] *Id.*

patent licensing orders that began to emerge during World War II and the FRAND commitments of today.

B. Antitrust Enforcement and Patents in the Early 20th Century

Antitrust enforcement in the United States experienced a lull during the Great Depression and its immediate aftermath.[44] This situation changed, however, in the years preceding U.S. entry into World War II, when the Department of Justice initiated an aggressive new enforcement campaign against international cartels.[45] In the early 1940s the DOJ brought actions challenging numerous commercial arrangements in the markets for metals, fuels, instrumentation, and other industries entered into by U.S. and foreign (particularly German) firms.[46]

The trend toward greater antitrust enforcement in the 1940s coincided with increased antitrust scrutiny of industrial arrangements concerning patents. By the beginning of the 20th century, large industrial concerns in fields such as railroads, metals, oil refining, glass, and electric lighting were well aware of the strategic benefits to be gained from patents. The early century saw the rise of complex webs of patent licensing and pooling agreements among large competitors in these industries, giving rise to numerous antitrust enforcement actions. The results, however, did not always condemn the patent arrangements. In 1931 the Supreme Court approved a patent-pooling arrangement led by Standard Oil Co. (Indiana), reasoning that "an agreement for cross-licensing and division of royalties violates the Act only when used to effect a monopoly, or to fix prices, or to impose otherwise an unreasonable restraint upon interstate commerce."[47] But while the Court seemingly settled the question of antitrust liability for patent pools in *Standard Oil (Indiana)*, allegations continued to arise regarding other allegedly anticompetitive practice involving patents.

In 1938, President Franklin D. Roosevelt, responding to public concern over the activities of large industrial actors, urged Congress to review and possibly amend the patent laws to "prevent their use . . . to create . . . monopolies."[48] As a result, the DOJ was charged with studying the interplay of patents and monopolistic activity and was given renewed encouragement to

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[44] Wilbur L. Fugate, Foreign Commerce and the Antitrust Laws 6 (1996).

[45] *Id.* (noting suspicion among Congressional committees that technical collaboration between U.S. and German firms may have sabotaged the war effort).

[46] *Id.*

[47] Standard Oil Co. (Indiana) v. United States, 283 U.S. 163, 175 (1931).

[48] *See* S. Doc. No. 75-173, at 9 (1938) (Message from the President of the United States Transmitting Recommendations Relative to the Strengthening and Enforcement of Antitrust Laws); 83 Cong. Rec. 5992, 5995 (1938). President Roosevelt was, of course, no stranger to the strategic use of patents. *See infra* note 191 (discussing Roosevelt's role as Secretary of the Navy

address instances in which patents were being used with anticompetitive effect.[49]

These two trends toward greater antitrust enforcement, overall, and greater scrutiny of patents led the DOJ to challenge a number of industrial patent arrangements in the early decades of the century. In many of these cases, injunctive orders were entered prohibiting patent holders from the continuation of restrictive patent licensing practices, dissolving patent holding companies,[50] or requiring the divestiture of patents.[51] By 1945, the DOJ had brought 56 suits challenging patent licensing arrangements on antitrust grounds.[52]

C. THE WARTIME CONSENT DECREES (1942)

A key development in the DOJ's antitrust enforcement program occurred in the early 1940s. Until that point, as discussed above, orders entered against anticompetitive patent practices tended to do no more than prohibit abusive licensing practices. Beginning with a series of consent decrees in 1942, however, the DOJ sought, and courts entered, orders requiring that patent holders grant licenses to third parties on "reasonable" terms. These decrees arguably embodied the first FRAND commitments.[53]

The wartime decrees, as I call them, combined a concern over potentially anticompetitive use of patents with the spectre of U.S.-German industrial collaboration. The first such decree was issued by the Federal District Court for the District of New Jersey, the venue for several major antitrust actions in the

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in persuading competing aircraft manufacturers to pool their patents to support the war effort in 1917).

[49] Ernest S. Meyers & Seymour D. Lewis, *The Patent "Franchise" and the Antitrust Laws—Part I*, 30 GEO. L.J. 117, 118 (1941). One of the industries selected for investigation by the DOJ was the glass container industry, *id*., the subject of the *Hartford-Empire* case discussed *infra* Part II.D.

[50] *See, e.g*., Standard Sanitary Mfg. Co. v. United States, 226 U.S. 20 (1912) (prohibiting patentee from enforcing fixed price contracts for enamel ironware, but otherwise permitting lawful licenses); United States v. Discher (S.D.N.Y. 1917) (prohibiting defendants from acting in concert to grant unlawful licenses); *Compulsory Patent Licensing by Antitrust Decree*, 56 YALE L.J. 77, 91 n.38 (1946) (reprinting excerpts from decrees in additional cases).

[51] *See, e.g.*, United States v. Kearney & Trecker Corp., 1940–1943 Trade Cas. (CCH) ¶ 56,147, 1941 WL 84778 (N.D. Ill. Aug. 22, 1941).

[52] Marcus, *supra* note 38, at 11.

[53] Of course, the idea of "reasonable royalties" for patents was already in the air prior to the 1940s, and the antitrust patent decrees discussed in this article were not the only legal manifestations of it. Even more importantly, perhaps, was the enshrinement of "reasonable royalty" patent damages into the Patent Act of 1946, Pub. L. No. 79-587, 60 Stat. 778 ("[The patentee] shall be entitled to recover general damages which shall be due compensation for making, using, or selling the invention, not less than a reasonable royalty therefor . . . ."). *See* Christopher B. Seaman, *Reconsidering the* Georgia-Pacific *Standard for Reasonable Royalty Patent Damages*, 2010 B.Y.U. L. REV. 1661, 1671 (2010).

early 20th century, in March 1942.[54] The case involved a complex set of patent licensing, product distribution, and R&D agreements among Standard Oil Company (New Jersey), several of its corporate affiliates, and the German industrial firm I.G. Farbenindustrie AG (IGF) in the field of processing and refining hydrocarbons. The DOJ challenged these agreements under the Sherman Act, and the action was settled by the entry of a consent decree in which the illegality of the arrangements was acknowledged.[55] Given the ongoing war with Germany and its allies (referred to euphemistically as the "present emergency"), the U.S. defendants were prohibited from engaging in further relations with IGF, except as approved by the Attorney General or falling within several narrow exceptions.[56] Two other 1942 antitrust consent decrees issued by the District Court for the Southern District of New York (*United States v. Aluminum Co. of America (Alcoa)*[57] and *United States v. American Bosch Corp.*[58]) contained similar "trading with the enemy" provisions. In fact, the decree in *Alcoa*[59] prohibited the patent holders from "entering into or renewing any agreement" with IGF, the same German entity that appeared in *Standard Oil (New Jersey).*[60] In *American Bosch*, the consent decree cancelled several patent licensing, manufacturing, and technical cooperation agreements between American Bosch and its German parent, Robert Bosch, GmbH.[61]

In addition to these wartime provisions, the 1942 decrees sought to prevent future anticompetitive harm. Thus, like the Supreme Court's order in *Terminal Railroad* 30 years earlier, the consent decrees required the defendants to make their essential resources (in this case patents rather than railroad terminals) available to all applicants. In *Alcoa*, for example, the decree required that each defendant grant any applicant a non-exclusive license to operate

[54] United States v. Standard Oil Co. (New Jersey), 1940–1943 Trade Cas. (CCH) ¶ 56,198, 1942 WL 82574 (D.N.J. Mar. 25, 1942). The anticompetitive practices of the Standard Oil Company were among the leading justifications for enactment of the Sherman Act in 1890, and the DOJ's subsequent actions against the corporate giant led to its break-up in 1911. *See generally Standard Ogre*, ECONOMIST, Dec. 31, 1999, at 77. Numerous follow-on actions were brought against the resulting corporations formed after the break-up, including the patent pooling action against Standard Oil (Indiana), discussed *supra* note 47, and a series of actions against Standard Oil (New Jersey).

[55] 1940–1943 Trade Cas. (CCH) ¶ 56,198.

[56] *Id.*

[57] 1940–1943 Trade Cas. (CCH) ¶ 56,200, 1942 WL 82576 (S.D.N.Y. Apr. 15, 1942). The 1942 consent decree resolved only a small portion of the extensive antitrust litigation in which the company was embroiled. *See, e.g.*, United States v. Aluminium Co. of Am., 148 F.2d 416 (2d Cir. 1945).

[58] 1940–1943 Trade Cas. (CCH) ¶ 56,253, 1942 WL 82620 (S.D.N.Y. Dec. 29, 1942).

[59] Selected portions of the decree are reproduced *infra* Appendix A, Part 1.

[60] 1940–1943 Trade Cas. (CCH) ¶ 56,200 § VIII(1).

[61] 1940–1943 Trade Cas, (CCH) ¶ 56,253 § III.

under its magnesium fabrication and production patents.[62] In the case of fabrication, the license would be *royalty-free*, unless the licensee refused to grant the patent holder a reciprocal royalty-free license under its own fabrication patents. If the licensee refused to grant a reciprocal license, then the patent holder could charge the licensee a "reasonable royalty." In the case of the production patents, the license remained royalty-free (subject to the patent holder's receipt of a reciprocal license from the licensee) for the duration of the "present emergency." After the "present emergency," the patent holders were permitted to charge the licensees "a reasonable and non-discriminatory royalty."[63]

The *Standard Oil (New Jersey)* and *American Bosch* decrees were similar to the decree in *Alcoa*, except that all of the patents covered by these decrees could be licensed at reasonable royalty rates following the "present emergency" (i.e., there were no permanently royalty-free patents).[64] These three early consent decrees appear to be the first decrees issued by U.S. courts to mandate reasonable and non-discriminatory licensing of patents.[65] As such, they are the direct lineal ancestors of today's FRAND commitments.

D. THE *HARTFORD-EMPIRE* DECREE (1945)

United States v. Hartford-Empire Co.[66] involved the first *contested* patent licensing decree in the United States. As such, the record in the case, as well as the numerous judicial opinions that it generated, offer a detailed and comprehensive analysis of the decree and the dispute that led to its entry.

The case involved patents covering the manufacture of glass containers (bottles and jars), an important U.S. industry responsible for more than $100

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[62] 1940–1943 Trade Cas. (CCH) ¶ 56,200 §§ V, VI(a). The production patents cover "the reducing or smelting of magnesium from ores or chemical compounds by any machine, apparatus, or process in any manner and including the mining, processing, treating, refining, purifying, or producing of raw or intermediate materials used for the purpose of producing magnesium." *Id.* § II(a). And the fabrication patents cover "the working or treating of magnesium or alloys containing more than fifty per cent (50%) of magnesium, the manufacture of such alloys and of products made from magnesium or such alloys by any machine, apparatus, or process in any manner and to such alloys or products." *Id.* § II(b).

[63] *Id.* § VI(b) (noting that the non-discrimination requirement does not prevent the defendants from granting preferential royalty rates to the U.S. government or its agents and assigns).

[64] 1940–1943 Trade Cas. (CCH) ¶ 56,253, § IV(A)(3).

[65] Another such consent decree was entered in the District of New Jersey against General Electric Co. in April 1942. United States v. General Elec. Co., 1940–1943 Trade Cas. (CCH) ¶ 56,201, 1942 WL 82577 (D.N.J. Apr. 10, 1942). However, this decree was the subject of numerous appeals and subsequent litigation, and resulted in the entry, in 1953, of a final decree. *See infra* Part III.F.

[66] 46 F. Supp. 541 (N.D. Ohio 1942), *order modified*, 323 U.S. 386 (1945), *modified in response to a request for clarification*, 324 U.S. 570 (1945) (selected portions of the decree are reproduced *infra* Appendix A, Part 2).

million in annual revenue during the 1930s.[67] In dispute was a complex set of patent cross-licensing arrangements among the two largest U.S. manufacturers of machinery for making glass containers (Hartford and Lynch), the two largest producers of glass containers (Owens-Illinois and Hazel-Atlas), and the principal manufacturer of pressed and blown glass (Corning). The parties to the resulting cross-licensing pool held more than 800 patents covering glass container machinery (600 were owned by Hartford alone).[68] As a result, by 1938 machinery licensed under the pooled patents was used to manufacture 94 percent of the glass containers made in the United States.[69] In 1939, the Department of Justice brought an action against Hartford and the other patent holders, alleging that their cross-licensing arrangement illegally restrained trade in violation of Sections 1 and 2 of the Sherman Act.[70]

In August 1942, after a 112-day bench trial,[71] the court held that the parties' patent arrangement was anticompetitive. In particular, their restrictive cross-licensing terms and practices toward third parties discouraged innovation, suppressed competition, and artificially raised prices of manufactured glass containers.[72] Nevertheless, the court declined to order that Hartford be dissolved, a remedy that it felt went too far and would ultimately not help the industry.[73] Instead, in order to restore competition to the market, it ordered, *inter alia*, that Hartford and the other defendants "agree to license anyone, *royalty free*, on all present patents and pending applications for patents for the life of the patents . . . ."[74] This provision was incorporated into a decree subsequently issued by the court.

The defendants appealed the decision directly to the Supreme Court.[75] Though Justice Owen Roberts, writing for the Court in January 1945, af-

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[67] Marcus, *supra* note 38, at 4 (describing the background of the glass container industry in the United States).

[68] *Hartford-Empire Co.*, 323 U.S. at 400.

[69] *Id.*

[70] *Hartford-Empire Co.*, 46 F. Supp. at 544–45 (alleging that Hartford and the other pool members used their combined patent strength to disadvantage competitors and to block entry to the market); *see also* Marcus, *supra* note 38, at 4–6 ("At the time of the suit the strange wonderland of the glass container industry was controlled by a small oligarchy, which maintained its power through the Aladdin's lamp of patent control. . . . The keeper of the lamp was Hartford.").

[71] *See* Marcus, *supra* note 38, at 2 ("[The *Hartford-Empire* litigation] has been one of the most bitterly contested cases in antitrust annals.").

[72] 323 U.S. at 400.

[73] 46 F. Supp. at 620.

[74] *Id.* at 621 (emphasis added).

[75] Under the Expediting Act of 1903, 15 U.S.C. §§ 28–29, parties subject to an antitrust order issued by a U.S. District Court could appeal directly to the U.S. Supreme Court, bypassing the normal federal appeals process through the circuit courts of appeal. *See* Marcus, *supra* note 38, at 54–55. The Expediting Act was amended in 1974 to eliminate this direct appeal to the Supreme Court absent a certification from the district court that immediate Supreme Court review is of "general public importance in the administration of justice." 15 U.S.C. § 29(b).

firmed the district court's liability ruling, he overturned the lower court's remedial decree, finding it excessively punitive.[76] Justice Roberts wrote that forcing Hartford to grant licenses without the ability to collect royalties went "beyond what is required to dissolve the combination and prevent future combinations of like character," and would constitute an unjustified "confiscation" of the patent holders' property.[77]

As a result, the Court instructed the district court to modify the decree to allow the patent holders to charge "standard royalties . . . without discrimination or restriction" on licenses of their glassmaking machinery patents.[78] In a subsequent opinion issued shortly thereafter, the Supreme Court changed the term "standard royalties" to "uniform reasonable royalties."[79] The final decree issued by the district court in October 1945 carried out these instructions.

The Court's disapproval of the royalty-free licensing commitment initially imposed by the Ohio district court is interesting in view of the royalty-free licenses contained in the nearly contemporaneous *Alcoa* and *American Bosch* consent decrees.[80] This discrepancy highlights the difference between consent decrees, which are stipulated by mutual agreement of the parties, and contested decrees, which are fashioned by the courts. The Supreme Court may be indicating that while a lower court can permit defendants to accept greater restrictions than might otherwise be imposed under the law in a voluntary instrument,[81] a court should *not* impose more stringent restrictions than are warranted in the decree that it fashions.[82]

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[76] 323 U.S. at 401. Violations of the Clayton Act were also found. *Id.*

[77] *Id.* at 414–15 ("[I]f, as we must assume on this record, a defendant owns valid patents, it is difficult to say that, however much in the past such defendant has abused the rights thereby conferred, it must now dedicate them to the public."); *see also* Marcus, *supra* note 38, at 56 (reporting that Hartford earned more than $6 million per year in royalty income from the affected patents); Richard J. Gilbert, *Antitrust for Patent Pools: A Century of Policy Evolution*, 2004 STAN. TECH. L. REV. 3, ¶ 43 (assessing the Court's ruling against royalty-free licensing in *Hartford-Empire*).

[78] 323 U.S. at 419. Justice Black, joined by Justice Rutledge, dissented from the Court's modification of the district court's decree, including its elimination of the royalty-free licensing requirement. He reasoned that "[t]he decree of the court below was well fashioned to prevent a continuation of appellant's monopolistic practices. The decree as modified leaves them free, in a large measure, to continue to follow the competition-destroying methods by which they achieved control of the industry." *Id.* at 437 (Black, J., dissenting in part).

[79] 324 U.S. at 574 (The change was made at the request of the DOJ to avoid any implication that Hartford's then-current "standard" rates were "reasonable.").

[80] The *Alcoa* and *American Bosch* consent decrees were entered by the New York court in April and December 1942, respectively. The initial *Hartford-Empire* decree was entered by the Ohio court in August 1942.

[81] *See* Isenberg & Rubin, *supra* note 39, at 388.

[82] It is also possible that the Court viewed the royalty-free licenses required of Alcoa and American Bosch during the pendency of World War II to constitute special wartime measures that would no longer be warranted once the war ended. This reasoning, however, would not

E. PROCEDURAL ELEMENTS OF THE HARTFORD-EMPIRE DECREE

Both the Supreme Court's opinion and the final decree in *Hartford-Empire* addressed procedural issues that the courts and the parties anticipated would arise in implementing the patent licensing commitments imposed on the defendants. These issues are surprisingly reminiscent of issues being discussed today in connection with FRAND commitments.

For example, Justice Roberts in *Hartford-Empire* anticipated that a potential licensee might refuse to accept a license under the uniform and reasonable terms offered by the patent holder. In such cases, he made it clear that the patent holder should retain its ability to bring an action for infringement against the refusing party.[83] Likewise, the decree addresses the scenario in which the parties simply cannot agree on a "reasonable" royalty rate. If such a disagreement occurs, "either party may apply to the Court for determination of such reasonable royalty."[84] According to one contemporary account, the district judge did, in fact, appoint a special master to determine appropriate royalties for certain licenses granted by Hartford.[85]

The decree in *Hartford-Empire* also anticipated potential disputes regarding the non-royalty terms of licenses granted under the decree. For example, it prohibited the defendants from conditioning the grant of a license on their receipt of a reciprocal license back from the licensee.[86] Likewise, the decree contemplated the practical difficulty of complying with a requirement that all licenses be granted at "uniform" royalty rates. It specified two scenarios in which deviations from the standard rate are permitted: when the licensee offers the defendant patent rights, development work, or other non-monetary consideration, and when so required by law.[87] But to eliminate the defendants' ability to abuse these limited exceptions, the decree goes on to allow a potential licensee to petition the court if it feels "aggrieved by any want of uniformity in such charges . . . ."[88]

Thus, while the circumstances leading to the patent licensing decree in *Hartford-Empire* differ significantly from the circumstances leading to the voluntary adoption of FRAND commitments in standard-setting organiza-

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account for the royalty-free licenses that Alcoa agreed to grant following the end of the war with respect to magnesium production patents.

[83] 323 U.S. at 419 ("The decree should, however, be without prejudice to the future institution of any suit or suits for asserted infringements against persons refusing to take licenses under any of the presently licensed inventions arising out of their use after the date of the decree.").

[84] YALE L.J., *supra* note 50, at 123 (Final Judgment ¶ 13(C)(3) (added by order dated May 17, 1946)).

[85] *Id.* at 106.

[86] *Id.* at 124 (Final Judgment ¶ 13(F)).

[87] *Id.* (Final Judgment ¶ 13(E)).

[88] *Id.*

tions, similar practical considerations surrounding the interpretation and implementation of these commitments, once they have been put in place, arise in both scenarios. These common considerations are discussed in detail in Part IV.

III. THE LEGACY OF *HARTFORD-EMPIRE*: PATENT LICENSING DECREES THROUGH THE 1970s

Hartford-Empire had a lasting impact on the remedial decrees issued by courts in antitrust and other cases through the 1970s. Below is a brief summary of the principal cases in which the courts imposed FRAND-style patent licensing orders. These historical cases add essential insight to the scope and contours of these early FRAND commitments.

A. *NATIONAL LEAD* (1947)

In *United States v. National Lead Co.*,[89] the defendants were found to have violated Section 1 of the Sherman Act through a complex patent pooling arrangement in the market for titanium compounds and pigments.[90] As a remedy, the district court, writing just a few months after the Supreme Court's first opinion in *Hartford-Empire*, ordered the defendants "to grant to any applicant . . . a non-exclusive license under any or all of the patents . . . at a uniform, reasonable royalty."[91] The DOJ appealed various terms of the district court's remedial order, including the patent holders' ability to charge royalties. Justice Burton, writing for a unanimous Supreme Court[92] and citing *Hartford-Empire,* affirmed the district court's order. He reasoned that the order was intended to prohibit the illegal restraints of trade caused by the defendants' patent licensing practices, and no more.[93] The Court thus affirmed the district court's determination that licensing patents on a reasonable and uniform basis would accomplish that end, and that royalty-free licensing was not required as a matter of law.[94] Nevertheless, Justice Burton also noted that, while an automatic royalty-free licensing requirement could be viewed as in-

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[89] 63 F. Supp. 513 (S.D.N.Y. 1945), *aff'd*, 332 U.S. 319 (1947) (selected portions of the decree are reproduced *infra* Appendix A, Part 3).

[90] *Id.* at 532; *see* Gilbert, *supra* note 77, ¶¶ 45–55 (discussing and analyzing challenged arrangements).

[91] *Id.* at 534 (stating that the affected patents include both those issued at the time of the order as well as within five years thereafter).

[92] Justices Black and Jackson took no part in the consideration or decision of the case.

[93] 332 U.S. at 338 ("The purpose of the decree . . . is effective and fair enforcement, not punishment.").

[94] *Id.* at 349 ("[T]o reduce all royalties automatically to a total of zero, regardless of their nature and regardless of their number, appears, on its face, to be inequitable without special proof to support such a conclusion.").

equitable, "uniform, reasonable royalties" on *some* patents could be nominal or even zero, depending on the facts and circumstances of the case.[95]

Procedurally, the decree in *National Lead* largely follows the structure set forth in *Hartford-Empire*, and differs only in its treatment of non-royalty terms. Specifically, the *National Lead* decree expressly permits the defendants to condition their "reasonable and uniform" licenses on the receipt of "reciprocal" patent licenses.[96] That is, the defendant patent holders may require that licensees grant them licenses-back, at reasonable royalty rates, to operate under the licensees' patents covering titanium pigments and their manufacture, a right denied in *Hartford-Empire*. The implications of this divergence are discussed in Part IV.J., below.

B. *RUDENBERG V. CLARK* (1948)

Rudenberg v. Clark[97] is worth mentioning because, unlike most of the other mid-century cases involving patent licensing decrees, it does not involve an action brought under the antitrust laws. In *Rudenberg*, the U.S. Alien Property Custodian seized two U.S. patents covering electron microscope technology as suspected enemy property.[98] The patent owner, Dr. Rinehold Rudenberg, successfully sued to recover title to his patents in federal court.[99] During the

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[95] *Id.*

[96] 63 F. Supp. at 534. These reciprocal arrangements are often referred to as "grant-back" licenses and are not uncommon in patent pooling structures. *See, e.g.*, U.S. Dep't Justice & Fed. Trade Comm'n, Antitrust Guidelines for the Licensing of Intellectual Property 30 (1995) [hereinafter DOJ/FTC IP Guidelines].

[97] 81 F. Supp. 42 (D. Mass. 1948) (selected portions of the decree are reproduced *infra* Appendix A, Part 4).

[98] The Alien Property Custodian was a wartime executive office established during World Wars I and II to seize enemy property, including patents, located within the United States. *See* Howland H. Sargeant & Henrietta L. Creamer, *Enemy Patents*, 11 L. & CONTEMP. PROBS. 92 (1945).

[99] Rudenberg v. Clark, 72 F. Supp. 381 (D. Mass. 1947). Dr. Reinhold Rudenberg was a prominent German scientist employed by Siemens-Schuckertwerke, A.G. (Siemens), a large Germany manufacturer, from 1913 until 1936. With the rise of the Nazi regime, Dr. Rudenberg (politely referred to as "non-Aryan") fled Germany and emigrated to the United States, where he assumed a distinguished professorship at Harvard University. The patents in question related to electron microscope technology that he developed to assist in the search for a cure for polio, a disease that afflicted his son. The patents, when filed in the United States, were assigned to Siemens, and on this basis were seized by the Alien Property Custodian as enemy property. Dr. Rudenberg brought suit to challenge this seizure under the Trading with the Enemy Act, 50 U.S.C. § 9(a), claiming that the patents, which related to an invention made outside the scope of his work for Siemens, should properly be owned by him, rather than Siemens. The court agreed and upheld his claim. Apparently, Dr. Rudenberg's perceived role in the development of the electron microscope may have been overstated as a result of his early patent applications. *See* Martin M. Freundlich, *Origin of the Electron Microscope*, 142 SCIENCE 185, 186 (1963) ("Rudenberg, though the first to apply for patent rights, did not contribute directly or indirectly to the early development of the electron microscope"). For a fascinating economic analysis of the effect of the Trading with the Enemy Act on foreign-owned patents in the United States, see

appeal, the parties settled the suit through a consent decree, which the court entered in 1947.[100]

The decree, based on the *Hartford-Empire* model, ordered Dr. Rudenberg to "grant to any applicant . . . a non-exclusive unlimited license [under the patents] on a non-discriminatory basis . . . ."[101] Later that year, Rudenberg licensed his patent to a commercial microscope manufacturer at a rate of 5 percent of the net selling price. He also offered a license at the same rate to Radio Corporation of America (RCA), but RCA refused the license. Dr. Rudenberg then petitioned the court to modify the decree to allow him to bring an infringement action against a potential licensee that refused the offer of a license, even after the court had confirmed the reasonableness of the royalty rate.[102] The Attorney General objected to the modification, arguing that it would contradict the original intent of the order that Dr. Rudenberg grant a license to "any applicant," even an intransigent one.

The court disagreed with the Attorney General, offering the following analysis of the procedural logic of FRAND offers:

> To construe the decree as keeping licensing opportunities forever available to persistent infringers would serve no public policy and no public purpose that the Attorney General could have had in mind when the consent decree was negotiated. . . . [The decree] was not intended to place the individual holder of patents at the mercy of large corporate enterprises which could use the invention, decline to accept the inventor's reasonable offers, allow him to sue for infringement and in the end, if beaten in the infringement suit, pay him not even a royalty high enough to cover the expenses of the litigation but the lowest royalty rate the inventor is receiving from anyone whatsoever.[103]

Thus, like the Supreme Court in *Hartford-Empire*,[104] the court in *Rudenberg* acknowledged that a patent holder cannot be forever bound to offer licenses to unwilling parties.[105] Accordingly, the court amended the parties' consent decree to allow rescission of the license offer if the offeree either (a) failed to apply to the court for a reasonable royalty determination within

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Petra Moser & Alessandra Voena, *Compulsory Licensing: Evidence from the Trading with the Enemy Act*, 102 AM. ECON. REV. 396 (2012).

100 81 F. Supp. at 43.

101 *Id.*

102 *Id.* at 44. The court adopted Dr. Rudenberg's proposed procedure with only one minor modification. *Id.* at 46.

103 *Id.* at 45.

104 *See supra* note 83 and accompanying text.

105 The court notes that Rudenberg, who voluntarily consented to the decree and was not accused of violating any antitrust laws, should not be treated more harshly than the conspiring defendants in *Hartford-Empire* and other antitrust cases. 81 F. Supp. at 45.

120 days after receipt of the patent holder's initial offer, or (b) failed to accept the license after the court made its royalty determination.[106]

The court in *Rudenberg* also offered an insightful rationale for the "nondiscrimination" component of FRAND commitments. The court reasoned that in seeking the commitment from Dr. Rudenberg,

> [t]he Attorney General undoubtedly was seeking to further what he might have described as an *open-door policy* assuring equality of opportunity to all who might have use for inventions disclosed in patents. That policy was intended to give the *same chance* to all who are or may be in competition regardless of whether they have or lack large funds and influential connections.[107]

Finally, the last sentence of the decree in *Rudenberg*, which attracts no mention in the court's opinion, is worth noting. It required Dr. Rudenberg to "make of record in the United States Patent Office any license granted under the provisions of this paragraph within a reasonable period after its execution."[108] This approach, which does not appear to have been followed in any other case, is discussed in greater detail in Part IV.L., below.

C. *Textile Machine Works* (1950)

United States v. Textile Machine Works,[109] involved an alleged conspiracy involving patents in the market for hosiery manufacturing machinery. The case was settled in 1950 by consent decree, in which the defendant patent holders agreed to license their patents to all applicants. There are two interesting features of the decree in *Textile Machine Works*: first, the defendants agreed to license some of their patents on a *royalty-free* basis and others on reasonable, non-discriminatory, royalty-bearing terms.[110] Unlike the earlier royalty-free consent decrees in *Alcoa* and *American Bosch*, however, the royalty-free licensing obligation was not linked to the continuation of armed hostilities. And because *Textile Machine Works* was settled by voluntary consent decree rather than judicially imposed order, the countervailing considerations relating to takings of property noted by the Supreme Court in *Hartford-Empire* were not raised.

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[106] 81 F. Supp. at 44–45 (accepting Rudenberg's proposed amendment to the decree).

[107] *Id.* at 45 (emphasis added).

[108] *Id.* at 44. Based on an examination of electronic and physical records at the U.S. Patent and Trademark Office conducted in January 2014, no licenses of Dr. Rudenberg's patents appear to have been filed and recorded. This may be because the patents, issued in 1936 and 1937, were already somewhat obsolete by the time the decree was entered in 1948.

[109] 1950 U.S. Dist. LEXIS 1909 (S.D.N.Y. Oct. 9, 1950) (selected portions of the decree are reproduced *infra* in Appendix A, Part 5).

[110] *Id.* at *9–11.

Second, the order in *Textile Machine Works* for the first time defined which party had the burden of proof to establish the reasonableness of a patent holder's proposed royalty rate. Specifically, the decree provided that in a proceeding brought to determine a reasonable royalty, "the burden of proof shall be upon the defendant to whom application is made to establish, by a fair preponderance of evidence, a reasonable royalty, and the Attorney General shall have the right to be heard thereon."[111] Though the case is silent regarding the rationale for this procedural clarification, it is likely that it was added to resolve disputes or differences in interpretation that were already beginning to arise under prior decrees.

D. *U.S. Gypsum* (1951)

United States v. United States Gypsum Co.[112] involved a complex set of cases spanning two decades and three separate Supreme Court opinions. The litigation involved alleged price fixing and other anticompetitive conduct by U.S. Gypsum, the owner of several patents covering gypsum board configurations and manufacturing, and its licensees. The DOJ brought suit in 1940, alleging that the license agreements among U.S. Gypsum and its licensees fixed minimum prices and otherwise restricted the business and operations of the licensees in order to control the market for gypsum board in the eastern United States.[113] The Supreme Court agreed, holding in 1948 that "the defendants, constituting all former competitors in an entire industry, had acted in concert . . . under patent licenses in order to . . . stabilize prices" in violation of Sections 1 and 2 of the Sherman Act.[114] On remand, the district court issued a decree ordering the "compulsory licensing . . . to any applicant of all then-owned patents relating to gypsum board at *not to exceed* the standardized royalties as . . . charged to defendant licensees."[115] Dissatisfied with the effectiveness of the decree, the DOJ sought a modification requiring, among other things, that all licensees receive "equal treatment" as to royalties.[116]

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[111] *Id.* at *12.

[112] 67 F. Supp. 397 (D.D.C. 1946), *rev'd*, 333 U.S. 364 (1948), *remanded to* 1949 WL 4071 (D.D.C. Nov. 7, 1949), *rev'd*, 340 U.S. 76 (1950), *remanded to* 1951 U.S. Dist. LEXIS 1917 (D.D.C. May 15, 1951) (selected portions of the decree are reproduced *infra* Appendix A, Part 6).

[113] *See* 340 U.S. at 83. In addition to unlawful patent licensing arrangements, the defendants were charged with attempting "to standardize gypsum board and its method of production for the purpose of eliminating competition . . . ." 333 U.S. at 367. This is one of the first instances in which standardization itself, independent of anticompetitive patent licensing, was successfully challenged. *See* Gilbert, *supra* note 77, ¶¶ 57–61 (discussing and analyzing challenged arrangements).

[114] 333 U.S. at 401.

[115] 340 U.S. at 93 (emphasis added). The text of the 1949 decree, and the DOJ's proposed modified decree, are set forth in *id.* at 96–105.

[116] *Id.* at 93.

The Supreme Court agreed with the DOJ. Justice Reed, relying on *National Lead*, reasoned that U.S. Gypsum "should be required to license all its patents in the gypsum products field to all applicants on equal terms."[117] On remand, the district court issued a modified decree requiring U.S. Gypsum to grant any applicant a non-exclusive license of all patents defined in the decree at a reasonable, non-discriminatory royalty.[118] The district court also expanded the scope of the decree to cover patents obtained by U.S. Gypsum over the next five years.[119]

U.S. Gypsum is an important milestone in the evolution of patent licensing commitments because the modified decree issued by the district court in 1951 laid out a detailed procedure by which the parties were required to negotiate the required reasonable royalty.[120] In short, if the parties could not agree on a reasonable royalty rate and the applicant failed to apply to the court for a royalty determination, it would be deemed to have abandoned its request for a license. Once the court made its royalty determination, it would apply, with preclusive effect, to all other licenses of the patents thereafter.[121] This procedure, including an acknowledgement of the preclusive effect of a reasonable royalty determination, became part of the DOJ's standard form of patent licensing decree and was adopted in many of the decrees that followed *U.S. Gypsum*.[122]

During the litigation over the modification of the 1949 decree, some of U.S. Gypsum's co-defendants (i.e., the parties to the original anti-competitive licensing arrangement) stopped paying royalties to U.S. Gypsum. U.S. Gypsum brought an action to recover royalties from these firms, leading the district court in 1954 to modify the 1951 decree to enjoin U.S. Gypsum from recovering such retroactive royalties.[123] U.S. Gypsum appealed, arguing that the court's modification of the decree effectively granted a royalty-free license to its co-defendants during the three-year period in question, a remedy that the Supreme Court rejected in *Hartford-Empire*. Justice Harlan, writing for the Court in 1957, agreed, noting that no intervening conduct by U.S. Gypsum

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[117] *Id.* at 94.

[118] 1951 U.S. Dist. LEXIS 1917, at *9. The 1951 decree was further modified by the district court in 1954 to address compensation for U.S. Gypsum during the period 1948–1951. *See* United States Gypsum Co. v. Nat'l Gypsum Co., 352 U.S. 457 (1957) (*Gypsum III*) (affirming the district court's 1954 modification of decree).

[119] 1951 U.S. Dist. LEXIS 1917, at *10.

[120] *Id.* at *12–13 (¶ 3).

[121] *Id.*

[122] A slightly earlier case involving a consent decree rather than a contested decree, *United States v. Phillips Screw Co.*, 1949 WL 69667 (N.D. Ill. 1949), also contained language creating a preclusive effect as to later-granted licenses of the same patents.

[123] *See Gypsum III*, 352 U.S. at 475.

had occurred that would justify increasing its penalty.[124] The Court thus reversed the district court's 1954 modification and eliminated the royalty-free license period.[125]

E. *BESSER* (1952)

United States v. Besser Manufacturing. Co.[126] involved a licensing arrangement between Besser Manufacturing Company and Stearns Manufacturing Company, Inc., the two largest competitors in the U.S. market for equipment to manufacture concrete blocks.[127] In 1942, Besser and Stearns entered into an agreement with the inventors of a key patented improvement. Under the agreement, Besser, Stearns, and the inventors agreed to license no other manufacturers under the patent without the others' consent and to subject all future improvements of the patented technology to the same restriction. The district court held in 1951 that this arrangement, together other agreements among the parties, violated Sections 1 and 2 of the Sherman Act.[128] As a remedy, the court invalidated the license agreement, ordering that the patent "be made available to everyone in the industry on the same terms . . . ."[129]

Besser is notable not for the content of its licensing commitment but because the district court ordered that the royalty rates, as well as the form and content of the license agreements, be determined through arbitration.[130] The arbitration committee that was established to make these determinations consisted of two persons selected by each of Besser and the DOJ, with deadlocks to be broken by a fifth individual chosen by the four committee members; if they could not agree on a fifth committee member, deadlocks would be broken by the trial judge or his designee.[131]

Not surprisingly, the committee did reach an impasse and could not agree on a fifth tie-breaking member. Thus, the trial judge intervened as the fifth arbitrator and voted in support of the proposal made by the DOJ representa-

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[124] *Id.* at 474.

[125] *Id.* at 476. Justice Black, joined by Chief Justice Warren and Justice Douglas, dissented, arguing that permitting U.S. Gypsum to charge royalties to its co-conspirators essentially permitted it to continue their illegal agreement, thus implicating the "unclean hands" doctrine. *Id.* at 478.

[126] 96 F. Supp. 304 (E.D. Mich. 1951), *aff'd*, 343 U.S. 444 (1952) (selected portions of the decree are reproduced *infra* Appendix A, Part 7).

[127] Together, Besser and Stearns controlled 65% of the market, with the balance divided among more than 50 other firms, the largest of which claimed only 8% of the market. 96 F. Supp. at 307.

[128] *Id.* at 311.

[129] *Id.* at 314.

[130] 343 U.S. at 448.

[131] *Id.*

tives.[132] Besser challenged the arbitration procedure in the Supreme Court, arguing that it constituted an unlawful deprivation of Besser's property without due process of law. Besser contended that, rather than submitting the royalty determination to arbitration, the trial judge should have held a full hearing on the matter or referred it to a special master.[133] Justice Jackson, writing for a unanimous court, affirmed the district court's judgment and the arbitration procedure. He noted that while the lower court's method of determining the reasonable royalty was "an innovation in certain aspects . . . novelty is not synonymous with error."[134] He recognized that "compulsory licensing" is a recognized remedy for antitrust violations and particularly appropriate when "a penchant for abuses of patent rights is demonstrated."[135] Accordingly, the Court held that the trial judge acted within its permitted discretion, and "[t]he procedure . . . was entirely reasonable and fair."[136]

F. *General Electric* (1953)

During the first half of the 20th century, the DOJ maintained a nearly continuous and staggeringly complex series of antitrust actions against General Electric, Westinghouse, and others for alleged monopolization of the incandescent lighting market. In *United States v. General Electric Co.* (*General Electric II*),[137] the DOJ challenged a number of patent licensing agreements entered into by GE and others.[138] The federal district court in New Jersey, after decades of litigation, held in 1949 that these arrangements violated Sections 1 and 2 of the Sherman Act.[139]

In 1953, the district court entered a remedial order requiring, among other things, that the defendants (a) "dedicate to the public any and all existing patents on lamps and lamp parts,"[140] and (b) grant to all applicants non-exclu-

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[132] *Id.*

[133] *Id.* at 448–49.

[134] *Id.* at 449.

[135] *Id.*

[136] *Id.*

[137] 82 F. Supp. 753 (D.N.J. 1949), *decree entered by* 115 F. Supp. 835 (D.N.J. 1953) (*General Electric II*) (selected portions of the decree are reproduced *infra* Appendix A, Part 8).

[138] The patent licensing arrangements in question were entered between 1896 and 1911. The DOJ first brought suit challenging these arrangements in 1911. 82 F. Supp. at 765. In 1925, the legality of the licensing arrangements was upheld in *United States v. General Electric Co.,* 15 F.2d 715 (N.D. Ohio 1925), *aff'd*, 272 U.S. 476 (1926) (*General Electric I*). The roster of counsel for GE and its co-defendants in these cases reads like a "Who's Who" of early 20th century patent litigation, and includes luminaries such as Paul D. Cravath (for GE), and Frederick P. Fish and Charles Neave (for Westinghouse). The Supreme Court's unanimous 1926 opinion favoring GE was authored by Chief Justice William H. Taft. Nevertheless, the DOJ sued again in 1941, arguing that the arrangement became illegal when it permitted the defendants to continue their monopoly after the expiration of the relevant patents. 82 F. Supp. at 774–75.

[139] *General Electric I*, 15 F.2d 715.

[140] *General Electric II*, 115 F. Supp. at 843.

sive licenses to patents on lamp machinery for "reasonable, nondiscriminatory compensation . . . ."[141] The court's differential treatment of patents on lamp parts and lamp machinery is notable, particularly because the patents on lamp parts were required to be dedicated to the public for no consideration.[142] In crafting this order, the court was attentive to the Supreme Court's earlier ruling in *Hartford-Empire*, which cautioned against forfeiture of patents as a remedy for anticompetitive conduct. In distinguishing *Hartford-Empire* the *General Electric II* court took advantage of the opening offered in *National Lead*, which suggested that certain facts and circumstances could justify an award of royalty-free licensing.[143] The court in *General Electric II* concluded that such facts and circumstances were, indeed, in evidence with "General Electric and the other defendants . . . mounted upon an arsenal of a huge body of patents that can easily overwhelm and defeat competition . . . ."[144] Accordingly, the court held that royalty-free licensing of lamps and lamp parts was not intended simply to punish GE, but as "a preventive against a continuance of monopoly in the industry."[145]

Nevertheless, the court in *General Electric II* was willing to permit GE and the other defendants to charge a reasonable, nondiscriminatory royalty on patents covering machinery for manufacturing lamps. It noted that GE had made substantial technological contributions to the field of lamp manufacturing machinery and had appropriately reserved the benefit of those advances to itself and its licensees.[146] Moreover, the defendants had not used their machinery patents to dominate the lighting market to the same degree that they used their lamp patents. Thus, while licensing of their machinery patents was ordered, such licenses could bear reasonable, nondiscriminatory royalties.[147]

Another notable feature of the *General Electric II* decree is its denial of GE's request for reciprocal licenses from licensees of lamp machinery patents. While the decree permitted GE to demand reciprocal licenses from licensees of its future patents,[148] GE also wished to refuse licenses to applicants who did not license GE under their own lamp machinery patents.[149] Citing

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141 *Id.* at 846, 849.

142 *Id.*

143 *National Lead*, 332 U.S. at 338 (quoted in *General Electric II*, 115 F. Supp. at 843).

144 *General Electric II*, 115 F. Supp. at 844.

145 *Id.* In addition to objecting to the lack of compensation associated with their lamp parts patents, the defendants objected to the court's formulation of the order as a "dedication" of the patents to the public, rather than a royalty-free license. The court considered, and rejected, these objections, *id.* at 844–46, yet at times discusses the order as though it had, in fact, required royalty-free licensing.

146 *Id.* at 847.

147 *Id.* at 848.

148 *General Electric II*, 115 F. Supp. at 848 (§ V.C(2)).

149 *Id.* at 847.

National Lead (in which such a reciprocity provision was allowed),[150] GE argued that "absent such a provision other members of the industry would be able to develop while blocking [GE's own] development."[151] The court disagreed, reasoning that GE's ability to insist on reciprocal licenses would "tend to perpetuate the situation of industry dominance by [GE]," and that the decree was intended, rather, to "dissipate the effect of the great advantage which accrued" to GE by virtue of its illegal arrangement.[152] Accordingly, the court held that "it is advisable to require the defendants to license whatever machinery patents they have without possessing the correlative right to demand licenses in return,"[153] a clear blow against reciprocity requirements in FRAND commitments.[154]

G. *AT&T* AND *WESTERN ELECTRIC* (1956)

Much has been written about the history of telecommunications standardization in the United States, and much of this history centers around the rise, dominance, and eventual break-up of the Bell telephone monopoly.[155] Throughout its long history, the Bell telephone system operated by American Telephone and Telegraph (AT&T), a governmentally sanctioned monopoly, was the target of numerous antitrust investigations and suits. The *AT&T* litigation became emblematic of the government's post-War impatience with large industrial monopolies and their use of patents.[156] One of the first such suits to be litigated was initiated by the DOJ in 1949 and alleged that AT&T and its affiliate, Western Electric, monopolized the market for the manufacture, distribution, sale, and installation of telephone equipment in violation of Sections 1 and 2 of the Sherman Act.[157] At the urging of the Eisenhower administration, the suit was settled by consent decree in 1956.[158]

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[150] *See supra* note 332 and accompanying text.

[151] *General Electric II*, 115 F. Supp. at 847. GE's concern seems to have stemmed from a concern regarding the future intentions of its former co-conspirators, Westinghouse and Corning.

[152] *Id.*

[153] *Id.*

[154] *See* discussion *infra* Part IV.J.

[155] A survey of this vast literature is beyond the scope of this article. *See, e.g.*, MILTON L. MUELLER, JR., UNIVERSAL SERVICE: COMPETITION, INTERCONNECTION, AND MONOPOLY IN THE MAKING OF THE AMERICAN TELEPHONE SYSTEM (1996); RUSSELL, *supra* note 15, at 95–160; Joseph H. Weber, *The Bell System Divestiture: Background, Implementation, and Outcome*, 61 FED. COMM. L.J. 21 (2008).

[156] *See* ADRIAN JOHNS, PIRACY: THE INTELLECTUAL PROPERTY WARS FROM GUTENBERG TO GATES 402–09 (2009) (describing the AT&T investigation and litigation as "the era's principal venue for debating the consequences of patents in general for society, science, and industry").

[157] Complaint, Civ. Action No. 17-49 (D.N.J. Jan. 14, 1949); *see also* RUSSELL, *supra* note 15, at 137.

[158] United States v. Western Elec. Co., 1956 Trade Cas. (CCH) ¶ 68,246, 1956 U.S. Dist. LEXIS 4076 (D.N.J. 1956). *See* United States v. AT&T Co., 552 F. Supp. 131, 135–38 (D.D.C. 1982) (describing the background of the 1949 litigation and 1956 consent decree).

While the 1956 *AT&T* decree is best known for limiting AT&T's domain to common carrier telephone services, thereby excluding it from the emerging market for computers and data processing equipment being pursued by its rival IBM,[159] the decree also contained patent licensing requirements similar to those imposed in earlier cases.[160] Specifically, AT&T and Western Electric were ordered to grant licenses under the Bell telephone equipment patents to all applicants.[161] These licenses were required to bear reasonable royalties as to General Electric, RCA, and Westinghouse (collaborators that had all entered into prior licensing agreements with the Bell companies), and royalty-free as to all others.[162] If the parties were unable to agree on a royalty rate, they could apply to the court for a rate determination.[163]

In 1974, the Department of Justice filed another antitrust suit against AT&T, alleging that it illegally limited the connectivity of its network to MCI and other carriers and blocked competing manufacturers from providing equipment to Bell operating companies.[164] This massive lawsuit resulted in the well-known 1982 consent decree that dismantled the Bell system.[165] Among other things, the 1982 decree expressly eliminated the patent licensing commitments of the 1956 decree.[166]

Despite its subsequent revocation, the 1956 *AT&T* decree is of interest primarily because of its, and AT&T's, historical role in the evolution of telecommunications standardization in the United States. During the first half of the 20th century, AT&T operated the national Bell telephone network as a state-sanctioned "end-to-end" monopoly. It controlled both telephone service and the equipment necessary to utilize that service, including everything from central switching apparatus to household telephone units.[167] Despite this level of control, AT&T could not manufacture every component of its systems and was required to purchase many peripheral components from third parties. In order to ensure that these components would work throughout the extensive Bell network, AT&T became an early advocate of standardization.[168] The

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[159] *See* RUSSELL, *supra* note 15, at 143–60 (contrasting IBM's market approach with that of AT&T).

[160] United States v. Western Elec., 1956 U.S. Dist. LEXIS, at *9–12 (Part X(A)).

[161] *Id.*

[162] *Id.*

[163] *Id.* at *12–13 (Part X (B)).

[164] *See* United States v. AT&T Co., 552 F. Supp. at 139 n.18.

[165] United States v. AT&T Co., 552 F. Supp. 131 (D.D.C. 1982), *aff'd mem. sub nom.*, Maryland v. United States, 460 U.S. 1001 (1983).

[166] United States v. AT&T Co., 552 F. Supp. at 176–77 (finding, among other things, that the need for compulsory licensing of patents would be lessened following separation of AT&T's carrier and equipment businesses).

[167] *See* RUSSELL, *supra* note 15, at 102–03; Weber, *supra* note 155, at 22.

[168] *See* RUSSELL, *supra* note 15, at 120.

company was instrumental in the formation and early work of the American Standards Engineering Committee (AESC) in the 1920s, and later assumed a leadership role in its successor organization, the American Standards Association (ASA).[169]

Given AT&T's influential role in ASA, it is not surprising that ASA's first patent licensing policy was proposed in 1956, the same year as the first *AT&T* consent decree.[170] The 1956 decree required AT&T to license its patents to competitors on reasonable terms, and the new ASA policy permitted patented technologies to become the basis for standards, so long as the patent holder licensed others on reasonable terms. It is thus possible that the 1956 *AT&T* consent decree was the direct impetus for ASA's first FRAND licensing policy.

H. *American Securit* (1959)

American Securit Co. v. Shatterproof Glass Corp.[171] is notable because it addressed the consequences of a patent holder's violation of the terms of a court-imposed patent licensing decree. In 1948, the District Court for the Northern District of Ohio[172] entered a consent decree establishing that Securit and other defendants violated the Sherman Act by colluding to exploit patents covering technology for tempering flat glass panes (the Toledo decree).[173] Securit was ordered to grant to any applicant a non-exclusive license under its patents and to refrain from including any restrictions or conditions in that license. Specifically, Securit was prohibited from requiring a licensee to take a license under any patent *not* covered by the decree from Securit.[174]

Shatterproof Glass requested a license from Securit in 1951.[175] Though Shatterproof's request only related to patents covered by the Toledo decree, Securit refused to grant Shatterproof a license unless it agreed to license a substantially larger portfolio of patents, including patents not covered by the decree, at a single, fixed royalty rate. The parties continued to negotiate through 1953, at which time Shatterproof began to manufacture glass in a manner allegedly covered by Securit's patents. In 1955, Securit brought a patent infringement action against Shatterproof in Delaware. Shatterproof raised defenses of patent misuse, as well as Securit's violation of the Toledo decree.

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[169] *See id.* at 119–22.

[170] *See supra* notes 17–21 and accompanying text (discussing 1959 ASA policy).

[171] 154 F. Supp. 890 (D. Del. 1957), *aff'd*, 268 F.2d 769 (3d Cir. 1959).

[172] The Ohio trial judge in *American Securit*, Frank Kloeb, was the same judge who tried the *Hartford-Empire* case and issued the patent licensing decree in that case.

[173] The Ohio decision and decree do not appear to be reported, but are described and excerpted in the Delaware decision. *See* 154 F. Supp. 890.

[174] *Id.* at 897 & n.21.

[175] 268 F.2d at 771.

In particular, Shatterproof argued that Securit's requirement that Shatterproof accept a license of both patents covered by the decree and patents not covered by the decree violated the decree's express prohibitions.

The district court in Delaware ruled for Shatterproof on both grounds and barred Securit from enforcing its patents against Shatterproof.[176] While a discussion of the patent misuse component of the holding in *American Securit* is beyond the scope of this article, the court made it clear that the remedy of patent unenforceability was independently supported *both* by Securit's patent misuse and its violation of the Toledo decree.[177] The Third Circuit affirmed.[178] The *American Securit* case thus provides the first example of patents being rendered unenforceable as a result of the violation of a court-imposed patent licensing commitment.[179]

American Securit also offers an interesting interpretation of the non-discrimination requirement of FRAND commitments. In defense of its "package license," Securit argued that it could not offer to license Shatterproof less than its full portfolio of patents, as that portfolio was Securit's standard offering, and deviating from that standard offering would discriminate against Securit's existing licensees.[180] The court dismissed this argument quickly, first questioning whether this step "would have traveled the sure road to discrimination," and then observing that such a deviation would have been more consistent with its legal obligations under the Toledo decree.[181]

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[176] 154 F. Supp. at 895–96.

[177] *Id.* at 896 ("I will consider . . . whether the terms of plaintiff's standard form of license agreement violate the terms of the decree to which it consented, and, if it does, whether violation renders the patents unenforceable in an action for infringement.").

[178] 268 F.2d at 778. In an unusual procedural twist, between the Delaware trial court's decision and its affirmation by the Third Circuit, Securit petitioned the district court in Ohio, which originally issued the Toledo decree, to declare that its licensing practices did not violate the decree. Judge Kloeb in Toledo issued an oral opinion on September 16, 1958, largely in favor of Securit. *Id.* at 769. While the Third Circuit took cognizance of Judge Kloeb's decision, it proceeded to render its decision on the basis of the Delaware court's ruling.

[179] For a general discussion of the remedy of patent unenforceability in the context of standard-setting, see Jorge L. Contreras, *Equity, Antitrust, and the Reemergence of the Patent Unenforceability Remedy*, ANTITRUST SOURCE, Oct. 2011, www.americanbar.org/content/dam/aba/directories/antitrust/oct11_contreras_10_24f.authcheckdam.pdf.

[180] 154 F. Supp. at 890. In fact, when Shatterproof requested that Securit's standard license be modified to include only the patents covered by the Toledo decree, Securit was willing to remove the non-covered patents, though it was not willing to reduce the royalty. 268 F.2d at 771. Herein, apparently, lay the point of disagreement between the parties.

[181] 154 F. Supp. at 897.

I. *Scott Paper* (1969)

In *United States v. Scott Paper Co.,*[182] the DOJ brought an action against Scott Paper Co. and Chemotronics, Inc. in connection with an exclusive research and licensing arrangement relating to the manufacture of polyurethane foam. The parties settled the action by consent decree, which contained most of the provisions in the DOJ's then-standard form of patent licensing order. One interesting and atypical feature of the *Scott Paper* decree, however, was a public notice requirement. That is, the defendants were required to give public notice of the availability of the licenses that were required to be granted, either through the Official Gazette of the United States Patent Office or a named trade journal (*Modern Plastics*).[183] They were also required to notify all persons who expressed an interest in obtaining a license under the relevant patent during the preceding five years. The purpose of these notification provisions is not entirely clear, and it does not appear that similar provisions were adopted by the DOJ in subsequent decrees.

J. *Glaxo* (1974)

In *United States v. Glaxo Group, Ltd.*,[184] the District Court for the District of D.C. found that Glaxo and other defendants committed per se violations of Section 1 of the Sherman Act by restricting their purchasers' freedom to resell the drug *griseofulvin* in bulk form. Nevertheless, the district court declined to order mandatory licensing of the related patents. The Supreme Court, in a 6-3 decision, reversed the lower court, noting that "reasonable-royalty licensing [is a] well-established form[ ] of relief when necessary to an effective remedy, particularly where patents have provided the leverage for or have contributed to the antitrust violation adjudicated."[185]

On remand, the district court entered an order in March 1974 requiring Glaxo to grant any applicant a license to manufacture *griseofulvin* at reasonable royalty rates.[186] Like many previous decrees, if the parties disagreed over royalty rates they could apply to the court to determine reasonable royalties, the burden of proving reasonableness lay with Glaxo, and any reasonable royalty determination would apply to future licenses of the same patent.[187]

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[182] 1969 Trade Cas. (CCH) ¶ 72,919, 1969 WL 192901 (E.D. Mich. Oct. 24, 1969) (selected portions of the decree are reproduced *infra* Appendix A, Part 9).

[183] *Id.* § X.

[184] 328 F. Supp. 709 (D.D.C. 1971), *rev'd*, 410 U.S. 52 (1973) (selected portions of the decree are reproduced *infra* Appendix A, Part 10).

[185] 410 U.S. at 59 (citing *Hartford-Empire*, *U.S. Gypsum*, *Besser*, and other authority).

[186] 1974-1 Trade Cas. (CCH) ¶ 74,884, 1974 WL 828 (D.D.C. Mar. 1, 1974).

[187] *Id.* at *3.

In addition, the decree prohibited Glaxo from selling or transferring any patent unless the transferee filed with the court an undertaking to be bound by the provisions of the decree.[188] Finally, it appears that the DOJ subsequently challenged the validity of a particular Glaxo patent covering *griseofulvin*, leading the parties to reach a settlement that manifested itself in an amended order, which the court entered in May 1974.[189] In the amended order, Glaxo agreed to grant any applicant an irrevocable, *royalty-free* license under that patent. Like the voluntary consent decrees of the 1940s and 1950s, a royalty-free licensing commitment was included in the court's order, without regard to the Supreme Court's warning against mandated royalty-free licensing in *Hartford-Empire*.

K. *Manufacturers' Aircraft Association* (1975)

The Manufacturers' Aircraft Association (MAA) is well-known in the patent pooling literature[190] and, contrary to most of the examples discussed above, was formed with the backing (some might say coercion) of the U.S. government.[191] The original 1917 cross-licensing agreement among aircraft manufacturers was amended in 1928 and remained in effect for nearly five decades. By the mid-1960s, according to the DOJ, the $8 billion aircraft industry in the United States was highly concentrated, with the eight largest aircraft manufacturers controlling 88 percent of the market.[192] All eight of those firms were members of the MAA, which by then had 20 members who cross-licensed approximately 1,500 aviation-related patents. Their cross-licensing agreement covered all existing and future aviation patents, and prohibited any member from acquiring additional patents without extending cross-licensing rights to the other members. In 1972, the DOJ brought an action against the MAA, alleging that the arrangement reduced competition in the "research, development, manufacture and sale of airplanes," in violation

[188] *Id.* at *4.

[189] 1974-1 Trade Cas. (CCH) ¶ 75,000, 1974 WL 862 (D.D.C. May 10, 1974).

[190] *See, e.g.*, Ron D. Katznelson & John Howells, T*he Myth of the Early Aviation Patent Hold-Up—How a U.S. Government Monopsony Commandeered Pioneer Airplane Patents*, 24 INDUS. & CORP. CHANGE 1 (2015); Michael Mattioli, *Communities of Innovation,* 106 NW. U. L. REV. 103, 130–33 (2012); Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CALIF. L. REV. 1293, 1342–46 (1996).

[191] The MAA was formed by rival aircraft manufacturers Wright-Martin Aircraft Corp. (successor to the Wright Brothers' original aviation patents) and Curtiss Aeroplane & Motor Corp. in 1917 at the urging of then-Acting Secretary of the Navy Franklin Delano Roosevelt, who feared that the companies' respective blocking patent positions could hinder the U.S. war effort. *See* Mfrs. Aircraft Ass'n, Inc. v. United States, 77 Ct. Cl. 481 (Ct. Cl. 1933).

[192] U.S. Dep't of Justice, Competitive Impact Statement in United States v. Mfrs. Aircraft Ass'n, 40 Fed. Reg. 30,848, 30,851 (July 23, 1975).

of Section 1 of the Sherman Act.[193] It sought the dissolution of the MAA and cancelation of its cross-licensing agreements.

In 1975, the U.S. District Court for the Southern District of New York issued an order that largely granted the relief sought by the DOJ.[194] In addition to breaking up the MAA and cancelling the industry-wide cross-license, it required that each former MAA member grant any applicant "a nonexclusive, non-discriminatory license under any licensed airplane patent . . . . [at] reasonable and non-discriminatory royalties."[195] Despite the fact that the MAA order was issued a full 30 years after *Hartford-Empire*, the structure and provisions of the order closely follow that of prior models. Specifically, the order gave the court final authority to determine reasonable royalty levels, placed the burden of proof regarding reasonableness on the patent holder, and made any royalty determination apply to subsequent licensees of the same patents.[196] In addition, unlike most prior cases other than *Besser*, the order expressly permitted the use of arbitration to determine reasonable royalties prior to submitting the dispute to the court,[197] perhaps because arbitration was previously utilized by the MAA members to resolve licensing disputes amongst themselves.[198]

L. *XEROX* (1975)

The consent decree entered in *Xerox*[199] is notable, not least because the enforcement action in question was brought by the FTC rather than the DOJ.[200] In its complaint, the FTC alleged that Xerox violated Section 5 of the FTC Act (unfair methods of competition) by, among other things, (1) monopolizing and attempting to monopolize patents applicable to office copiers, (2) developing and maintaining a patent structure of great size, complexity, and obscure boundaries, and (3) engaging in unfair marketing practices directed to

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[193] *Id.*

[194] United States v. Mfrs. Aircraft Ass'n, 1976-1 Trade Cas. (CCH) ¶ 60,810, 1975 WL 405109 (S.D.N.Y. Nov. 12, 1975) (selected portions of the decree are reproduced *infra* Appendix A, Part 11).

[195] *Id.* § VI.

[196] *Id.* § VIII.

[197] *Id.* § VI.

[198] U.S. Dep't Justice, *supra* note 192, at 30,849.

[199] Xerox Corp., 86 F.T.C. 364 (1975) (decision and order) (selected portions of the order are reproduced *infra* Appendix A, Part 12,).

[200] The FTC shares antitrust enforcement authority with the Antitrust Division of the DOJ. *See* 2 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 302c (4th ed. 2014). Though the FTC was created in 1915, it did not play a major role in U.S. antitrust enforcement until the early 1970s. *See* Robert A. Skitol, *1969: The FTC's Mid-Life Crisis and Near-Death Experience*, ANTITRUST, Fall 2014, at 23 (attributing the rise of FTC enforcement activity to a 1969 ABA report that criticized the agency as weak and borderline irrelevant and prompted both legislative and managerial changes that strengthened and emboldened the agency).

office copiers.[201] The case was settled in 1975 with the entry of a consent order by the FTC.[202]

Under the order, Xerox agreed to license its patents to any applicant for use in connection with office copiers and related parts and supplies.[203] The order differs from prior examples in that it permitted the applicant to select up to three Xerox patents for licensing on a royalty-free basis.[204] As to additional patents, Xerox was permitted to charge a royalty of up to 0.5 percent of the licensee's net product revenue, up to an aggregate maximum of 1.5 percent per product.[205]

To address the potentially incongruous combinations of patents and royalty rates that could emerge from this structure, the consent decree also provided that "there shall be no discrimination by [Xerox] in the royalty charged as among royalty-paying licensees who procure the same rights under the same patents . . . ."[206] However, the order went on to clarify that it did not restrict Xerox from negotiating separate licenses "outside the terms . . . of this order with anyone who so elects."[207]

Finally, in a departure from the judicial consent decrees entered to resolve enforcement actions brought by the DOJ, the FTC's order in *Xerox* did not refer disputes between the parties back to the FTC for resolution. Rather, it required that such disputes be resolved by binding arbitration by the American Arbitration Association.[208]

M. LATER CASES

In the decades following *Hartford-Empire*, remedial orders requiring the licensing of patents on reasonable, non-discriminatory terms were issued in

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[201] 86 F.T.C. at 367 (complaint). For a relatively recent analysis of the claims brought by the FTC against Xerox and a comparison to contemporary views of these practices, see Willard K. Tom, *The 1975* Xerox *Consent Decree: Ancient Artifacts and Current Tensions*, 68 ANTITRUST L.J. 967, 968–77 (2001). In a prior case, the antitrust defendants argued that the FTC lacked authority to order compulsory licensing of patents under Section 5 of the FTC Act. Am. Cyanamid Co. v. FTC, 363 F.2d 757 (6th Cir. 1966). The Court of Appeals for the Sixth Circuit disagreed, confirming the FTC's authority to order the licensing of the defendants' patents for a reasonable royalty. *Id*. at 772.

[202] Unlike enforcement actions brought by the DOJ in the federal courts, actions brought by the FTC are heard first by an administrative law judge and then by the Commission itself, with appeal to the Court of Appeals for the D.C. Circuit. *See* AREEDA & HOVENKAMP, *supra* note 200, ¶ 302d.

[203] 86 F.T.C. at 373–74.

[204] *Id*. at 374.

[205] *Id.*

[206] *Id.* at 379 (emphasis omitted).

[207] *Id.*

[208] *Id.* at 381.

significant numbers. The cases summarized in this article provide a representative sample of the FRAND-like decrees obtained by federal antitrust agencies, as well as the most common terms found in each. During its active pursuit of reasonable royalty decrees, the DOJ clearly adopted a standardized format for the remedial orders that it sought, both through consent decrees and litigated matters. This format evolved over the years, most likely due to trial and error, as well as experience from the administration and enforcement of earlier decrees.

Despite the large number of licensing decrees entered from the 1940s to the early 1970s, there do not appear to be many, if any, remedial patent licensing orders entered in antitrust cases after the *Manufacturers' Aircraft Association* and *Xerox* decrees of 1975. This trend is consistent with the overall decline in antitrust enforcement that began in the late 1970s with the rise of the Chicago School law and economics movement[209] and the publication of Robert Bork's influential text, *The Antitrust Paradox*.[210] As several recent commentators have pointed out, the conduct condemned in the post-war remedial orders does not offend the modern antitrust conscience.[211] Thus by 1995, with the DOJ's and FTC's joint issuance of the *Antitrust Guidelines for the Licensing of Intellectual Property*,[212] such cases had faded into the background.

Nevertheless, echoes of the post-war patent licensing orders have arisen from time to time in later antitrust cases, particularly in the context of merger review. For example, in *United States v. Pilkington PLC,*[213] the DOJ challenged a series of contractual arrangements in the glass manufacturing industry that continued to restrain the parties' activities long after the relevant

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[209] *See, e.g.*, LESLIE, *supra* note 30, at 39–41 (noting that antitrust enforcement activity against collusive and monopolistic practices employing patents subsided beginning in the mid-1970s); Bohannan & Hovenkamp, *supra* note 9, at 908–09 (describing and critiquing expansionist U.S. antitrust enforcement policy during this period); Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17 HARV. J.L. & TECH. 85, 87 (2003) (noting shifts in antitrust enforcement thinking due to Chicago School influence); Tom, *supra* note 201, at 968 (referring to changes in post-1975 legal thinking that resulted a "new understanding of the relationship between antitrust and intellectual property").

[210] ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF (1978) (criticizing the activist enforcement policies of the DOJ and FTC); *see also* William E. Kovacic, *Out of Control? Robert Bork's Portrayal of the U.S. Antitrust System in the 1970s*, 79 ANTITRUST L.J. 855 (2014) (analyzing Bork's critique).

[211] *See, e.g.*, Farrell & Weiser, *supra* note 209, at 87 (2003) (noting substantial change in view of vertical integration); Tom, *supra* note 201, at 968–77 (observing significant changes in attitude toward practices such as price discrimination, cross-licensing, field of use restrictions and patent acquisitions between 1975 and 2001).

[212] DOJ/FTC IP Guidelines, *supra* note 96 (superseding § 3.6 in Part I, "Intellectual Property Licensing Arrangements," and cases 6, 10, 11, and 12 in Part II of the U.S. Department of Justice 1988 Antitrust Enforcement Guidelines for International Operations).

[213] 1994-2 Trade Cas. (CCH) ¶ 70,842, 1994 WL 750645 (D. Ariz. Dec. 22, 1994).

patents had expired. The remedial decree entered in 1994 prohibited the defendants from asserting confidentiality and know-how restrictions against both their former licensees and third parties.[214] Likewise, in *United States v. Borland International, Inc.*[215] the DOJ challenged the proposed merger of Borland and Ashton-Tate, the two largest suppliers of PC database management systems, on the basis that the combined entity would be able to exert substantial control over a dominant database standard in the industry.[216] As a result, in 1992 the court enjoined Borland from asserting its copyright in certain command names, file structures, and other technical features recognized by Ashton-Tate's products.[217] This remedy, which effectively required royalty-free licensing of Ashton-Tate's copyrights in order to restore competition to the market, bears some resemblance to the patent licensing orders of prior decades.[218]

IV. INFORMING POLICY THROUGH HISTORY

FRAND commitments today are pervasive in markets characterized by standardized technologies and other common technology platforms. And as noted above, the scope and contours of FRAND commitments have increasingly become the subject of debate, litigation, and rulemaking. Yet there is a paucity of case law interpreting FRAND commitments, and litigants, courts, and agencies have resorted to analogies and reasoning from first principles to develop a framework for analyzing these complex commercial arrangements.

In general, courts must take into account two different sets of considerations when evaluating the "meaning" of FRAND commitments. The first of these is what the "parties" intended the commitment to mean. But unlike a simple bilateral contract, the "parties" to a FRAND commitment are far from clear. On one side, of course, is the patent holder. But on the other side lie both the SDO and a wide and diverse range of other SDO members and nonmembers who have developed and sold products based on some understanding of what patent holders' FRAND commitments entail.[219] And, as evidenced

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[214] *Id.*

[215] 1992-1 Trade Cas. (CCH) ¶ 69,774, 1992 WL 101767 (N.D. Cal. Mar. 13, 1992).

[216] Competitive Impact Statement, United States v. Borland Int'l, Inc., 56 Fed. Reg. 56,096, 56,100 (Oct. 31, 1991) (noting that Ashton-Tate was aggressive in enforcing its copyrights against business rivals and "enjoyed competitive advantages as a result of its adoption as a 'standard' by corporate customers"); *see also* Catherine Fazio & Scott Stern, *Innovation Incentives, Compatibility, and Expropriation as an Antitrust Remedy: The Legacy of the Borland/Ashton-Tate Consent Decree*, 68 ANTITRUST L.J. 45, 46 (2000).

[217] 1992 WL 101767, at *2.

[218] *See also* Boston Scientific, FTC Docket No. C-3573 (May 3, 1995).

[219] For a discussion of the "contractual" paradigm applied to the interpretation of FRAND commitments, and the failure of that paradigm to offer a satisfactory analytical framework, see Contreras, *Market Reliance*, *supra* note 29.

by the voluminous and contradictory trial records in recent cases, the parties (at least in hindsight) seldom agree on this intent. Courts are thus left with a choice between reasonable options, and must consider the effect that their choices will have on the overall market. In analyzing both sets of considerations, courts, agencies, and commentators would do well to look to the historical patent licensing decrees issued from the 1940s through 1970s. Valuable lessons can be drawn from the extensive analysis and interpretation in these decrees. In this Part, I discuss just a few areas in which the analyses and observations from these historical cases can and should inform our understanding of FRAND commitments today.[220]

A. Non-Discrimination: All Applicants

In each remedial patent licensing decree that was reviewed for this article, whether a consent decree or a contested decree, the defendant patent holders were required to grant licenses to "all applicants"—every person or firm that requested such a license. The reasoning behind this requirement is straightforward: the decrees were typically fashioned to remedy distortions in the market caused by the defendants' anticompetitive conduct.[221] The favored way of doing so was by removing patent barriers to free competition through licensing to all interested parties on a non-discriminatory basis. But the salutary effects of broad, non-discriminatory licensing were acknowledged as having value beyond the remediation of anticompetitive harm, as demonstrated by the decree entered in *Rudenberg*. Even though *Rudenberg* was not an antitrust case, the court recognized the benefit of establishing "an open-door policy assuring equality of opportunity to all who might have use for inventions disclosed in patents."[222] Based on the foregoing, it seems that the commonly held understanding of the non-discriminatory patent licensing commitments established by these decrees was that licenses should be offered to any person or firm requesting such a license.

Today, this understanding is being challenged. Specifically, some have argued that the "non-discrimination" prong of a FRAND commitment does not

[220] These decrees, of course, also cover topics that are less relevant to the modern FRAND analysis. For example, many of the decrees devote significant attention to which patents are included within the scope of the decree, the grant of interim licenses while reasonable royalty determinations are being made, and the transfer of know-how and technical information alongside the licensing of patents.

[221] *See, e.g.*, Hartford-Empire Co. v. United States, 323 U.S. 386, 414 (1945) (purpose of decree was to "dissolve the combination and prevent future combinations of like character."); United States v. Gen. Elec. Co. (*General Electric II*), 115 F. Supp. 835, 844 (D.N.J. 1953) ("To compel the completely free use of these patents is . . . to check the intrusion of advantages thereby gained into the mechanics of competition in the lamp industry").

[222] *Rudenberg*, 81 F. Supp. at 45. Recall that *Rudenberg* was not an antitrust case, suggesting that the rationale supporting patent licensing decrees extends beyond antitrust issues to a broader set of concerns.

necessarily require patent holders to offer licenses to every applicant that requests one, but only to avoid discrimination among the applicants that the patent holder chooses to license.[223] The issues involved are illustrated by the following example: A patent holder subject to a FRAND commitment is entitled to charge its licensees a "reasonable" royalty. Patent royalties are typically calculated as percentages of the net selling price of a product covered by the patent. So if patent holder Paul charges royalties at a rate of 1 percent and his licensee Lisa sells a product for $10.00, the per-unit royalty that Lisa owes Paul is $0.10. But what if Lisa's $10 product is a chip that is used in wireless routers? Lisa sells chips to Sally, a router manufacturer, for $10/unit, and Lisa pays Paul the required per-unit royalty of $0.10. Sally's routers sell for $200. Under the doctrine of patent exhaustion,[224] Paul's patent rights are extinguished once the chip is sold by Lisa, Paul's authorized licensee. Paul cannot assert his patent or collect royalties from Sally. If, somehow, Paul could charge his 1 percent royalty to Sally instead of Lisa, then Paul could collect 1 percent of the price of Sally's $200 router ($2.00) rather than Lisa's $10 chip ($0.10). And what if Sally's routers are purchased by coffee shops, motels, and law firms that use them to offer Wi-Fi access in their respective businesses? Could Paul find a way to charge his 1 percent royalty on the revenues of these businesses?[225] Not if his patent rights are exhausted upon Lisa's sale of the chip, or Sally's sale of the router.

This is the classic supply chain issue faced by patent holders. To address it and maximize royalty revenue, patent holders often seek to license the entity that is furthest "downstream," or selling products at the highest price, while declining to grant licenses to suppliers of low-priced intermediate compo-

[223] *See, e.g.*, Daniel A. Crane, *Patent Pools, RAND Commitments, and the Problematics of Price Discrimination*, *in* WORKING WITHIN THE BOUNDARIES OF INTELLECTUAL PROPERTY: INNOVATION POLICY FOR THE KNOWLEDGE SOCIETY 371, 373 (Rochelle C. Dreyfuss et al. eds., 2010); Anne Layne-Farrar, Non-Discriminatory Pricing: What Is Different (and What Is Not) About IP Licensing in Standard Setting (Jun. 29, 2009) (unpublished manuscript), *available at* papers.ssrn.com/sol3/papers.cfm?abstract_id=1427924.

[224] *See generally* Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617 (2008) (holding that LG's unrestricted patent license to Intel exhausted LG's patent rights in the chips sold by Intel to PC manufacturer Quanta, and that as a result LG could not assert those patents against Quanta when it sold PCs including Intel's chips connected to non-Intel components). The Court left open the possibility that a patent holder, through contractual limitations on the rights granted to its licensee, could avoid exhaustion of its patents and thereby charge downstream users. *See id.* at n.17.

[225] This, of course, was the strategy pursued by Innovatio in its various patent infringement suits against "brick and mortar" businesses offering wireless Internet connectivity to their customers. *See* Innovatio IP Ventures LLC Patent Litig., 921 F. Supp. 2d 903, 907 (N.D. Ill. 2013). Scenarios such as this have prompted some to suggest that the determination of an appropriate royalty "base" is more important even than determining the appropriate percentage royalty in royalty determinations. *See, e.g.*, FED. TRADE COMM'N, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION 25 (2011).

nents.[226] While this practice is doubtless within a patent holder's rights in the ordinary course of business,[227] it is not clear that the practice is (or should be) permitted when patents are subject to a FRAND commitment. That is, a patent holder's refusal to grant a license to a low-value component vendor could constitute "discrimination" against market participants and thus violate the non-discrimination prong of its FRAND commitment. This view is supported by commentators including Dennis Carlton and Allan Shampine, who have recently proposed an economic model for FRAND commitments that includes licensing patents to all applicants.[228] One federal appellate court has also recently taken this view in interpreting a firm's non-discrimination commitment imposed by the International Telecommunications Union (ITU),[229] and a similar commitment to universal licensing was adopted by the IEEE in recent amendments to its intellectual property policy.[230]

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[226] *See* Daniel Hermele, Comment #63 of Qualcomm Inc., IEEE-SA Standards Board Bylaws draft 10-May-14, Comment Report 26-May-14 listed by Comment ID, at 26, *available at* grouper.ieee.org/groups/pp-dialog/drafts_comments/index.html (arguing that proposed revision of bylaws that would permit vendors of subcomponents of standardized products to request a license from patent holders would "force holders of essential patent claims to license exhaustively at the level of certain chip components of end products that implement IEEE standards and to seek to limit licensing costs, in particular royalty costs, to a fraction of the price of those chip components."); Tomas Dannelind, Licensing 26-26 Presentation to Swedish Network for Innovation & Technology Transfer Support (SNITTS) (Mar. 12, 2010) (copy on file with author) ("Here we choose to license the patents as late in value chain as possible . . . . One big advantage with this strategy is also that it is likely that the royalty income will be higher since we calculate the royalty on a more expensive product"); *see also* Brief for iBiquity Digital Corporation as Amicus Curiae Supporting Respondents, Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617 (2008) [hereinafter iBiquity Amicus Brief] (explaining two-tiered patent licensing model in the HD Radio market).

[227] *Cf.* 35 U.S.C. 271(d)(4) ("No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having . . . refused to license or use any rights to the patent.").

[228] Carlton & Shampine, *supra* note 7, at 546 ("'Non-discriminatory,' in the context of a SSO setting standards for competing firms can be interpreted to mean that all implementers of the standard should be offered licenses to the technology, and all 'similarly situated' firms should pay the same royalty rate.").

[229] Microsoft Corp. v. Motorola, Inc., 696 F.3d 872, 884 (9th Cir. 2012) ("Motorola, in its declarations to the ITU, promised to 'grant a license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable terms and conditions to use the patented material necessary' to practice the ITU standards. This language admits of no limitations as to who or how many applicants could receive a license ('unrestricted number of applicants') . . . .").

[230] IEEE Standards Ass'n, IEEE-SA Standards Board Bylaws, Sec. 6.2(b); *see also* Letter from Renata B. Hesse, Acting Assistant Att'y Gen., U.S. Dep't Justice, to Michael Lindsay, Dorsey & Whitney LLP 14 (Feb. 2, 2015) ("Parties contemplating manufacturing products conforming to an IEEE standard, or investing in research and development related to such a standard, will know that they will have access to necessary technology, thereby facilitating implementation of these standards, to the benefit of consumers.").

Patent holders who refuse to license component vendors take the position that this refusal is permitted under their FRAND commitments.[231] They argue that by licensing the downstream customers of component vendors, they have, in effect, "indirectly licensed" the component vendors.[232] To their credit, no patent holders have publicly argued that they should be permitted under their FRAND commitments to refuse to offer patent licenses to particular applicants and then *enforce* those patents against the refused applicants. The refusal to license particular classes of applicants clearly stems from a desire to derive royalty income from the most profitable tier in the distribution chain, not to enforce patents against otherwise willing market participants.

As courts and agencies weigh these two opposing perspectives, they would do well to consider the historical patent licensing decrees described in this article. As noted above, these decrees require the licensing of patents to "all applicants" on reasonable and non-discriminatory terms. This requirement arose not because courts believed that such open licensing policies were desired by patent holders, but because the courts, and the DOJ that brought the suits, believed that open licensing to the marketplace would promote competition and remedy ill-gained market concentration.[233] Such policies were not developed to prevent patent holders from realizing fair returns on their investments.[234] Rather, they were developed to ensure that all potential market entrants had an equal opportunity to participate, without undue advantage to entrenched interests. And while today's SDO FRAND commitments are not intended to redress the forms of anticompetitive conduct that the DOJ sought to prevent in its earlier suits, the positive market benefits to be gained from such an approach could be similar, as could the harms that might flow from patent holders' refusal to license all applicants under their standards-essential patents. And by the same token, permitting a patent holder to refuse to license selected categories of market participants in order to enhance its royalty in-

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[231] *See* Ericsson v. D-Link, Case No. 6:10-CV-473, 2013 U.S. Dist. LEXIS 110585, at *80 (E.D. Tex. Aug. 6, 2013) ("Ericsson believed it complied with its RAND obligations because it did not discriminate against competitors."); iBiquity Amicus Brief, *supra* note 226, at 21–22 (arguing that an "overly-aggressive approach to patent exhaustion is unnecessary," as parties' RAND commitments in a multiple-tiered royalty market "demonstrates that the marketplace can and does self-regulate to achieve procompetitive results . . . .").

[232] *See Ericsson*, 2013 U.S. Dist. LEXIS 110585, at *80 ("By licensing end product manufacturers, Ericsson believed it was indirectly licensing chip manufacturers . . . ."). This position is curious, as patent exhaustion does not work in reverse, and licensing the purchaser of a component would generally not authorize its supplier to make or sell the component unless the supplier has been sublicensed by the purchaser or deemed to have made the component "for" the purchaser, two characterizations that do not generally seem to reflect the realities of the marketplace.

[233] *See, e.g.*, *supra* notes 221–222 and accompanying text.

[234] The order in *Hartford-Empire* expressly instructs those making reasonable royalty determinations that "it shall be kept in mind that the licensor is entitled to receive reasonable compensation for the use of its inventions." YALE L.J., *supra* note 50, at 123 (Final Judgment ¶ 13(C)(1)).

come may be inconsistent with this goal, particularly if those market participants affirmatively seek the comfort of a patent license which they are refused.

B. Non-Discrimination: Uniform Terms

Part IV.A above considers whether the non-discrimination prong of a FRAND commitment prevents a patent holder from refusing to offer licenses to certain categories of potential licensees ("non-exclusion"). Another question raised by the non-discrimination prong of the FRAND commitment is the degree of variability that is permitted in license terms among different licensees ("uniformity"). Most commentators agree that "non-discriminatory" does not mean that all licenses must be granted on identical terms.[235] Yet beyond this general consensus, there is little agreement regarding the type and degree of uniformity that is required among licenses in order to comply with a FRAND obligation.[236]

The Supreme Court in *Hartford-Empire* addressed the question of uniformity in its second 1945 opinion. It held that "similar licenses at uniform reasonable royalties must be available to all who desire them."[237] The Court allowed the patent holder to deviate from its established uniform rates in only two scenarios: when the licensee offered to compensate the patent holder using non-monetary consideration, and when variations in treatment were required

[235] *See, e.g.*, U.S. Int'l Trade Comm'n, lnitial Determination of Administrative Law Judge, *In re* Certain Wireless Devices with 3G Capabilities and Components Thereof, No. 337-TA-800 at 432 (A.L.J. Shaw July 29, 2013) (the "non-discrimination" requirement of a FRAND commitment does not require that licensing terms for each individual manufacturer or competitor be uniform; all terms of a license— not only the royalty or price terms—must be examined as part of the non-discrimination analysis); ABA Patent Policy Manual, *supra* note 12, at 22 (observing that, in practice, the terms of all FRAND licenses need not be identical); Carlton & Shampine, *supra* note 7, at 546; Crane, *supra* note 223, at 373 ("[T]he 'nondiscriminatory' prong of the RAND commitment should be read narrowly to prohibit only discriminatory licensing to potential downstream rivals and not price discrimination more generally, else the RAND commitment turn into an inflexible commitment to license at identical terms to all potential licensees."); Gilbert, *supra* note 7, at 872 ("It is artificial and counterproductive to impose a definition of non-discrimination that requires identical licensing terms for every licensee."); Layne-Farrar, *supra* note 223.

[236] The differences of opinion in this regard can be substantial. *Compare* Letter from John Moore & John Han, Ericsson Inc., to Lisa R. Barton, Acting Sec'y, U.S. Int'l Trade Comm'n (Aug. 7, 2013) (arguing that licenses may differ substantially between licensees because they must be "tailored to the individual circumstances of a particular license" taking into account factors such as the value of a cross-license, the types of products sold, the standards incorporated into the products, the licensee's expected revenues and profits, the geographic scope of the license, etc.), *with* Carlton & Shampine, *supra* note 7, at 546 ("[A]ll 'similarly situated' firms should pay the same royalty rate . . . [where] competing firms are similarly situated if *ex ante* they expect to obtain the same incremental value from the patented technology compared to the next best alternative available to be incorporated into the standard.").

[237] Hartford-Empire Co. v. United States, 324 U.S. 570, 574 (1945).

by law.[238] To reduce the defendants' ability to abuse these limited exceptions, the decree also permitted an applicant to petition the court if it felt "aggrieved by any want of uniformity" in the rates charged.[239] But despite these pronouncements, the *Hartford-Empire* Court did not strictly require the patent holders to treat all licensees identically. Specifically, the *Hartford-Empire* decree permitted the patent holders to charge different royalty rates to different categories of market participants (e.g., container manufacturers versus machinery manufacturers).[240]

American Securit also offers a potentially interesting interpretation of the non-discrimination requirement of FRAND commitments. In defense of a "package license" that included both patents covered by the decree and patents not covered by the decree, Securit argued that it could not offer to license Shatterproof less than its full package of patents, as that package was Securit's standard offering and deviating from the standard offering in Shatterproof's case would have discriminated against Securit's other licensees (who were forced to license both the covered and non-covered patents).[241] The court dismissed this argument quickly, first questioning whether licensing only the covered patents "would have traveled the sure road to discrimination," and then observing that such a deviation in Securit's licensing policy would only have been for the better (i.e., making it more consistent with Securit's obligation not to "bundle" patents covered under the decree with other patents).[242] *American Securit* suggests that identical packages of patents need not be offered to every licensee to comply with a non-discrimination covenant.

An even more complex non-discrimination scenario is raised by *Xerox*, in which applicants could license up to three Xerox patents on a royalty-free basis, then pay royalties on additional patents at rates limited to 0.5 percent per patent, with an overall royalty cap of 1.5 percent of the licensee's net product sales.[243] Despite the potentially limitless range of combinations of royalty-free and royalty-bearing patents and royalty rates, the FTC nevertheless required that Xerox refrain from discriminating as to royalties charged for "the same rights under the same patents."[244] Clearly, there would be little basis for comparison if different licensees chose different patents as their three roy-

[238] YALE L.J., *supra* note 50, at 123–24 (Final Judgment ¶ 13(E)).
[239] *Id.* at 124.
[240] *Id.* at 93, 121 (Final Judgment ¶ 13(B)).
[241] Am. Securit Co. v. Shatterproof Glass Corp., 154 F. Supp. 890, 890 (D. Del. 1957). In fact, when Shatterproof requested that Securit's standard license be modified to include only the patents covered by the Toledo decree, Securit was willing to remove the non-covered patents, though it was not willing to reduce the royalty. Am. Securit Co. v. Shatterproof Glass Corp., 268 F.2d 769, 771 (3d Cir. 1959). Herein, apparently, lay the point of contention between the parties.
[242] 154 F. Supp. at 897.
[243] Xerox Corp., 86 F.T.C. 364, 374 (1975).
[244] *Id.* at 379 (emphasis omitted).

alty-free patents. However, the FTC may have been relying on there being a large number of Xerox patents available for licensing and the eventual application of the aggregate 1.5 percent royalty cap to most, if not all, licensees. If so, then the non-discrimination restriction would largely prevent Xerox from offering a "sweetheart" deal at *less* than the 1.5 percent cap to certain favored licensees. As such, the decree is somewhat anomalous, in that it might have acted primarily to push royalty rates to the 1.5 percent maximum (resulting in both a maximum and a minimum).

Taken together with the non-exclusion aspect of the licensing decrees discussed in Part IV.A above, the uniformity provisions of *Hartford-Empire*, *American Securit*, and *Xerox* appear to support an interpretation of "non-discrimination" that (a) allows differential pricing between different distribution channels or categories of licensees, but not among licensees within the same channel or category, and (b) prohibits the refusal of a license on such terms to any willing applicant requesting one. This result seems logical and avoids the need to determine when a patent holder's refusal to license a particular firm is justified and when it is not. To the extent that patent holders wish to earn particular returns on their patents, royalties can be set in a number of ways to ensure that the patent holder receives the same amount regardless of the point in the supply chain at which a license is granted.[245]

C. Royalty Determinations: Judge or Jury?

In general, neither the voluntary FRAND commitments of today nor the patent licensing orders of the past specify precise numerical values for the "reasonable" royalty rates that patent holders are permitted to charge.[246] Thus, the determination of reasonable royalty levels, at least initially, lies with the patent holder. But if a potential licensee believes that the patent holder's proposed royalty rate is not, in fact, reasonable, the parties face a potential impasse. Few SDOs establish a mechanism for resolving disputes regarding the reasonableness of FRAND royalties. The lack of a clear methodology for resolving disputes has led to litigation over whether a particular patent holder's requested royalty rate complies with its obligation to grant licenses on FRAND terms.[247]

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[245] For example, per-unit royalties (e.g., $0.05 per device) eliminate disputes over the appropriate royalty "base" on which to charge percentage royalties.

[246] Interestingly, as explained in *Xerox*, the FTC did not require that Xerox's royalty rates be "reasonable," as it established strict numerical caps for those royalty rates (0.5% of net product revenue per patent and 1.5% of net product revenue overall). 86 F.T.C. at 374. Thus, the FTC seemingly makes its own determination of a "reasonable" level of royalties, bypassing the need to submit such a determination either to the negotiation of the parties or a determination by the court.

[247] *See, e.g.*, Findings of Fact and Conclusions of Law, Microsoft Corp. v. Motorola, Inc., 2013 U.S. Dist. LEXIS 60233 (W.D. Wash. Apr. 25, 2013); Apple, Inc. v. Motorola, Inc., 886 F.

Today, a growing number of U.S. district courts have ventured to tackle the FRAND royalty question, though their approaches have been far from consistent. For example, in both *Apple, Inc. v. Motorola, Inc.* and *Microsoft Corp. v. Motorola*, *Inc.,* a potential licensee alleged that the patent holder (Motorola) violated its FRAND commitment by failing to offer it a license on reasonable terms. In *Apple*, the parties jointly stipulated to a bench trial rather than a jury trial on the FRAND issue.[248] The district judge initially explained that she was prepared to determine the relevant FRAND royalty rate to enable the parties to enter into an appropriate license agreement.[249] She reasoned that "in situations such as this in which the parties cannot agree on the terms of a fair, reasonable and nondiscriminatory license, the court may be the only forum to determine license terms."[250] But shortly after this decision, Apple announced that it would *not* commit to enter into a license agreement with Motorola at the FRAND rate the court determined. Rather, Apple would *consider* the royalty rate determined by the court, but reserved the right, if the rate exceeded $1.00 per product, to continue to assert in litigation that Motorola's patents were invalid and not infringed.[251] This announcement led Judge Crabbe to question "whether it was appropriate for a court to undertake the complex task of determining a FRAND rate if the end result would be simply a suggestion that could be used later as a bargaining chip between the parties."[252] As a result, she reversed direction and decided *not* to determine a reasonable royalty rate in the case, reasoning that "it would not be in the public interest for the court to spend such enormous resources to determine a FRAND rate that may ultimately lead only to additional litigation . . . ."[253]

Supp. 2d 1061 (W.D. Wis. Aug. 10, 2012). Both cases relate to the "standard" royalty rate established by Motorola and whether it complies with Motorola's FRAND obligations with respect to two widely-adopted industry standards.

248 Unopposed Motion for Bench Trial (Sealed Document) by Plaintiff Apple Inc., Apple, Inc. v. Motorola, Inc., No. 3:11-cv-00178 (W.D. Wis. Sept 24, 2012).

249 Opinion and Order, Apple, Inc. v. Motorola, Inc., No. 11-cv-178-bbc, 2012 U.S. Dist. LEXIS 181854, at *12 (W.D. Wis. Oct. 29, 2012).

250 *Id.*

251 Apple, Inc. v. Motorola, Inc., No. 11-cv-178-bbc, 2012 U.S. Dist. LEXIS 157525, at *6 (W.D. Wis. Nov. 2, 2012).

252 *Id.* at *6

253 *Id.* at *11 (Applying the four-factor test for injunctive relief established by the Supreme Court in *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006), the court found, inter alia, that the "public interest" *eBay* factor weighed against Apple.). The court dismissed Apple's action against Motorola. *Id.* The parties mutually agreed to dismiss their respective appeals of the case in May 2014. Joint Motion to Dismiss the Appeals, Apple, Inc. v. Motorola Mobility, Inc., No. 12-1548 (Fed. Cir. May 16, 2014).

In contrast, in *Microsoft v. Motorola*, after an initial agreement to submit to a bench trial, Motorola sought a jury trial on the FRAND issues.[254] The district court held that a jury would decide the question whether or not Motorola breached its FRAND obligation, but Judge Robart himself would determine the FRAND royalty rate from the bench.[255] The judge was thus left to undertake a laborious and complex calculation of the range of appropriate royalty rates that could properly be charged by Motorola.[256] He explained:

> Having made the determination that Motorola must grant a RAND license for its essential patents, the court is left with the inescapable conclusion that a forum must exist to resolve honest disputes . . . as to what in fact constitutes a RAND license agreement. Here, the courthouse may be the only such forum.[257]

Both *Apple* and *Microsoft* involved breach of contract claims against Motorola for alleged violations of its FRAND obligations. The considerations are slightly different when an alleged infringer has raised a patent holder's violation of a FRAND commitment as an affirmative defense to an allegation of infringement. For example, in *Innovatio*, Judge Holderman undertook a reasonable royalty analysis and computation, though his methodology differed from that of Judge Robart in *Microsoft v. Motorola.*[258] But in *Ericsson v. D-Link*, both parties demanded a jury trial on the question of the FRAND royalty rate, and a jury duly determined the applicable FRAND royalty rate.[259] A sim-

[254] Motorola's Opposition to Microsoft Corporation's Motion to Confirm Bench Trial of Breach of Contract Issues, Microsoft Corp. v. Motorola, Inc., No. C10-1823-JLR (W.D. Wash. Mar. 8, 2013).

[255] Order, Microsoft Corp. v. Motorola, Inc., No. C10-1823-JLR (W.D. Wash. Aug. 25, 2013).

[256] Findings of Fact and Conclusions of Law, Microsoft Corp. v. Motorola, Inc., No. C10-1823-JLR, 2013 U.S. Dist. LEXIS 60233 (W.D. Wash. Apr. 25, 2013). Unlike the aborted royalty determination in *Apple v. Motorola*, the *Microsoft* royalty determinations were not made in the context of a request for specific performance, but in order to help the jury assess whether or not Motorola had *breached* its FRAND commitments (i.e., the commitment to offer a reasonable royalty rate to Microsoft).

[257] Order, Microsoft Corp. v. Motorola, Inc., No. C10-1823-JLR, 2012 U.S. Dist. LEXIS 146517, at *26 (Oct. 10, 2013).

[258] Innovatio IP Ventures LLC Patent Litig., 921 F. Supp. 2d 903, 907 (N.D. Ill. 2013); *see also* Thomas F. Cotter, *Judge Holderman's RAND Ruling in In re* Innovatio IP Ventures, LLC Patent Litigation, Comparative Patent Remedies (Oct. 3, 2013), comparativepatentremedies.blogspot.com/2013/10/judge-holdermans-rand-ruling-in-in-re.html (discussing Judge Holderman's royalty determination methodology in *Innovatio* and comparing it to Judge Robart's methodology in *Microsoft v. Motorola*).

[259] Plaintiffs' Demand for Jury Trial, Ericsson, Inc. v. D-Link Corp., No. 6:10-cv-473-LED-KFG (E.D. Tex. May 6, 2013); Defendant D-Link System's Notice of Jury Demand, *Ericsson, Inc. v. D-Link*; *see also* Ericsson, Inc. v. D-Link Sys., No. 6:10-CV-473, 2013 U.S. Dist. LEXIS 110585, at *74–76 (E.D. Tex. 2014), *rev'd in part and remanded*, 2014 U.S. App. LEXIS 22778 ("There is no need for the Court to determine an appropriate RAND royalty for the infringed patents because the jury already determined a reasonable royalty for those same patents, and the jury considered Ericsson's RAND obligations when rendering its verdict . . . . Because there was

ilar jury trial occurred in *Realtek v. LSI*.[260] These cases highlight the question of who should determine the "reasonable" royalty rate when the parties cannot agree on one.

This question was anticipated by the early patent licensing decrees described in this article. Beginning with *Hartford-Empire* in 1945, the DOJ predicted, and the courts agreed, that disagreements over reasonable royalty rates would occur. But rather than remaining silent regarding the means for resolving such disputes, these early decrees uniformly provide that, if the parties disagree whether a particular royalty rate is reasonable, the court entering the decree would have final authority to answer the question.[261] While the procedures associated with reasonableness disputes became more detailed and complex as these decrees evolved, the fundamental placement of determinative authority with the court, or its designated special master, remained constant.[262]

The allocation of decision-making authority over FRAND royalty rates to the judge in *Hartford-Empire* and subsequent antitrust cases differs from the dominant presumption today that such questions of fact should be determined by the jury.[263] Even in those recent cases such as *Microsoft*, *Apple*, and *Innovatio*, in which a judge was called upon to determine a FRAND royalty rate, that was due largely to the parties' voluntary election of a bench trial over a jury determination, at least on the issue of royalty rates. As the jury verdicts in both *Ericsson* and *Realtek* indicate, parties are increasingly willing to allow juries to determine FRAND royalty rates as questions of fact.

The view of the enforcement agencies, however, may differ. The FTC, for example, in its recent settlement with Google and Motorola, prohibits the patent holders from seeking to enjoin the infringement of standards-essential patents for a defined period following an infringer's "Request for a FRAND Determination."[264] Such a request must be filed by the infringer in a federal district court and must request that the court determine the royalty terms of

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substantial evidence to support the jury's verdict, there is no need for this Court to make its own factual determination of an appropriate royalty rate.").

[260] Joint Submission Pursuant to Supplemental Case Management Order, Realtek Semiconductor Corp. v. LSI Corp., No. 5:12-cv-03451 RMW (N.D. Cal. Sept. 26, 2013).

[261] *See, e.g.*, YALE L.J., *supra* note 50, at 122–23 (¶ 13(C)(1)).

[262] Interestingly, one contemporary commentator on *Hartford-Empire* expressed skepticism over the expenditure of scarce judicial resources on the laborious process of determining royalty rates, YALE L.J., *supra* note 50, at 115–16, a concern that was echoed by the court in *Apple v. Motorola* 70 years later. *See supra* notes 252–253 and accompanying text. Ultimately, however, the commentator concluded that such judicial determinations are preferable to prolonged litigation. YALE L.J, *supra* note 50, at 115–16.

[263] *See, e.g.*, Mark A. Lemley, *Why Do Juries Decide If Patents Are Valid*?, 99 VA. L. REV. 1673, 1719 (2013) ("[J]ury trials have become the norm in patent cases on ultimate questions of validity as well as infringement and damages issues.").

[264] FTC Google Order, *supra* note 5, at 8 (¶ II.D).

the relevant FRAND license.[265] This procedure does not appear to involve a full trial or a fact determination by a jury.[266] According to the FTC, then, a judge rather than a jury may be the appropriate adjudicatory agent to determine the level of a FRAND royalty, and such a determination may be one of law rather than fact. If this is the case, then the Commission is aligned with the earlier antitrust patent decrees in *Hartford-Empire* and subsequent cases. The question remains, however, whether the FRAND determination in litigation will eventually gravitate toward judge or jury.

D. Arbitration

While nearly all remedial patent licensing decrees gave the court entering the decree authority to determine a reasonable royalty if the parties could not agree on one, two of the decrees discussed above also permitted this determination to be made through arbitration. The trial court in *Besser* ordered that royalty rates, as well as the form and content of license agreements, be determined through arbitration.[267] As discussed above, Besser challenged the court's arbitration procedure, arguing that it constituted an unlawful deprivation of property without due process of law.[268] The Supreme Court, however, affirmed the district court's use of the arbitration procedure, referring to it as "an innovation" and "entirely reasonable and fair."[269]

The court in *Manufacturers' Aircraft Association* also acknowledged arbitration as a potential means for resolving reasonable royalty disputes.[270] The MAA's internal pooling agreement permitted members to request that an arbitration panel determine the royalty to be levied on particular patents contributed to the pool.[271] In its Competitive Impact Statement, the DOJ noted that several such arbitrations were in progress at the time of the decree.[272] Given this existing course of dealing among MAA members, it is not surprising that

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[265] *Id.* at 6 (¶ I.Z).

[266] The basis on which an alleged infringer would have the ability to make such a request of a federal district court is not clear from the FTC Google Order. One wonders whether such a request could amount to a request for an advisory opinion, precisely the result that the court sought to avoid in *Apple v. Motorola. See supra* notes 252–253 and accompanying text.

[267] United States v. Besser Mfg. Co., 343 U.S. 444, 448 (1952). *See supra* Part III.E.

[268] *Besser*, 343 U.S. at 448–49. Interestingly, even though the arbitration proceeding in question resulted in the approval of the DOJ's royalty proposal, during the appeal the DOJ expressed only "faint enthusiasm" for the arbitration procedure preferring, presumably, a procedure more akin to those established in other recent cases. *Id.* at 449.

[269] *Id.* at 449.

[270] United States v. Mfrs. Aircraft Ass'n, 1976-1 Trade Cas. (CCH) ¶ 60,810, 1975 WL 405109 (S.D.N.Y. Nov. 12, 1975). *See supra* Part III.K.

[271] *See* Merges, *supra* note 190, at 1344 (noting that most patents contributed to the MAA pool were licensed on a royalty-free basis, but that certain patents of exceptional value or importance could be subjected to royalties).

[272] U.S. Dep't Justice, *supra* note 192, at 30,819.

arbitration was preserved as a means for resolving disputes once the former MAA members began to operate under the consent decree.

Unlike the judicial consent decrees entered to resolve enforcement actions brought by the DOJ, the FTC's order in *Xerox* mandated that disputes regarding the order be resolved by binding arbitration.[273] The arbitration methodology outlined in the *Xerox* order resembles that set forth in the FTC's recent consent order with Google and Motorola, in which arbitration is recognized (together with judicial determination) as a legitimate means for resolving FRAND disputes.[274] In each of these cases, unlike the trial courts hearing earlier DOJ enforcement actions, the FTC has not evidenced a willingness to place itself in the role of arbiter of FRAND licensing disputes.[275]

These affirmative statements regarding the use of arbitration to resolve reasonable royalty disputes are particularly instructive given recent interest in the use of arbitration to resolve private disputes regarding FRAND commitments.[276] That is, if the courts, the DOJ, the FTC, and private firms in these early cases viewed arbitration of reasonable royalty disputes as both legally permissible and practically desirable, this precedent should further encourage parties who are considering the use of arbitration to resolve reasonable royalty disputes.

E. ROYALTY DETERMINATIONS: METHODOLOGY

No matter which adjudicatory agent—judge, jury, or arbitrator—is allocated the responsibility of determining a FRAND royalty rate, the methodology to be used in making this determination is far from settled. The dominant analytical framework for determining "reasonable royalty" patent damages in the United States today was set out in 1970 by the District Court for the Southern District of New York in *Georgia-Pacific Corp. v. U.S. Plywood Corp*.[277] The *Georgia-Pacific* analysis requires determination of the hypothetical royalty rate that would have been negotiated by the patent holder and the

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[273] Xerox Corp., 86 F.T.C. 364, 381 (1975).

[274] FTC Google Order, *supra* note 5, at 9–10.

[275] Interestingly, though, the order in *Xerox* requires that the arbitrator "issue protective orders and/or receive evidence *in camera* in the same manner as an administrative law judge of the Federal Trade Commission," 86 F.T.C. at 381, indicating that the FTC at least wished to preserve the procedural protections afforded to the parties by an FTC tribunal.

[276] *See* Jorge L. Contreras & David L. Newman, *Developing a Framework for Arbitrating Standards-Essential Patent Disputes*, 2014 J. DISPUTE RESOL. 23 (2014); Kai-Uwe Kühn, Fiona Scott Morton & Howard Shelanski, *Standard Setting Organizations Can Help Solve the Standard Essential Patents Licensing Problem*, CPI ANTITRUST CHRON., Mar. 2013, Vol. 3, No. 1, at 4; Mark A. Lemley & Carl Shapiro, *A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents*, 28 BERKELEY TECH. L.J. 1135 (2013).

[277] 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modified and aff'd*, 446 F. 2d 295 (2d Cir. 1971), *cert. denied*, 404 U.S. 870 (1971).

infringer immediately prior to the infringement. In making this determination, the finder of fact must consider 15 different factors that could have informed this hypothetical negotiation.[278]

As discussed in Part IV.C above, Judge Robart in *Microsoft v. Motorola* undertook a detailed analysis of the standards-essential patents asserted by Motorola to compute the applicable FRAND royalty rates.[279] In doing so, he used a modified version of the *Georgia-Pacific* analysis. He took into consideration the royalty rates charged by private firms and patent pools for patents essential to the same standards, assessed the importance of Motorola's patents to the standards in question, and the importance of the standards to the infringing products, and accounted for the total number of patents being asserted in comparison to the total number of patents covering each standard.[280] Judge Holderman in *Innovatio* adopted a slightly different approach, but still followed the basic contours of *Georgia-Pacific*.[281] Even the jury instructions in *Ericsson* and *Realtek* directed jurors to consider the *Georgia-Pacific* factors when determining the relevant FRAND rates.[282]

Interestingly, *Hartford-Empire* and most of the other cases in which antitrust patent decrees were issued were decided before *Georgia-Pacific*, and thus were not constrained by the analytical structure of that case. Judges determining reasonable royalties under these decrees would have had the benefit of contemporary case law to guide them. Much of the early 20th century case law on reasonable royalty patent damages depended from the Supreme Court's 1915 decision in *Dowagiac Manufacturing Co. v. Minnesota Moline Plow Co*.[283] In *Dowagiac*, the Court held that a "reasonable" patent royalty should be based on "the nature of the invention, its utility and advantages, and the extent of the use involved."[284] The focus is thus on the intrinsic value of the patented invention, rather than a hypothetical negotiation between the patent holder and the infringer.

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[278] *Id.*

[279] A comprehensive discussion of the complex damages analysis undertaken by the district court in *Microsoft v. Motorola* is beyond the scope of this article. Judge Robart's methodology has been extensively analyzed in the literature. *See, e.g.*, Thomas F. Cotter, *The Comparative Law and Economics of Standard-Essential Patents and FRAND Royalties*, 22 TEX. INTELL. PROP. L.J. 311 (2014); Sidak, *supra* note 7; Jorge L. Contreras, *So That's What RAND Means? A Brief Report on the Findings of Fact and Conclusions of Law in Microsoft v. Motorola*, PATENTLY-O (Apr. 27, 2013), patentlyo.com/patent/2013/04/so-thats-what-rand-means-a-brief-report-on-the-findings-of-fact-and-conclusions-of-law-in-microsoft-v-motorola.html.

[280] Microsoft Corp. v. Motorola, Inc., Findings of Fact and Conclusions of Law, 2013 U.S. Dist. LEXIS 60233 (W.D. Wash. Apr. 25, 2013).

[281] *See supra* note 258 and accompanying text.

[282] *See supra* notes 259–260, and accompanying text.

[283] 235 U.S. 641 (1915).

[284] *Id.* at 648.

Against this backdrop, it is informative to consider the analysis undertaken by courts determining "reasonable royalties" under the antitrust patent decrees of the 20th century. In *Hartford-Empire*, the decree first establishes that the reasonable royalty will be a percentage of the aggregate sale price of the relevant glass container manufacturing machine.[285] It then states that the level of the royalty must be adequate to "permit continuous competition" between the patent holder and the licensee in the market for such machines.[286] In other words, the royalty cannot be so high that the licensee will be unable to compete effectively with the patent holder. On the other hand, the decree reaffirms that the patent holder "is entitled to receive reasonable compensation for the use of its inventions."[287] Whereas the prior clause acted as a ceiling on the royalty level, this provision acts like something of a floor, ensuring that the patent holder will always receive a minimum "reasonable" level of compensation. Between these two points, the court had to decide where to place the reasonable royalty, guided by the patent holders' previous licenses in the industry.

One of the most striking differences between the *Hartford-Empire* and *Georgia-Pacific* analytical frameworks is the goals they seek to achieve. With its hypothetical negotiation framework, *Georgia-Pacific* seeks to predict, to the greatest extent possible, the outcome of a private, bilateral negotiation between two firms.[288] The analysis, and the result, are indifferent to the broader market effects of the determination. The *Hartford-Empire* approach, on the other hand, expressly seeks to foster competition in the marketplace. Though the Court acknowledges the need to appropriately reward the patent holder, it places a premium on the restoration of competition in a market that had been distorted through the patent holder's malfeasance. Given that *Hartford-Empire* and the other antitrust patent cases were brought in response to perceived injuries to competition caused by improper and collusive patent arrangements, this emphasis is not surprising. Nevertheless, the restoration of

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[285] YALE L.J., *supra* note 50, at 122 (¶ 13(C)(1)). While royalties based on a percentage of sales price are today customary, they were not generally accepted in the early twentieth century. In *Hartford-Empire*, the DOJ offered five different measures on which to base a reasonable royalty: (1) a percentage of the sales price (the measure used by the court), (2) the minimum annual royalties charged by Hartford for the lease of its machines, (3) the difference between the sales price of machines sold in the foreign market and cost of production, (4) the average use royalties for a period of three years, and (5) the average use royalties for a period ranging from three to ten years depending on the share of the market then enjoyed by Hartford for the particular type of machine. *Id*. at 94 & n.45.

[286] *Id.* at 122–23 (¶ 13(C)(1)).

[287] *Id*. at 123.

[288] In other work, the author has criticized the *Georgia-Pacific* framework and has urged the return to a damages approach based on the incremental value of alternative technologies at the time of selection, an approach that finds support in standards-based cases such as *Microsoft v. Motorola*. Jorge L. Contreras & Richard J. Gilbert, *A Unified Framework for RAND and Other Reasonable Royalties*, __ BERKELEY TECH. L.J. __ (forthcoming 2015).

competition is not necessarily a factor that is or should be considered in ordinary patent damages determinations. Thus, while some of the analytical steps followed by the DOJ and courts in the antitrust enforcement cases following *Hartford-Empire* may be informative to courts and litigants grappling with the determination of FRAND royalties, it is not clear that these considerations should control.

F. Burden of Proof

Which party bears the burden to prove that a patent royalty is or is not reasonable: the patent holder who proposed the royalty or the potential licensee who believes it is unreasonable? This question was not addressed in the early antitrust enforcement decrees of the 1940s, but in 1950 the parties agreed in *Textile Machine Works* that the burden would rest with the patent holder to prove its case "by a fair preponderance of evidence . . . ."[289] The same provision subsequently became part of the DOJ's standard form of patent licensing order and found its way into most later remedial licensing decrees.[290]

The question of which party has the burden of proving the reasonableness of a particular royalty level is critically important in FRAND disputes.[291] In *Microsoft v. Motorola*,[292] in which Microsoft brought suit alleging that Motorola breached a contractual obligation to honor its FRAND commitments to two SDOs,[293] Microsoft, as the plaintiff, bore the burden of proving its breach of contract case.[294] Consequently, Microsoft, the potential licensee, bore the burden of proving that Motorola's, the patent holder's, royalty offer was *not* reasonable and therefore in violation of Motorola's FRAND commitments.

In a slightly different context, the district court in *Innovatio* placed the burden of proving the elements of a potential licensee's "RAND defense" on the

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289 United States v. Textile Machine Works, No. 43-671, 1950 U.S. Dist. LEXIS 1909, at *12 (S.D.N.Y. 1950). *See supra* Part III.C.

290 *See, e.g.*, United States v. Mfrs. Aircraft Ass'n, No. 72 Civ. 1307:MEL, 1975 WL 814, at *4 (S.D.N.Y. Nov. 12, 1975). *But see* United States v. Western Elec. Corp., 1956 U.S. Dist. LEXIS 4076, at *12–13 (D.N.J. Jan. 24, 1956) (stating that *each* party bears the burden of proving the reasonableness of its requested royalty rate).

291 *See* Daryl Lim, *Standard Essential Patents, Trolls and the Smartphone Wars: Triangulating the End Game*, 119 Penn. St. L. Rev. 1, 35–37 (2014); Crane, *supra* note 223, at 392 ("The party who created the uncertainty should bear the burden of proving the hard-to-prove fact.").

292 Findings of Fact and Conclusions of Law, Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 U.S. Dist. LEXIS 60233 (W.D. Wash. Apr. 25, 2013).

293 The contractual nature of Motorola's FRAND commitments was stipulated by the parties. *Id.* Nevertheless, questions remain regarding the suitability of common law contract doctrine as a framework for enforcing FRAND commitments. *See* Contreras, *Market Reliance*, *supra* note 29.

294 *See* Microsoft Corp. v. Motorola, Inc., Joint Statement of Disputed Jury Instructions Pursuant to LR 51, Case No. C10-1823-JLR at *72–76 (W.D. Wash. Aug. 26, 2013).

potential licensee.[295] It reasoned that "the accused infringers should bear the burden of demonstrating the existence of a RAND obligation that limits their damages if they are found to infringe."[296] As such, the potential licensee must prove that particular patents asserted by the patent holder are, in fact, essential to a standard as to which the patent holder has a FRAND obligation.

Courts and parties considering this critical issue today should bear in mind the long history of placing the burden of proof of reasonableness on the patent holder, as established by courts, the DOJ, and private firms over the course of more than 25 years of patent licensing decrees.[297] As recognized by these authorities, the patent holder possesses the greatest degree of knowledge regarding the value of its patents, and is thus in the best position to establish a reasonable royalty rate.

G. Royalty-Free Licensing

As discussed above, the Supreme Court in *Hartford-Empire* held that requiring Hartford and other patent holders to grant royalty-free licenses was both unnecessary to restore competition and unduly punitive, if not outright confiscatory.[298] For these reasons, the original *Hartford-Empire* decree was amended to permit the patent holders to charge uniform reasonable royalties, beginning three decades of reasonable royalty decrees in antitrust enforcement actions.[299] The Court's refusal to compel royalty-free licensing has been affirmed in several subsequent cases, including *U.S. Gypsum*.[300] Nevertheless, the issue of royalty-free licensing has re-emerged repeatedly over the years.

The wartime consent decrees in *Alcoa* and *American Bosch* required royalty-free licensing of some patents until the end of World War II,[301] and the consent decrees in *Textile Machine Works*[302] and *AT&T*[303] required royalty-free licensing of a subset of the defendants' patents or licensees. More re-

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[295] Memorandum & Order, *In re* Innovatio IP Ventures, LLC Patent Litigation, 956 F. Supp. 2d 925, 931 (N.D. Ill. July 26, 2013).

[296] *Id.*

[297] Burden of proof questions in patent cases have recently attracted the attention of the Supreme Court. *See* Medtronic, Inc. v. Mirowski Family Ventures, LLC, 134 S. Ct. 843 (2014) (addressing the question of which party bears the burden of proving infringement in a patent declaratory judgment action).

[298] Hartford-Empire Co. v. United States, 323 U.S. 386, 414–15 (1945) ("[I]f, as we must assume on this record, a defendant owns valid patents, it is difficult to say that, however much in the past such defendant has abused the rights thereby conferred, it must now dedicate them to the public."). *See* Gilbert, *supra* note 77, ¶ 43.

[299] Hartford-Empire Co v. United States, 324 U.S. 570, 574 (1945).

[300] *See supra* Part III.D.

[301] *See supra* Part II.B.

[302] *See supra* Part III.C.

[303] United States v. Western Elec. Corp., No. 17-49, 1956 U.S. Dist. LEXIS 4076, at *10 (D.N.J. Jan. 24, 1956).

cently, the 1974 consent decree in *Glaxo* required royalty-free licensing of a particular patent following the DOJ's initiation of invalidation proceedings against that patent,[304] and the FTC's consent order in *Xerox* permitted licensees to obtain licenses to three selected Xerox patents on a royalty-free basis.[305] Of course, a consent decree is merely a private settlement that is recognized by a court, rather than a judicially crafted remedy. Courts have proven willing to permit parties to agree to terms in consent decrees that may go beyond the remedies that a court could award on its own.[306] In this sense, royalty-free patent licensing commitments contained in consent decrees are akin to voluntary commitments to license on a royalty-free basis, both of which are entered willingly by the patent holder, rather than imposed by the court.[307]

This being said, the prospect of royalty-free licensing has also been raised in the context of contested decrees. In *National Lead*, the Supreme Court suggested that, while per se imposition of royalty-free licensing on all of a defendant's patents could be viewed as inequitable (and likely inconsistent with *Hartford-Empire*), it is possible that, after proper analysis, the most appropriate "uniform, reasonable" royalty rate for *some* patents might be nominal, or even zero.[308] Though the Court did not explain the circumstances under which the most "reasonable" royalty for a particular patent might be zero, possible examples might include instances in which the patent is of extremely limited value, or in which the patent holder's prior enforcement of the patent resulted in market harm that can only be corrected through royalty-free licensing.

The latter rationale was adopted by the Court in *General Electric II*, in which GE's patents on lamps and lamp parts were ordered to be "dedicate[d] to the public" and licensed on a royalty-free basis, while its patents on lamp machinery could be licensed at reasonable royalty rates.[309] In justifying its order of royalty-free licensing, the Court cited GE's long history of abusive patent litigation and licensing tactics.[310] It concluded that "royalty free licensing of patents on lamps and lamp parts is an essential remedy as a preventive against a continuance of monopoly in this industry."[311]

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[304] United States v. Glaxo Grp. Ltd., 1974-1 Trade Cas. (CCH) ¶ 75,000, 1974 WL 862 (D.D.C. May 10, 1974).

[305] Xerox Corp., 86 F.T.C. 364, 374 (1975).

[306] *See* Isenbergh & Rubin, *supra* note 39, at 387–88.

[307] Though, in the case of remedial consent decrees, the persuasive effect of a potential DOJ enforcement action is not to be underestimated.

[308] United States v. Nat'l Lead Co., 332 U.S. 319, 349 (1947).

[309] United States v. Gen. Elec. Co., 115 F. Supp. 835, 843, 846, 849 (D.N.J. 1953).

[310] *Id.* at 844.

[311] *Id.* In addition to objecting to the lack of compensation associated with their lamp parts patents, the defendants objected to the court's formulation of the order as a "dedication" of the patents to the public, rather than a royalty-free license. The court considered, and rejected, these

It is not surprising that royalty-free licensing might be condoned by the courts when utilized to restore a market to competitive conditions. Yet this rationale is not particularly relevant to FRAND commitments voluntarily made by patent holders and not imposed to remedy anticompetitive conduct. Far more relevant is the other rationale for royalty-free licensing suggested by the Court's dicta in *National Lead*: that the *value* of the licensed patents may be so low as to warrant only nominal or zero royalties. The Court's intuition here presages by more than 60 years the reasoning of courts that have recently calculated "reasonable" royalty rates for standards-essential patents. Almost uniformly, these royalty rates have been much lower than initially requested by the patent holder. For example, in *Microsoft v. Motorola*, the court determined that Motorola's patents were only of "minor importance" and made "very little contribution" to the relevant standards and products.[312] Accordingly, the reasonable royalty rate established by the court for these patents was only a tiny fraction (less than one half of one percent) of the royalty originally demanded by Motorola.[313] The court-determined reasonable royalty in the *Innovatio* case was likewise very small.[314]

So, while the few cases assessing reasonable royalty rates in FRAND cases to-date have not assessed royalties of zero or imposed explicit royalty-free licensing, the very low rates established by these courts come close.[315] As further cases are tried involving patents of marginal value, parties and courts should recall the Supreme Court's support for royalty-free licensing under *National Lead*.

H. LICENSEE'S REFUSAL TO ACCEPT

In the current debate over FRAND commitments, a significant question exists regarding the permissible actions of a patent holder after a potential licensee refuses a license on the terms offered by the patent holder. Such a

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objections (*id.* at 844–46), yet at times discussed the order as though it had, in fact, required royalty-free licensing.

312 Findings of Fact and Conclusions of Law, Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 U.S. Dist. LEXIS 60233, at *134, *138, *177–78, *183 (W.D. Wash. Apr. 25, 2013).

313 *See, e.g.*, Joe Mullin, *Court Shreds Power of Motorola's Standard-Based Patents*, ARS TECHNICA (Apr. 26, 2013), arstechnica.com/tech-policy/2013/04/court-shreds-power-of-motorolas-standard-based-patents/ (noting the discrepancy between Motorola's original royalty demand of $4 billion/year versus the court's "reasonable" royalty of $1. 8 million/year).

314 *In re* Innovatio IP Ventures LLC Patent Litig., U.S. Dist. LEXIS 144061, at *180–83 (N.D. Ill. Oct. 3, 2013) (determining reasonable royalty of $0.0956 per device, approximately one percent of the amount sought by the patent holder).

315 *Cf.* Oskar Liivak, When Nominal Is Reasonable: Damages for the Unpracticed Patent (Sept. 9, 2014) (unpublished manuscript), *available at* papers.ssrn.com/sol3/papers.cfm?abstract_id=2488690 (arguing that nominal damages may be an appropriate and reasonable remedy for the infringement of certain unpracticed patents).

refusal may occur for various reasons, including the potential licensee's belief that the license offer was unreasonable, or that it does not infringe the relevant patents, or the potential licensee's bad faith. This situation has been termed "hold-out" or "reverse hold-up," and is often offered as a counterweight to arguments that patent holders may use their patents in bad faith to hold-up standards implementers. When facing hold-out, the most important question facing patent holders is whether, following the potential licensee's refusal to accept a license on the terms proffered, the patent holder is permitted, without violating its FRAND commitment, to sue the potential licensee for patent infringement and potentially seek injunctive relief to prevent further infringement. This question has been addressed extensively in the literature, both by commentators and enforcement agencies.[316]

As early as *Hartford-Empire*, the Supreme Court recognized the possibility that a potential licensee might refuse to accept the terms offered by a patent holder, even if those terms were manifestly reasonable. Should this occur, Justice Roberts, writing for the Court, made it clear that the patent holder retains its right to bring an action for infringement against the refusing party.[317]

Just a few years later, Dr. Reinhold Rudenberg faced this situation when he offered to license his electron microscopy patents to RCA at the court-sanctioned 5 percent royalty rate and RCA refused to accept the license. The district court in *Rudenberg* acknowledged that a patent holder cannot forever be bound to offer licenses to unwilling parties.[318] Accordingly, the court amended the parties' consent decree, over the DOJ's objection, to allow rescission of an offeree's right to obtain a license if the offeree either (a) failed to apply to the court for a reasonable royalty determination within 120 days after receipt of the patent holder's initial offer, or (b) failed to accept a license after the court has made its royalty determination.[319]

It would seem that the reasoning of the courts in the decades-old *Hartford-Empire* and *Rudenberg* decisions is relevant to the current debate over the treatment of unwilling licensees. In fact, similar analyses have already been

[316] *See, e.g.*, DOJ/PTO Policy Statement, *supra* note 3; Colleen Chien et al., *RAND Patents and Exclusion Orders: Submission of 19 Economics and Law Professors to the International Trade Commission* (Santa Clara Univ. Legal Studs. Res. Paper No. 07-12, 2012), *available at* papers.ssrn.com/sol3/papers.cfm?abstract_id=2102865; Brian T. Yeh, Cong. Research Serv., 7-5700, Availability of Injunctive Relief for Standard-Essential Patent Holders (2012); Third Party United States Fed. Trade Comm'n's Statement on the Public Interest, *In re* Certain Wireless Communication Devices, Portable Music and Data Processing Devices, Computers and Components Thereof, U.S. Int'l Trade Comm'n, Inv. No. 337-TA-745 (Jun. 6, 2012).

[317] Hartford-Empire Co. v. United States, 323 U.S. 386, 419 (1945). *See supra* note 83 and accompanying text.

[318] Rudenberg v. Clark, 81 F. Supp. 42, 45 (D. Mass. 1948).

[319] *Id.*

adopted, for example, by the Federal Trade Commission in its recent settlement with Google and Motorola. In the 2013 consent decree embodying that settlement, the FTC expressly authorizes the patent holders to seek injunctive relief against potential licensees who have either stated that they will not license a patent on any terms, or refuse to enter into a license agreement on terms that have been set in the final ruling of a court or arbitrator.[320] This position is in accordance with the views of numerous commentators and agency officials,[321] yet the precise boundaries of what will ultimately be viewed by the courts to constitute an "unwilling" licensee remain to be seen. Thus, the reasoning offered by the courts in these early patent licensing decrees can help to define and guide today's courts when these consider these issues anew.

I. PRECLUSIVE EFFECT

The 1951 decree in *U.S. Gypsum* established for the first time that a reasonable royalty determination by the court will apply to all subsequent licenses of the same patents.[322] The rule giving preclusive effect to reasonable royalty determinations has since been applied in most of the patent licensing decrees that followed *U.S. Gypsum* (e.g., *General Electric* (1953), *Scott Paper* (1969), *Glaxo* (1974), and *Manufacturers' Aircraft Association* (1975)). This rule has intuitive appeal, as one would like to think that the "reasonable" value of a patent, once determined, should not vary over time. The rule is also sensible from a judicial economy standpoint, given that the effort required to calculate a reasonable royalty rate is significant and the marginal benefit of undertaking this work multiple times is questionable. Finally, providing that all licenses be based on a single reasonable royalty computation supports the non-discrimination prong of these patent license decrees.

Today, a new debate is under way regarding the preclusive effect of FRAND royalty determinations. In large part, the issues are similar to those that arose in *U.S. Gypsum* and subsequent cases: when will a court's or arbitrator's determination of a reasonable royalty be applied to other disputes involving different parties? Yet questions have been raised concerning the appropriateness, not to mention the procedural propriety, of applying a royalty rate determined in a particular matter (e.g., an infringement suit between a patent holder and an accused infringer) to a different matter that involves different parties (or, at least, different defendants), and which may be before a different court and possibly even in a different country. Though commentators

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320 FTC Google Order, *supra* note 5, at 8.

321 *See* sources cited *supra* note 316.

322 *See supra* Part II.D.

have begun to wrestle with these issues,[323] the question has not yet come squarely before any court. When it does, however, courts should not ignore the long history of granting preclusive effect to reasonable royalty determinations in patent licensing decrees and the efficiencies to be gained thereby.

J. Reciprocity

The practice of granting patent licenses only to licensees who, in turn, license their own patents to the patent holder (i.e., "reciprocal" licensing) is an old one, and was in widespread use by the time that the first patent licensing decrees were entered in the 1940s. The large patent holders subject to these decrees were, not surprisingly, concerned that they would be required to grant licenses on reasonable and nondiscriminatory terms to equally large competitors who were themselves under no obligation to grant any rights to the party subject to the decree. The competitive disadvantage that might arise from this asymmetric licensing structure probably worried these parties more than the requirement that they license their competitors at reasonable royalty rates. As a result, provisions regarding license reciprocity, and whether a patent holder could require it of prospective licensees, made their appearance in the very first patent licensing decrees.

Thus, in the wartime *Alcoa* consent decree, the defendant was relieved of its obligation to grant licenses on royalty-free terms if the licensee did not grant it a "similar right."[324] The consent decree in *American Bosch* went further, and relieved the defendant of its obligation to grant any license to an applicant unless the applicant granted American Bosch a reciprocal license.[325] The court in *Hartford-Empire*, however, was less sympathetic to the patent holders' desire for reciprocal licenses, and prohibited the defendants from conditioning the grant of a license on their receipt of a reciprocal license from the licensee.[326]

A similar prohibition on the patent holder's right to demand reciprocal licenses can be found in the *General Electric* decree, as it applies to GE's patents on lamp machinery. While the decree permitted GE to demand reciprocal licenses from licensees of its future patents,[327] the court denied GE's request to demand reciprocal licenses from licensees of its lamp machinery patents.[328] GE argued that "absent such a provision other members of the in-

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[323] *See, e.g.*, Contreras & Newman, *supra* note 276, at III.F.

[324] United States v. Aluminum Co. of Am. (*Alcoa*), 1940–1943 Trade Cas. (CCH) ¶ 56,200, 1942 WL 82576, § V (S.D.N.Y. Apr. 15, 1942).

[325] United States v. Am. Bosch Corp., 1940–1943 Trade Cas. (CCH) ¶ 56,253, 1942 WL 82620, § IV(A)(3) (S.D.N.Y. Dec. 29, 1942).

[326] Yale L.J., *supra* note 50, at 123 (Final Judgment ¶13(F)).

[327] United States v. General Elec. Co., 115 F. Supp. 835, 848 (§ V.C(2)) (D.N.J. 1953).

[328] *Id.* at 847.

dustry would be able to develop while blocking [GE's own] development."[329] The court disagreed, reasoning that GE's ability to insist on reciprocal licenses would "tend to perpetuate the situation of industry dominance by [GE]," and that the decree was intended, rather, to "dissipate the effect of the great advantage which accrued" to GE by virtue of its illegal arrangement.[330] Accordingly, the court held that "it is advisable to require the defendants to license whatever machinery patents they have without possessing the correlative right to demand licenses in return."[331]

The Supreme Court in *National Lead*, however, departed from *Hartford-Empire* in its treatment of reciprocity clauses. Specifically, the Court affirmed a decree expressly permitting the defendants to condition their reasonable and uniform licenses on the receipt of reciprocal patent licenses from their licensees.[332] And in *Manufacturers' Aircraft Association*, the court took a middle road, permitting the defendants to apply to the court to demand reciprocal licensing on a case by case basis, with such application to be granted by the court only if "equitable or in the public interest."[333]

Today, reciprocity requirements are frequently included in FRAND licenses.[334] Yet questions linger regarding whether reciprocity is an inherently "reasonable" provision that may be included in all FRAND licenses and, if so, whether there are any limits on its scope. The analysis and conclusions of the courts that have considered the question of reciprocity over the years demonstrate that there is no clear-cut answer to this question. Enough courts have questioned the reasonableness of reciprocity provisions in patent licensing commitments to shed at least some doubt on its inherent reasonableness and its automatic inclusion in FRAND licenses. Nevertheless, in instances in which reciprocity was clearly expected and bargained-for by the parties, it is possible that courts relying on this line of cases would find that reciprocity requirements are not inherently anticompetitive either.

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[329] *Id.* GE's concern seems to have stemmed from a concern regarding the future intentions of its former co-conspirators, Westinghouse and Corning.

[330] *Id.*

[331] *Id.*

[332] United States v. Nat'l Lead Co., 63 F. Supp. 513, 534 (S.D.N.Y. 1945), *aff'd*, 332 U.S. 319 (1947).

[333] United States v. Mfrs. Aircraft Assn., 1976-1 Trade Cas. (CCH) ¶ 60,810 § VI, 1975 WL 405109 (S.D.N.Y. Nov. 12, 1975).

[334] *See, e.g.*, FTC Google Order, *supra* note 5, at 10 (authorizing reciprocity requirement in FRAND license); ABA PATENT POLICY MANUAL, *supra* note 12, at 61–62 (describing typical reciprocity provisions included in FRAND patent licenses); Bekkers & Updegrove, *supra* note 14, at 82–83 (describing reciprocity provisions authorized in several SDO policies).

K. Auditing of Compliance

Most of the patent licensing decrees discussed in this article grant the Attorney General the right to access the books and records of the defendants to verify their compliance with the terms of the decree (i.e., their granting of patent licenses to all applicants on reasonable and non-discriminatory terms). Such an audit right is customary and reasonable in a settlement of litigation, and seldom seems to have attracted much discussion or debate in the negotiation and litigation of the relevant decrees.[335]

This regulatory audit right also offers an answer to a question that has troubled recent commentators on FRAND licensing: namely, how can one ensure that a patent holder is treating all licensees on a "uniform" or "nondiscriminatory" basis when the subject license agreements are all treated as confidential by the parties?[336] That is, how can a licensee assure itself that the royalty rates and other terms being offered by a patent holder are the same as, or at least similar to, those being offered to other similarly situated licensees, when the licenses between the patent holder and its other licensees are all confidential? Permitting a neutral third party, such as a government agency,[337] to inspect such agreements on a confidential basis could provide an effective means for policing patent holder non-discrimination covenants, without disclosing sensitive commercial information to competitors.

L. Public Notifications

As noted in Part IV.K above, most of the patent licensing decrees discussed in this article gave the Attorney General the right to inspect the patent holders' books and records to verify compliance with the terms of the decree. The effectiveness of this approach depends on the vigilance of the Attorney General, and requires a legal process (a demand for audit) to implement. Richard Posner, for one, has been critical of such "regulatory" decrees that require ongoing management and monitoring by the court or DOJ.[338]

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[335] I draw this conclusion from the fact that the language of this particular clause in each such decree is virtually identical to that of the others.

[336] *See, e.g.*, Gilbert, *supra* note 7, at 873–77 (identifying the verification of "non-discrimination" as a particular challenge in FRAND licensing); Contreras & Newman, *supra* note 276, at 39–41 (discussing issues raised by a lack of publicly accessible information about FRAND licenses that have been granted).

[337] Of course, in the patent licensing decrees discussed in this article, the DOJ was not a neutral third party but the plaintiff bringing charges in the cases. The situation is different in the context of FRAND commitments that are not made in a litigation context.

[338] Posner, *supra* note 8, at 386 ("[S]uch decrees implicitly grant the courts and the Department broad and lasting discretion over business decisions that may be only remotely related to the original purposes of the antitrust suit.").

An alternative to regulatory oversight of patent licensing practices is to require that patent holders release sufficient information to the public to enable potential licensees to determine for themselves whether the terms offered to them are reasonable and non-discriminatory. Such an approach would both reduce agency administrative and oversight costs and would place the responsibility for monitoring non-discriminatory treatment in the hands of the parties with the greatest incentive to do so (i.e., potential patent licensees who would benefit from not being discriminated against).

This approach was adopted in *Rudenberg*, which required Dr. Rudenberg to file each license granted under the decree with the United States Patent Office within a reasonable period after its execution.[339] Such a recording obligation, which would make the terms of licenses granted by him known to other potential licensees, would enable them to guard against discriminatory treatment. Despite the potential benefits of this approach, public recording obligations were not widely imposed in remedial patent licensing decrees,[340] nor do any licenses appear to have been recorded by Dr. Rudenberg himself.[341]

Nevertheless, proposals for the public recording of patent ownership, licenses, and licensing commitments have recently gained renewed attention.[342] The precedent laid in *Rudenberg* may be valuable when considering the benefits and drawbacks of such an approach. In other work, I have recommended the creation of a state-sponsored and maintained registry of patent-related commitments (patent "pledges") that would achieve many of these benefits and improve the enforceability and usefulness of such commitments.[343]

M. BINDING TRANSFEREES

One of the only issues upon which there is fairly broad consensus in the area of FRAND commitments is that such commitments should not disappear simply because a patent is sold or otherwise transferred to a new owner. This issue is particularly relevant today, given the number of significant patent

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[339] Rudenberg v. Clark, 81 F. Supp. 42, 44 (D. Mass. 1948).

[340] It is likely that such public disclosure obligations would have been vigorously opposed by the industrial firms that were the subjects of most of the other patent licensing decrees resulting from DOJ antitrust enforcement actions. Dr. Rudenberg, an individual inventor, was an atypical subject of such a decree, and was probably less concerned about the disclosure of royalty rates than the corporate patent holders who were parties to most other decrees.

[341] *See supra* note 108 (conclusion based on review of PTO records and inquiries to PTO staff).

[342] *Cf.* NAS REPORT, *supra* note 7, at 90–91 and 94 (recommending that patent transfer and ownership information be recorded at the U.S. Patent and Trademark Office).

[343] *See* Jorge L. Contreras, *Patent Pledges*, ARIZ. ST. L.J. (forthcoming 2016).

transfers that have occurred recently.[344] Many of these transferred patents were, at one time, subject to FRAND commitments made by their owners.[345] Commentators have proposed a variety of legal theories under which the acquirors of patents could be bound by prior owners' FRAND commitments.[346] One approach recently favored by the FTC involves the potential imposition of liability under Section 5 of the Federal Trade Commission Act if the acquiror knowingly fails to honor a prior owner's FRAND commitment.[347] In addition, some have suggested that SDOs are best-equipped to ensure that patent commitments travel with patents by imposing policy-based requirements on participants who transfer patents after commitments have been made.[348]

The issue is, of course, not a new one. Forty years ago, the decree in *Glaxo* prohibited Glaxo from selling or transferring any patent unless the transferee filed with the court an undertaking to be bound by the provisions of the decree.[349] Such an undertaking filed with a court would likely have greater enforceability than a private agreement between the original patent owner and the transferee, and far greater enforceability than a policy document promulgated by a standards body. It is also likely that such an undertaking would offer greater certainty of enforcement than a case brought by the FTC under

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[344] *See, e.g.*, *Top 10 Patent Sales of 2012*, IDEABUYER.COM (Feb. 20, 2013), www.ideabuyer.com/news/top-10-patent-sales-of-2012/ (listing 2012 patent sales totaling $20 billion and encompassing thousands of patents).

[345] One notable example is that of Nortel Networks, a significant contributor to telecommunications and computer networking standards, which entered bankruptcy in 2011. In the bankruptcy proceeding, Nortel proposed the sale of numerous assets, including approximately 4,000 patents, on a "free and clear" basis. Several product vendors, together with IEEE, raised concerns that the "free and clear" sale could erase numerous licensing commitments previously made by Nortel. Ultimately, the purchaser of the patents, a consortium including several large product vendors, agreed to abide by Nortel's prior licensing pledges. Nortel Networks, Order Authorizing and Approving (A) The Sale of Certain Patent and Related Assets Free and Clear of All Claims and Interests, (B) The Assumption and Assignment of Certain Executory Contracts, (C) The Rejection of Certain Patent Licenses and (D) The License Non-Assignment and Non-Renewal Protections, No. 09-10138 (KG) (Del. Bankr. July 11, 2011). Nevertheless, the purchaser, an entity known as Rockstar, has begun to assert the Nortel patents in a manner that some defendants allege is in violation of Nortel's original commitments. Complaint, Charter Comm's Inc. v. Rockstar Consortium US LLC, No. 1:14-cv-00055 (D. Del. Jan. 17, 2014).

[346] *See* Contreras, *Market Reliance*, *supra* note 29 (summarizing contractual, antitrust and equitable theories).

[347] *See* Decision & Order, Negotiated Data Solutions LLC, FTC File No. 051-0094 (2008).

[348] *See* NAS REPORT, *supra* note 7, at 88–94 (discussing SDO strategies for making FRAND commitments binding on subsequent purchasers of patents); ABA PATENT POLICY MANUAL, *supra* note 12, at 84 (describing SDO policy language regarding transfers); Bekkers & Updegrove, *supra* note 14, at 92 (five of ten SDOs studied impose requirements on transferees of patents).

[349] United States v. Glaxo Grp. Ltd., No. 558-68, 1974 WL 828, at *3 (D.D.C. 1974) ("Glaxo is enjoined from making any sale or other disposition of any patent, right or license . . . unless the purchaser transferee, or assignee shall file with this Court, prior to the consummation of said transaction, an undertaking to be bound by its provision.").

Section 5 of the FTC Act, which depends on a variety of factors. Thus, parties considering means for ensuring the greatest enforceability of patent licensing commitments on downstream purchasers of patents may wish to consider the public filing approach adopted in *Glaxo*.

V. CONCLUSION

Though much has been written about FRAND commitments in standards-setting, insufficient attention has been paid to the series of remedial patent licensing decrees that were issued by federal courts from the 1940s through 1970s. These early decrees shed light on questions only now re-emerging as pertinent to FRAND commitments: the degree to which courts should intervene in the determination of reasonable royalty rates, the use of arbitration as a means for resolving licensing disputes, the methodology for determining reasonable royalty rates, the extent to which royalty-free licensing may be "reasonable," the effects of a potential licensee's refusal to accept a patent holder's license offer, the acceptability of a patent holder's demand for reciprocal licenses from its licensees, the meaning of the non-discrimination prong of the FRAND commitment, and means for ensuring that such commitments survive the transfer of underlying patents. Despite the outward differences between patent licensing commitments imposed by judicial decree and those agreed by parties collaborating to develop standards, their similarities, and the analysis offered by courts, enforcement agencies and private firms over the years, provides valuable insight to the interpretation of FRAND commitments today.

APPENDIX A

SELECTED TEXT OF ANTITRUST PATENT LICENSING ORDERS

1. *Alcoa* (1942)

From consent decree entered by the district court:[350]

[“*Present Emergency*”]
(C) The words “present emergency” mean the existing state of war between the United States and Germany, Italy and Japan, and the emergency shall be considered to have ended six months after the cessation of hostilities between the United States and each and all of said nations pursuant to an armistice or unconditional surrender previously signed or made.

[*Free Licensing of “Fabrication Patents”*]
V.
Each of the corporate defendants and its affiliates shall, upon the written request of any applicant, grant to such applicant, including any of the other defendants herein, a non-exclusive, non-assignable right to use, manufacture and sell within the United States under any and all “fabrication patents” where the patent or application there for was owned by it on the date of the entry of this decree, without any restrictions or conditions whatsoever, except such suitable restrictions as may be necessary pursuant to U.S.C. Title 35, Para. 49, 44 Stat. 1058, and without payment of any royalty or other compensation; *provided* that no such defendant or any of its affiliates shall be required to grant any such right, other than with reasonable royalty as hereinafter provided; to any applicant or any affiliate of such applicant who shall refuse to grant said defendant and its affiliates a similar right, without payment of royalty or other compensation, to use, manufacture, and sell under all “fabrication patents” where the patent or application there for was owned on the date of the entry of this decree by such applicant or any affiliate of such applicant or under which such applicant or affiliate had the right to grant sub-licenses on the date, of the entry of this decree, and in case of such refusal, such defendants or its affiliate shall grant such license but in stich case shall be entitled to charge a reasonable royalty in connection with any such grant to such applicant. In case of any controversy between any defendant or affiliate of any defendant and any applicant for a right to use, manufacture and sell under any patent arising out of the terms of this paragraph, the refusal of the defendant or its affiliate to grant such right shall not be deemed a violation of this decree

[350] United States v. Aluminum Co. of Am. (*Alcoa*), 1940–1943 Trade Cas. (CCH) ¶ 56,200, 1942 WL 82576 (S.D.N.Y. Apr. 15, 1942).

punishable by contempt, unless this Court, upon an order to show cause issued upon the petition either of the applicant refused such right or upon the petition of the United States of America, shall finally determine that such refusal was not justified under the provisions of this paragraph of the decree and the defendant or affiliate refusing to grant such right shall thereafter fail to comply with the direction of this Court.

[*Free Licensing of "Production Patents"*]

(a) Each of the corporate defendants and its affiliates shall, upon the written request of any applicant, grant to such applicant, including any of the other defendants herein, a non-exclusive, non-assignable right to use, manufacture and sell within the United States under any and all "production patents" where the patent or application therefor was owned by it on the date of the entry of this decree, without any restrictions or conditions whatsoever, except such suitable restrictions as may be necessary pursuant to U.S.C. Title 35, Para. 49, 44 Stat. 1058, and without payment of royalty or other compensation during the existence of the "present emergency" and for the period of the "present emergency"; *Provided*, that no such defendant, or any of its affiliates, shall be required to grant any such right, other than with reasonable royalty as hereinafter provided, to any applicant or any affiliate of such applicant who shall refuse to grant said defendant and its affiliates a similar right, without payment of royalty or other compensation, to use, manufacture, and sell under all "production patents" where the patent or application there for was owned on the date of the entry of this decree by such applicant or any affiliate of such applicant or under which such applicant or affiliate had the right to grant sublicenses on the date of the entry of this decree, and in case of such "refusal, such defendant or its affiliate shall grant such license, but in such case shall be entitled to charge a reasonable royalty in connection with any such grant to such applicant.

[*Charge of Royalties Permitted at Termination of "Present Emergency"*]

(b) At the termination of the "present emergency," each of the corporate defendants and its affiliates shall, upon the written request of any applicant, grant to such applicant, including any of the defendants herein, a non-exclusive, non-assignable right to use, manufacture, and sell under any and all "production patents" where the patent or application there for was owned by it on the date of the entry of this decree, without any conditions or restrictions whatsoever, except such suitable restrictions as may be necessary pursuant to U.S.C. Title 35 Para. 49, 44 Stat. 1058, save that a reasonable and non-discriminatory royalty may be charged there for, and save also that an independent auditor may be employed to inspect the books and records of licensees, provided that such independent auditor shall report to the licensor no information other than the amount of royalty due and payable. Nothing herein contained, however, shall prevent the granting by a defendant of preferential royalty rates to the United States or to any agency thereof or the assignee or assignees of such agency.

2. *Hartford-Empire* (1945)

From Final Judgment entered Oct. 31, 1945 (as amended by order dated May 17, 1946):[351]

13. (A) The defendants Hartford-Empire Company, Corning Glass Works, Owens-Illinois Glass Company, Hazel-Atlas Glass Company, Thatcher Manufacturing Company, Lynch Corporation, and Ball Brothers Company, and each of them be and hereby is enjoined from the distribution of machinery used in the manufacture of glassware in interstate commerce, and from the distribution of glassware in interstate commerce, unless it shall, by instrument filed with the Clerk of the Court within sixty (60) days from the effective date of this decree, agree: . . .
(2) to grant to any applicant under any patent or patents now or hereafter owned or controlled by it (but only in so far as it has the right so to do), a license as hereinafter provided to make, have made, use and/or sell any feeder, forming machine, suction machine, lehr or stacker, or part thereof and/or methods when used in connection therewith; provided that upon any application hereunder for the license of any invention for use in any of the machines required to be licensed under subparagraph (A)(1) of this paragraph, this Court may, in its discretion, upon a showing that the granting of such application probably will result in inequitable discrimination as between licensees or unduly burden the Court, deny such application; . . .

(B) As to each class of machines agreed to be licensed by each such defendant under subparagraph (A)(1) of this paragraph, said instrument shall designate separately the proposed charge, if any, for each of the following privileges (any one or more of which any applicant may elect to take): the rights under then existing patents (a) to use (if such defendant intends or is required hereunder to lease such machines), (b) to make, have made, and use, and (c) to make, have made, and sell (including the right to transfer to the vendee thereof the right to use) each such class of machines. If any such defendant intends, or is required by this judgment, to lease or service any such machines licensed by it, said instrument shall include separate proposed charges, if any, for such of the following privileges as are intended, desired, or required to be furnished: (d) the use of each class of leased machines apart from the charge

[351] YALE L.J., *supra* note 50, at 119–26.

in (a), and (e) the servicing of each class of leased or licensed machines. The defendant, Hartford-Empire Company, in filing the schedule required by this subparagraph, shall include therein the royalty rates set forth in Exhibit A attached to the intervening complaint of Anchor-Hocking Glass Corporation, *et al.*, which rates are hereby determined to be reasonable and shall be effective from November 1, 1945.

(C)(1) [Par. (C) was added by an order dated May 17, 1946] The reasonable royalty initially to be charged by defendants for the privilege of making, having made and selling each feeder, forming machine, suction machine, lehr or stacker shall, as to each defendant, be a percentage, to be fixed by the Court, of the aggregate price paid by the purchaser of such machine. At any time after the expiration of one year from the entry of the Order incorporating this provision in Paragraph 13 (C) hereof, the plaintiff may petition the Court to reduce the then prevailing royalty for the privilege of making, having made and selling any such machine upon the ground that it has proved ineffective or inappropriate in practice to permit continuous competition between the licensor and an efficient purchaser from an efficient licensed distributor in using such machine or between the licensor in leasing or distributing it and efficient independent machinery manufacturers in making and selling it. When the number of machines in any such classification outstanding in the hands of glassware manufacturers (excluding machines under license or lease from Hartford-Empire Company and, if forming machines, machines sold by Lynch Corporation of the classes offered for sale by Lynch Corporation at the time of the entry of this order) shall total 35% of all such machines outstanding, (including both those which are and those which are not under license or lease from Hartford-Empire Company and those which were and those which were not sold by Lynch Corporation) the reasonable royalty thereafter payable to Hartford-Empire Company for the privilege of making, having made and selling such class of machines shall, upon application by Hartford-Empire Company, by any licensee under such a license, by any applicant therefor, or by the plaintiff, be determined by the Court at a figure which will permit continuous competition between the lessor in leasing such machines and an efficient licensee or licensees in selling them. When the number of machines of any such classification outstanding in the hands of glassware manufacturers (excluding, if forming machines, machines sold by Lynch Corporation of the classes offered for sale by Lynch Corporation at the time of the entry of this order, and excluding machines under license or lease from Hartford-Empire Company) shall total 35% of all such machines outstanding (including both those which were and those which were not sold by Lynch Corporation and those which are and those which are not under license or lease from Hartford-Empire Company), the reasonable royalty thereafter payable to Lynch Corporation for the privilege of making, having made and selling such class of machines shall, upon application by Lynch Corporation, by any licensee under such a license, by any applicant therefor, or by the plaintiff, be determined by the Court at a figure which will permit the defendant Lynch Corporation, to continue to compete with an efficient licensee or licensees in the sale of such machines at a reasonable profit. At any time after the expiration of two years from the entry of the order incorporating this provision in Paragraph 13 (C) hereof, the plaintiff, any licensee of a defendant other than Hartford-Empire Company or Lynch Corporation, any applicant for a license from any defendant other than Hartford-Empire Company or Lynch Corporation or any such defendant may apply to this Court to change a royalty fixed hereunder with respect to such defendant upon the ground that it is ineffective or inappropriate to permit continuous competition between the licensor and an efficient purchaser from an efficient licensed distributor in using such machines, or between the licensor and an efficient licensee or licensees in distributing them. In determining all royalties hereunder, it shall be kept in mind that the licensor is entitled to receive reasonable compensation for the use of its inventions.

(2) If the licensor and licensee cannot agree as to the reasonable royalty for the privilege of making, having made and selling, obtained by any applicant under Subparagraph 13 A (2) hereof, either party may apply to the Court for determination of such reasonable royalty.

(E) The charges for each privilege designated in subparagraph (B) hereof shall be uniform to all applicants, except that (a) credit may be given for the fair value of patent rights, development work, or other valuable considerations reasonably and in good faith contributed by any licensee to, or for the benefit of, the licensor; and (b) variations may be permitted when required by any statute or the order of any court or other governmental authority, or when specifically ordered by this Court for other good cause shown; provided that any person, firm, or corporation deeming himself or itself aggrieved by any want of uniformity in such charges may apply to this Court for an order requiring the elimination of any unjustified variation.

(F) Except with respect to patent licenses or leases granted by one of the defendants named in this paragraph to another such defendant, each such defendant is perpetually enjoined and restrained from conditioning any patent license or lease granted under paragraph 12 or 13 of this judgment upon the granting of any such license or lease to such defendant.

(H) Any applicant may elect at any time to take any or all of the privileges described in subparagraph (B) hereof under then existing patents offered under subparagraph (A)(1) hereof, at the charges determined by this Court to be reasonable, and may elect to take the privileges under then existing patents offered under subparagraph (A)(2) of this paragraph. Any applicant thus electing to take such privileges under said subparagraph (A) (2) and who fails to agree with the licensing defendant as to the rate of royalty which is reasonable under such license may apply to the Court for a determination of such reasonable royalty rate for the specific patent rights applied for.

(I) The plaintiff or any interested defendant, applicant, or licensee reasonably deeming that changes in the patent position of any defendant require changes in any charges theretofore determined to be reasonable hereunder or the determination of new charges for any privilege or privileges may, upon sixty (60) days' written notice to the Attorney General, to each domestic manufacturer of glassware and to each domestic manufacturer of machinery used in the manufacture of glassware known to the party giving notice, petition the Court for a determination or redetermination of the reasonableness of said charges.

39. For the purpose of securing compliance with this judgment, and for no other purpose, duly authorized representatives of the Department of Justice shall, on written request of the Attorney General or an Assistant Attorney General, and on reasonable notice to any one of the defendant corporations made to the principal office of such defendant corporation, be permitted, subject to any legally recognized privilege (1) access, during the office hours of such defendant corporation, to all books, ledgers, accounts, correspondence, memoranda and other records and documents in the possession or under the control of such defendant corporation relating to any matters contained in this judgment, and (2) subject to the reasonable convenience of such defendant corporation and without restraint or interference from the defendants to interview officers or employees of such defendant corporation, who may have counsel present, regarding any such matters; provided, however, that such information obtained by the means permitted in this paragraph shall not be divulged by any representative of the Department of Justice to any person other than a duly authorized representative of the Department of Justice except in the course of legal proceedings for the purpose of securing compliance with this decree in which the United States is a party or as is otherwise required by law . . . .

3. *National Lead* (1947)

From decree entered by the district court:[352]

4. The term 'patents as herein defined' shall mean United States letters patent and applications as follows: (a) the letters patent and patent applications listed

[352] United States v. Nat'l Lead Co., 63 F. Supp. 513, 533–34 (S.D.N.Y. 1945) (emphasis added) (footnote omitted),

in Appendix A hereof; (b) all divisions, continuations or reissues of any of the foregoing patents and applications; (c) all patents issued upon such applications; (d) all patents which cover any titanium pigments or any process for the manufacture of titanium pigments issued to any of the defendants within five years from the date of this decree; and all such patents which any of the defendants acquires within such five years; and all such patents of which any of the defendants becomes the exclusive licensee within such five years with power to sublicense.

7. Each of the defendants is ordered to grant to any applicant therefor, including any defendant or co-conspirator, a non-exclusive license under any or all of the patents as herein defined at a uniform, reasonable royalty. Such grant may, at the option of the licensor, be conditioned upon the reciprocal grant of a license by the applicant, at a reasonable royalty, under any and all patents covering titanium pigments or their manufacture, now issued or pending, or issued within five years from the date of this decree, if any, owned or controlled by such applicant. . . . During a period of three years from the date of this decree such license or reciprocal license may at the option of either party contain a provision for the imparting in writing, at a reasonable charge, by the licensor to the licensee, of the methods and processes used by the former at the date of the license in its commercial practice under the licensed patents in connection with the production of titanium pigments. The Court reserves jurisdiction to pass upon the reasonableness of any royalty or charge herein directed to be reasonable.

4. *Rudenberg v. Clark* (1948)

From consent decree entered by the district court:[353]

3. The plaintiff, his heirs and assigns, shall grant to any applicant making written request to him therefor a non-exclusive unlimited license to use, make and sell under said U.S. Letters Patent Nos. 2,058,914 and 2,070,319 (including continuations, renewals, divisions and extensions thereof), such licenses to be granted on a non-discriminatory basis as to terms between applicants. A copy of the form of license to be used by the plaintiff is attached hereto. Plaintiff may extend to any person an offer in writing to grant such a license. Such offer to grant a license shall include a copy of this decree and of the form of license attached hereto. Any offeree to whom such offer shall have been extended may, if unwilling to accept the offer so extended, apply to this Court not less than 60 nor more than 120 days from the date such offer was received by him for the determination of a reasonable royalty, giving notice

[353] Rudenberg v. Clark, 81 F. Supp. 42, 44 (D. Mass. 1948).

of his application to plaintiff. In any such court proceeding, the burden of proof shall be on the plaintiff to establish the reasonableness of the royalty stipulated in his offer. If the Court fixes a royalty on such application, plaintiff shall issue and the offeree shall accept a license providing for royalties at the rate fixed by the Court. If the offeree, having applied to the Court, fails to accept the license, such action shall be ground for the dismissal of his application and for the rescission of any and all of the offeree's rights under this paragraph. If the offeree fails within 120 days from the receipt of plaintiff's offer either to accept plaintiff's offer or to apply to this Court as hereinabove provided, plaintiff may apply to the Court for an order requiring the offeree to show cause why all rights of the offeree under this paragraph should not terminate. Plaintiff shall make of record in the United States Patent Office any license granted under the provisions of this paragraph within a reasonable period after its execution.

5. *Textile Machine Works* (1950)

From consent decree entered by the district court:[354]

VI
1. Berkshire is hereby ordered and directed . . . to issue to any applicant making written request therefor a non-exclusive license, sublicense or immunity, to manufacture, use and sell under any one or more of the patents listed . . . relating to full fashioned hosiery or hosiery machinery, without any condition or restriction whatsoever, except that [ ] a reasonable and non-discriminatory royalty may be charged and collected . . . .
2. Textile is hereby ordered and directed . . . to issue to any applicant making written request therefor:
(a) A non-exclusive, unrestricted, royalty-free license, sublicense or immunity, to manufacture, use and sell under any one or more of the patents listed . . . relating to full fashioned hosiery;
(b) A non-exclusive license, sublicense or immunity, to manufacture, use and sell under any one or more of the patents listed . . . relating to hosiery machinery, without any condition or restriction whatsoever, except that [ ] a reasonable and non-discriminatory royalty may be charged and collected . . . .
4. Upon any application for a license in accordance with the provisions of clause 1 and subdivision b) of clause 2 of this Section VI the defendant to whom such application is made shall advise the applicant of the royalty it deems reasonable for the patents to which the application pertains. If the defendant and the applicant are unable to agree upon what constitutes a reasona-

[354] United States v. Textile Machine Works, No. 43-671, 1950 U.S. Dist. LEXIS 1909, at *9–13 (S.D.N.Y. 1950) (emphasis added).

ble royalty, the defendant may apply to this Court for a determination of a reasonable royalty, giving notice thereof to the applicant and the Attorney General, and shall make such application forthwith upon request of the applicant. In any such proceeding the burden of proof shall be upon the defendant to whom application is made to establish, by a fair preponderance of evidence, a reasonable royalty, and the Attorney General shall have the right to be heard thereon. Pending the completion of any such court proceeding, the applicant shall have the right to make, use and vend under the patents to which its application pertains, without the payment of royalty or other compensation, but subject to the following provisions: Such defendant may, with notice to the Attorney General, apply to the Court to fix an interim royalty rate pending final determination of what constitutes a reasonable royalty, if any. If the Court fixes such interim royalty rate, a license shall then issue providing for the periodic payment of royalties at such interim rate from the date of the making of such application by the applicant; and whether or not such interim rate is fixed, any final order may provide for such readjustments including retroactive or diminished royalties as the Court may order after final determination of a reasonable and non-discriminatory royalty.

6. *United States Gypsum* (1951)

From consent decree entered by the district court:[355]

Article II.
1. . . .
4. "Patents" shall mean United States Letters Patent and applications for United States Letters Patent relating to gypsum board, its processes, methods of manufacture or use, now owned or controlled by defendant United States Gypsum Company and issued to, applied for or acquired by defendant United States Gypsum Company within a period of five (5) years from the date of this decree, including Letters Patent issued upon any of said applications, and continuations in whole or in part, renewals, reissues, divisions and extensions of any such Letters Patent or applications for Letters Patent.

Article VI.
1. Defendant United States Gypsum Company is hereby ordered and directed to grant to each applicant making application therefor, but only in so far as it has the right to do so, a non-exclusive license to make, use and vend under any, some or all patents as hereinbefore defined, at a reasonable, nondiscriminatory royalty or royalties therefor.

[355] United States v. U.S. Gypsum, No. 8017, 1951 U.S. Dist. LEXIS 1917, at *4–5 (D.D.C. May 15, 1917) (emphasis added).

3. Upon receipt of written request for such a license defendant United States Gypsum Company shall advise the applicant in writing of the royalty which it deems reasonable for the patent or patents to which the request pertains. If the parties are unable to agree upon a reasonable royalty within sixty (60) days from the date such request for a license was received by United States Gypsum Company, the applicant therefor shall within ten (10) days thereafter apply to this Court for a determination of a reasonable royalty or be deemed to have abandoned his said request for such license. The applicant shall promptly give written notice of the filing of such application to the United States Gypsum Company and to the Attorney General of the United States, who shall have the right to be heard thereon. The reasonable royalty rate or rates so determined by the court shall apply to such patent or patent's in the license of the applicant from the date of his last written request for such license, and to such patent or patents in all other licenses then or thereafter issued under this decree from the date of such determination. Pending the completion of any such proceeding, applicant shall have the right to make, use and vend under the patent or patents to which his application pertains upon the terms and conditions as set forth in paragraph 4 of this Article, provided he files his application for the determination of a reasonable royalty as aforesaid.

7. *Besser* (1952)

District court order as described by the Supreme Court:[356]

The [district] court directed Besser and the Government each to select two persons to serve as arbitrators on a committee to establish fair royalty rates and the form and contents of royalty contracts. It was also provided that in the event of a stalemate the four representatives should choose a fifth to vote and break the deadlock. *If they could not agree on a fifth representative, the trial judge was to sit as the fifth* or appoint another person to serve in his place. . . . When an impasse was reached with regard to royalty rates on certain Besser patents, the judge stepped in as the fifth arbitrator and voted for the rates proposed by the government-appointed representatives.

8. *General Electric* (1953)

From decree entered by the district court:[357]

Dedication of existing patents on lamps and lamp parts.

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[356] Besser Mfg. Co v. United States, 343 U.S. 444, 448 (1952) (emphasis added).
[357] United States v. Gen. Elec. Co., 115 F. Supp. 835, 843–50 (D.N.J. 1953) (emphasis added).

A. The defendants are each, jointly and severally, ordered and directed, forthwith upon entry of this Judgment, to *dedicate to the public* any and all existing patents on lamps and lamp parts.

Licensing of General Electric's future patents.

C. (1) General Electric is ordered and directed to grant, to the extent that it has the power to do so, to any applicant making written request therefor in connection with the manufacture by the applicant in the United States of lamps, lamp parts or lamp machinery, a *non-exclusive license* under any, some or all of said General Electric's future patents, as herein defined, and for their full unexpired terms, to make, use and vend lamps, lamp parts or lamp machinery.

Reciprocity

(2) The provisions of this Section, however, shall not require General Electric to license any applicant . . . under any of its future patents, unless said applicant agrees upon request to grant to General Electric, upon a *reasonable royalty* and for the full unexpired term of each licensed patent, a non-exclusive license to make, use and vend lamps, lamp parts and lamp machinery under any, some or all, (as General Electric may request), of the patents and applications, if any, relating to lamps, lamp parts and lamp machinery owned or controlled by said applicant or under which it then has the right to grant licenses or sub-licenses.

9. *Scott Paper* (1969)

From consent decree entered by the district court:[358]

X. [Public Notification]

Chemotronics and Scott are jointly and severally ordered and directed within ninety (90) days of the effective date of this Final Judgment, to give (a) public notice of the availability of the licenses referred to in Sections IV, V and VI; such public notice requirement shall be satisfied by causing such availability to be made known in the Official Gazette of the United States Patent Office, maintained by the Department of Commerce and in Modern Plastics magazine and (b) notice of such availability to all persons who within the five (5) years prior to the date of entry of this Final Judgment have indicated to Chemotronics or to Scott an interest in obtaining a license under the "Geen Patent".

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[358] United States v. Scott Paper Co., 1969 Trade Cas. (CCH) ¶ 72,919, 1969 WL 192901, § X (E.D. Mich. Oct. 24, 1969).

10. *Glaxo* (1974)

From decree entered by the district court:[359]

[Non-Assignment]
"Defendant Glaxo is enjoined from making any sale or other disposition of any patent, right or license . . . unless the purchaser transferee, or assignee shall file with this Court, prior to the consummation of said transaction, an undertaking to be bound by its provision."

11. *Manufacturers' Aircraft Association* (1975)

From decree entered by the district court:[360]

[Grant of License]
Each defendant is ordered and directed to grant to each person, including any other defendant, making written application therefor a nonexclusive, non-discriminatory license under any licensed airplane patent which such defendant has the power to license. Such license may include provisions for reasonable and non-discriminatory royalties and shall authorize the licensee to practice the inventions of the licensed patent for the making, using and selling of airplanes and components, parts or accessories therefor. With respect to any airplane patent licensed pursuant to the Amended Cross-License Agreement on the effective date of this Final Judgment any license issued hereunder shall include royalties no less favorable to the licensee than those existing on the effective date of this Final Judgment pursuant to the Amended Cross-License Agreement, or thereafter established by arbitration pursuant to Article IV of this Final Judgment, provided that the licensor shall be entitled to charge reasonable royalties with respect to any airplane patent for which royalties have not been established as of the effective date of this Final Judgment, or thereafter by arbitration proceedings instituted prior to the effective date of this Final Judgment, but as to which the licensor has not irrevocably waived the right to receive royalties during the life of the patent. If the Court finds on application of a defendant that it would be equitable or in the public interest to permit imposition of such condition, that defendant shall have the right to require any person applying for a license pursuant to this Article VI, as a condition of receiving such a license, to grant to the defendant a non-exclusive, non-discriminatory license, on the terms specified for the grant of licenses in this Article VI, under any patent which such person has the right to license which would be a licensed airplane patent had such person on the effective date of

[359] United States v. Glaxo Grp. Ltd., No. 558-68, 1974 WL 828, at *3 (D.D.C. 1974).
[360] United States v. Mfrs. Aircraft Ass'n, 1976-1 Trade Cas. (CCH) ¶ 60,810, 1975 WL 405109, § VI (S.D.N.Y. Nov. 12, 1975).

this Final Judgment been a signatory to the Amended Cross-License Agreement. Any dispute as to royalties shall be resolved in accordance with the procedures set forth in Article VIII. Any person who is not a citizen of the United States, or who is controlled directly or indirectly or beneficially owned to the extent of more than fifty percent (50%) by a person or persons who are not citizens of the United States, shall not be entitled to a license to practice the inventions of the patent with respect to products manufactured outside the United States. This Article VI shall not apply to any patent as to which the defendant acquires the right to grant licenses after the effective date of this Final Judgment.

[Royalties]

Upon receipt of a written application for a patent license under Article VI of this Final Judgment . . ., the defendant to whom the application is made shall advise the applicant in writing within sixty (60) days of the royalties and/or other compensation which such defendant deems reasonable for use of the patent or technical information. If the applicant rejects the royalties and/or other compensation proposed by such defendant, and such defendant and applicant are unable to agree upon reasonable royalties and/or other compensation, or upon a method for determining the same, *including arbitration*, within sixty (60) days from the date such rejection is received in writing by such defendant, the applicant or defendant may, upon notice to the plaintiff and the other party to the dispute, apply to this Court for the determination of (a) reasonable royalties and/or other compensation, and (b) in the case of a patent, such reasonable interim royalties (pending the final disposition of the proceeding) as the Court may deem appropriate. In any such proceeding, the defendant shall have the burden of proof to establish the reasonableness of the royalties and/or other compensation requested by it. Pending the completion of negotiations or the final disposition of any such proceeding, the applicant shall have the provisional right to practice the inventions of the patent to which his application pertains in making, using and selling airplanes, and components, parts or accessories therefor, subject to the payment of reasonable interim royalties. A final determination by the Court of the amount of reasonable royalties for the use of a patent shall be applicable from the date the applicant applied for a patent license. Unless otherwise ordered by the Court in a proceeding instituted under this Article, any final determination by the Court pursuant to this Article VIII shall thereafter be applicable to any other person having or thereafter obtaining the same rights under the same patent or technical information.

12. *Xerox* (1975)

From consent order entered by the FTC:[361]

II
It is further ordered, That Xerox shall forthwith grant or cause to be granted to any Person making written application to Xerox at any time under this order a nonexclusive license for the full unexpired term under any, some or all order patents to make, have made, use or vend any, some or all of the following: . . .

IV
It is further ordered, That no license of an order patent granted pursuant to the terms of this order shall contain or be conditioned upon any restriction, except as hereinafter provided:

A. The licensee may, at his option, designate up to a total of three order patents which shall be licensed or sublicensed royalty-free; Provided, however, That, in each country, the licensee may substitute another order patent as royalty-free for any order patent previously designated as royalty-free which the licensee has discontinued using in that country. On order patents other than the three designated as royalty-free by the licensee, Xerox may, in its sole discretion, charge a royalty not to exceed ½ percent per patent up to a maximum accumulated royalty of 1½ percent of the licensee's net revenues for each royalty-bearing product which is manufactured, leased or sold by or for the licensee. With respect to any royalty-bearing product of the licensee which the licensee uses or consumes himself, the royalty shall be computed on the basis of the net revenues that would have been received by the licensee in an ordinary commercial transaction. The royalty shall be computed separately for each royalty-bearing product on the basis of order patents subject to royalty which are used in such royalty-bearing product. In no event shall more than three royalty-free patents apply to any one royalty-bearing product at any one time irrespective of the number of licenses granted by Xerox with respect to such royalty-bearing product. For the purpose of this Paragraph IV A, a patent and all Corresponding Patents in all countries shall count as one patent. The licensee need not take a license under any corresponding patent.

IV
J. In granting a license pursuant to Paragraph II of this order, there shall be no discrimination by Xerox, Rank Xerox, Fuji Xerox or any person in the royalty charged as among royalty-paying licensees who procure the same rights under the same patents; but nothing herein contained shall prevent Xerox, Rank Xerox, Fuji Xerox or any person from negotiating nonexclusive licenses and

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[361] Xerox Corp., 86 F.T.C. 364, 373–82 (1975) (decision and order).

cross-licenses outside the terms (except Paragraph IV C(9) of this order) of this order with anyone who so elects.

VIII

A. Upon receipt of a written application for a patent license or for a patent license and disclosure of know-how under the terms of this order, Xerox shall advise the applicant in writing of the terms of such license and/or knowhow disclosure. If a dispute arises between Xerox and a licensee or applicant regarding their respective rights under this order (except where certain matters are specifically referable to the Commission as provided in Paragraph IV F of this order), and if the parties to the dispute are unable to resolve it within 90 days after the existence of such dispute is communicated in writing to Xerox or to the licensee or applicant, the dispute shall be determined by arbitration pursuant to this Paragraph VIII. Notwithstanding the provisions of Paragraph V of this order, no dispute between Xerox and a licensee or applicant with respect to the validity, enforceability, infringement or scope of any patent shall be subject to arbitration pursuant to this order.

B. Unless otherwise agreed to by the parties, arbitration shall be held at a location in the United States designated by the licensee or applicant and in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The award of the arbitrator shall be final and binding on both parties. The arbitrator shall, upon a proper showing, issue protective orders and/or receive evidence in camera in the same manner as an administrative law judge of the Federal Trade Commission.

APPENDIX B

ANTITRUST PATENT LICENSING ORDERS 1942–2013

	Case name & Citation	Type
	DOJ Cases	
1	U.S. v. Standard Oil, 1942 WL 82574 (D.N.J. 1942), *supplemented by* 1943 WL 77174 (D.N.J. 1943)	consent
2	U.S. v. GE, 1942 WL 82577 (D.N.J. 1942)	consent
3	U.S. v. Alcoa, 1942 WL 82576 (S.D.N.Y. 1942)	consent
4	U.S. v. Am. Bosch, 1942 WL 82620 (S.D.N.Y. 1942)	consent
5	U.S. v. Hartford-Empire, 46 F. Supp. 541 (N.D. Ohio 1942), *modified*, 323 U.S. 386 (1945), *modified*, 324 U.S. 570 (1945), *remanded to* 1946 WL 69269 (N.D. Ohio 1946), *modified*, 1947 WL 61845 (N.D. Ohio 1947)	contested
6	U.S. v. Vehicular Parking, 54 F. Supp. 828 (D. Del. 1944), *modified*, 61 F. Supp. 656 (D. Del. 1945)	contested
7	U.S. v. GE, 1945 WL 72541 (D.N.J. 1945)	consent
8	U.S. v. Bendix Aviation, 1946 WL 69241 (D.N.J. 1946)	consent
9	U.S. v. Diamond Match Co., 1946 WL 69249 (S.D.N.Y. 1946)	consent
10	U.S. v. Libbey-Owens, 1946 WL 69278 (N.D. Ohio 1946)	consent
11	U.S. v. Am. Air Filter Co., 1946 WL 69281 (E.D. Ky. 1946)	consent
12	U.S. v. Owens-Ill. Glass Co., 1946 WL 69287 (N.D. Cal. 1946)	consent
13	U.S. v. Am. Lecithin Co., 1947 WL 61945 (N.D. Ohio 1947)	consent
14	U.S. v. Patent Button Co., 1947 WL 61851 (D. Conn. 1947)	consent
15	U.S. v. Nat'l Lead, 63 F. Supp. 513 (S.D.N.Y. 1945), *aff'd*, 332 U.S. 319 (1947)	contested
16	U.S. v. Scovill Mfg. Co., 1948 WL 70128 (D. Conn. 1948)	consent
17	U.S. v. Automatic Sprinkler Co. of Am., 1948 WL 70133 (N.D. Ill. 1948)	consent
18	U.S. v. Gamewell Co., 1948 WL 70139 (D. Mass. 1948)	consent
19	U.S. v. Universal Button, 1948 WL 70151 (E.D. Mich. 1948)	consent
20	U.S. v. Am. Bosch, 1948 WL 70177 (S.D.N.Y. 1948)	consent

	Case name & Citation	Type
21	U.S. v. White Cap Co., 1948 WL 70161 (N.D. Ill. 1948)	consent
22	U.S v. US Pipe & Foundry, 1948 WL 70178 (D.N.J. 1948)	consent
23	U.S. v. Gen. Cable Corp., 1948 WL 70193 (S.D.N.Y. 1948)	consent
24	U.S. v. Am. Optical Co., 1948 WL 70201 (S.D.N.Y. 1948)	consent
25	U.S. v. Allegheny Ludlum Steel, 1948 WL 70221 (D.N.J. 1948)	consent
26	U.S. v. Libbey-Owens, 1948 WL 70215 (N.D. Ohio 1948) ("Toledo decree")	consent
27	U.S. v. Rohm & Haas, 1948 WL 70225 (E.D. Pa. 1948)	consent
28	U.S. v. Technicolor, Inc., 1948 WL 70229 (S.D. Cal. 1948)	consent
29	U.S. v. Bendix Aviation, 1948 WL 70240 (S.D.N.Y. 1948)	consent
30	Rudenberg v. Clark, 81 F. Supp. 42 (D. Mass. 1948)	consent
31	U.S. v. Scophony Corp. of Am., 1949 WL 69637 (S.D.N.Y. 1949)	consent
32	U.S. v. Phillips Screw Co., 1949 WL 69667 (N.D. Ill. 1949)	consent
33	U.S. v. Owens Corning, 1949 WL 69709 (N.D. Ohio 1949)	consent
34	U.S. v. GE, 1949 WL 69781 (S.D. Cal. 1949)	consent
35	U.S. v. Standard Register Co., 1949 WL 69608 (D.D.C. 1949)	consent
36	U.S. v. Technicolor, Inc., 1950 WL 87606 (S.D. Cal. 1950)	consent
37	U.S. v. Am. Can Co., 1950 WL 87693 (N.D. Cal. 1950)	consent
38	U.S. v. Continental Can Co., 1950 WL 87694 (N.D. Cal. 1950)	consent
39	U.S. v. Textile Mach. Works, 1950 WL 87721 (S.D.N.Y. 1950)	consent
40	U.S. v. 3M, 1950 WL 87736 (D. Mass. 1950)	consent
41	U.S. v. U.S Gypsum, 67 F. Supp. 397 (D.D.C. 1946), *rev'd*, 333 U.S. 364 (1948), *remanded to* 1949 WL 4071 (D.D.C. 1949), *rev'd*, 340 U.S. 76 (1950), *remanded to* 1951 WL 91277 (D.D.C. 1951), *modified*, 1954 WL 82634 (D.D.C. 1954)	contested
42	U.S. v. Besser, 96 F. Supp. 304 (E.D. Mich. 1951), *aff'd*, 343 U.S. 444 (1952)	contested

	Case name & Citation	Type
43	U.S. v. Austenal Labs., 1951 WL 91304 (S.D.N.Y. 1951)	consent
44	U.S. v. Permutit Co., 1951 WL 91312 (S.D.N.Y. 1951)	consent
45	U.S. v. Parke, Davis & Co., 1951 WL 91140 (E.D. Mich. 1951)	consent
46	U.S. v. Mager & Gougelman, 1952 WL 92206 (N.D. Ill. 1952)	consent
47	U.S. v. Liquid Carbonic Corp., 1952 WL 92219 (E.D.N.Y. 1952)	consent
48	U.S. v. Imperial Chem. Indus., 100 F. Supp. 504 (S.D.N.Y. 1951), *decree entered by* 105 F. Supp. 215 (S.D.N.Y. 1952)	contested
49	U.S. v. United Eng'g & Foundry, 1952 WL 92340 (W.D. Pa. 1952)	consent
50	U.S. v. United Shoe Mach., 110 F. Supp. 295 (D. Mass. 1953)	contested
51	U.S. v. Gen. Instrument, 115 F. Supp. 582 (D.N.J. 1953)	contested
52	U.S. v. GE, 82 F. Supp. 753 (D.N.J. 1949), *decree entered by* 115 F. Supp. 835 (D.N.J. 1953)	contested
53	U.S. v. GE, 1953 WL 87786 (D.N.J. 1953)	consent
54	U.S. v. Bendix Aviation, 1953 WL 87791 (S.D.N.Y. 1953)	consent
55	U.S. v. Bendix Aviation, 1953 WL 87784 (S.D.N.Y. 1953)	consent
56	U.S. v. Switzer Bros., 1953 WL 87798 (N.D. Cal. 1953)	consent
57	U.S. v. Bearing Distributors, 1953 WL 87795 (W.D. Mo. 1953)	consent
58	U.S. v. Telescope Carts, 1953 WL 87775 (W.D. Mo. 1953)	consent
59	U.S. v. Servel, 1954 WL 82496 (E.D. Pa. 1954)	consent
60	U.S. v. Cincinnati Milling Mach., 1954 WL 82556 (E.D. Mich. 1954)	consent
61	U.S. v. Blaw-Knox, 1954 WL 82573 (W.D. Pa. 1954)	consent
62	U.S. v. U.S. Rubber, 1954 WL 82592 (S.D.N.Y. 1954)	consent
63	U.S. v. Hunter Douglas, 1954 WL 82623 (S.D. Cal. 1954)	consent
64	U.S. v. Food Mach. & Chem. Corp., 1954 WL 82650 (N.D. Cal. 1954)	consent
65	U.S. v. Pittsburgh Crushed Steel, 1954 WL 82711 (N.D. Ohio 1954)	consent

	Case name & Citation	Type
66	U.S. v. Eastman Kodak, 1954 WL 82737 (W.D.N.Y. 1954)	consent
67	U.S. v. Gen. Ry. Signal, 1955 WL 82828 (W.D.N.Y. 1955)	consent
68	U.S. v. Magcobar, 1955 WL 82855 (S.D. Cal. 1955)	consent
69	U.S. v. Kelsey-Hayes Wheel, 1955 WL 82924 (E.D. Mich. 1955)	consent
70	U.S. v. New Wrinkle, 342 U.S. 371 (1952) (reversing the judgment granting motion to dismiss), *decree entered by* 1955 WL 82992 (S.D. Ohio 1955)	consent
71	U.S. v. Am. Steel Foundries, 1955 WL 82987 (N.D. Ohio 1955)	consent
72	U.S. v. Western Elec. Co. and AT&T, 1956 WL 99775 (D.N.J. 1956), *modified*, 552 F. Supp. 131 (D.D.C. 1982)(licensing order removed)	consent
73	U.S. v. IBM, 1956 WL 99774 (S.D.N.Y. 1956)	consent
74	U.S. v. Gen. Shoe, 1956 WL 99799 (M.D. Tenn. 1956)	consent (merger)
75	U.S. v. Mich. Tool, 1956 WL 99815 (E.D. Mich. 1956)	consent
76	U.S. v. Logan, 1956 WL 99894 (W.D. Pa. 1956)	consent
77	U.S. v. Int'l Cigar Mach. Co., 1956 WL 99945 (S.D.N.Y. 1956)	consent
78	U.S. v. Am. Linen Supply, 1956 WL 100051 (N.D. Ill. 1956)	consent
79	U.S. v. Robertshaw-Fulton Controls, 1957 WL 99550 (W.D. Pa. 1957)	consent
80	U.S. v. Greyhound, 1957 WL 99692 (N.D. Ill. 1957)	consent
81	U.S. v. Radio Corp. of Am., 1958 WL 104296 (S.D.N.Y. 1958)	consent
82	U.S. v. Chem. Specialties, 1958 WL 104317 (S.D.N.Y. 1958)	consent
83	U.S. v. Pitney-Bowes, 1959 WL 115449 (D. Conn. 1959)	consent
84	U.S. v. Driver-Harris, 1961 WL 115830 (D.N.J. 1961)	consent
85	U.S. v. Borg-Warner, 1962 WL 130386 (S.D. Tex. 1962)	consent
86	U.S. v. Becton, Dickinson & Co., 1964 WL 128016 (D.N.J. 1964)	consent
87	U.S. v. Am. Cyanamid, 1964 WL 128036 (S.D.N.Y. 1964)	consent
88	U.S. v. Alloy Metal Wire, 1964 WL 128040 (D.N.J. 1964)	consent

	Case name & Citation	Type
89	U.S. v. Driver Harris, 1964 WL 128103 (D.N.J. 1964)	consent
90	U.S. v. Driver Harris, 1965 WL 168653 (D.N.J. 1965)	consent
91	U.S. v. GM, 1965 WL 168919 (E.D. Mich. 1965)	consent
92	U.S. v. 3M, 1969 WL 192849 (N.D. Ill. 1969)	consent
93	U.S. v. Scott Paper, 1969 WL 192901 (E.D. Mich. 1969)	consent
94	U.S. v. Sonoco Prods., 1970 WL 221183 (E.D.S.C. 1970)	consent
95	U.S. v. Ciba Corp., 1970 WL 221389 (S.D.N.Y. 1970)	consent (merger)
96	U.S. v. Fisons, 1972 WL 293825 (N.D. Ill. 1972)	consent
97	Int'l Tel. & Tel. v. Gen. Tel. & Elec. Corp., 351 F. Supp. 1153 (D. Haw. 1972), *decree entered by* 1972 WL 293735 (D. Haw. 1972)	contested (merger)
98	U.S. v. Glaxo, 323 F. Supp. 709 (D.D.C. 1971), *rev'd*, 410 U.S. 52 (1973), *remanded to* 1974 WL 828 (D.D.C. 1974), *supplemented by* 1974 WL 862 (D.D.C. 1974)	contested
99	U.S. v. (Glaxo) & Imperial Chem. Indus., 1974 WL 387171 (D.D.C. 1974)	consent
100	U.S. v. Copper Dev. Ass'n, 1975 WL 404937 (S.D.N.Y. 1975)	consent
101	U.S. v. Manufacturers Aircraft Ass'n, 1975 WL 405109 (S.D.N.Y. 1975)	consent
102	U.S. v. Studiengesellschaft, 1977 WL 431556 (D.D.C. 1977)	consent
103	U.S. v. Beecham, 1979 WL 454450 (D.D.C. 1979)	consent
104	U.S v. United Techs., 1981 WL 712723 (N.D.N.Y. 1981)	consent (merger)
105	U.S. v. Bristol-Myers, 1982 WL 983573 (D.D.C. 1981)	consent
106	U.S. v. Calmar, 1985 WL 1186126 (D.N.J. 1985)	consent (merger)
107	U.S. v. Borland Int'l, 1992 WL 101767 (N.D. Cal. 1992)	consent (merger)
108	U.S. v. Microsoft, 2002 WL 34532210 (D.D.C. 2002)	contested
	FTC Cases	
109	A.C. Nielsen Co., 1963 WL 66818 (1963)	consent
110	Gen. Ry. Signal Co., 1964 WL 73094 (1964)	consent
111	Am. Cyanamid, 1963 WL 66921 (1963), *vacated*, 363 F.2d 757 (6th Cir. 1966), *remanded to* 1967 WL 94153 (1967) (final order)	contested
112	Koppers Co., 1971 WL 128697 (1971)	consent

	Case name & Citation	Type
113	Xerox, 1975 WL 173245, 1975 FTC LEXIS 115 (1975)	consent
114	UNOCAL, 2005 WL 6241013 (2005)	consent
115	Rambus, 2007 WL 7031688 (2007), *rev'd*, 522 F.3d 456 (D.C. Cir. 2008)	contested
116	N-Data, 2008 WL 4407246 (2008)	consent
117	Robert Bosch, 2013 WL 1911293 (2013)	consent (merger)
118	Google, 2013 WL 3944149 (2013)	consent