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Rethinking the Length of Patent Terms

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RETHINKING THE LENGTH OF PATENT TERMS

SIMON LESTER AND HUAN ZHU*

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The standard patent term of twenty years minimum, for any and all products, as established by the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement),¹ may seem like it is set in stone: a fixed and final length never again to be adjusted. However, the historical reality of patent terms is that they have evolved over time. In the United States, the original patent term was determined on a case-by-case basis, with an upper limit of fourteen years under the first U.S. Patent Act, in 1790.² This term was

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1. See Agreement on Trade-Related Aspects of Intellectual Property Rights art. 33, Apr. 15, 1994, 1869 U.N.T.S. 299 [hereinafter TRIPS] (setting out the standards and enforcement of intellectual property rights).

2. Patent Act of 1790, ch.7, § 1, 1 Stat. 109–112 (“[I]t shall and may be lawful to and for the Secretary of State, the Secretary for the department of war, and the Attorney General, or any two of them . . . to cause letters patent to be made out in the name of the United States . . . and thereupon granting to such petitioner or petitioners, his, her or their heirs, administrators or assigns for any term not exceeding fourteen years, the sole and exclusive right and liberty of making, constructing, using and vending to others to be used, the said invention or discovery.”).

prolonged through the possibility of a single seven-year extension, under special circumstances, by the 1836 Patent Act,³ and later changed to a fixed length of seventeen years in 1861.⁴ Eventually, this was replaced by a twenty-year term⁵ for all patents through the signing of the 1994 Uruguay Round Agreements Act,⁶ which implemented the TRIPS Agreement into U.S. law.⁷

On the surface, the current patent term may look like the product of decades of careful refinement. In reality, though, its origins and current length have little evidentiary basis. Long and uniform patent terms have come under increasing criticism from economists and other experts. In this paper, we review both the history of and recent thinking on the appropriate patent term length.

Section I of the paper examines the history and origins of the patent term. Section II discusses the negotiating history of patent terms under the TRIPS Agreement. Section III reviews the analyses of patent terms by economists and other experts in recent decades. The final section concludes.

I. A BRIEF HISTORY OF PATENT TERMS

A. ENGLISH ORIGINS OF U.S. PATENTS

The notion of a monopoly on the sale of a particular product originated in England during the sixteenth century as a royal grant of a privilege to trade.⁸ Under this system, the privilege to trade a specific good was determined by the King.⁹ Theoretically, his determination was based on his view of the social value of the invention as well as the amount of effort the inventor had put into his product.¹⁰ Although in practice, there was often corruption and abuse, which led to

3. See Patent Act of 1836, ch. 357, § 5, 5 Stat. 117, 125.

4. See Act of Mar. 2, 1861, ch. 88, § 16, 12 Stat. 246, 249.

5. See TRIPS art. 33, *supra* note 1.

6. See 35 U.S.C. § 154(a)(2) (2017).

7. See discussion *infra* Part II.

8. See Oren Bracha, *Owning Ideas: A History of Anglo-American Intellectual Property* 9 (June 2005) (unpublished Ph.D dissertation, Harvard Law School), <https://law.utexas.edu/faculty/obracha/dissertation/>.

9. See *id.*

10. See *id.*

monopolies that were considered detrimental to the public good.¹¹ As a result, a movement to impose limits on the King's power emerged.¹² Eventually, this led to the enactment of the Statute of Monopolies of 1624, which eliminated most monopolies but allowed a monopoly of no more than fourteen years if the product was new and original.¹³

How the legislature decided on the fourteen-year term remains unclear and the subject of speculation. The most common view is that the fourteen-year patent term was based on the standard apprenticeship term, which was seven years.¹⁴ At the time, most inventions and new ideas were created and put into practice by craftsmen.¹⁵ The King granted them the exclusive right to implement such inventions as a reward to their time and effort.¹⁶ However, such exclusive right was not unconditional. In return for such a right, craftsmen, who were sometimes foreign, had to train some native apprentices so that the locals could learn the technology and widely use it after the apprenticeship ended.¹⁷

11. *See id.* at 11.

12. *See id.* at 27.

13. Statute of Monopolies 1623, 21 Jac. 1, c. 3 (Eng.) (“[A]ny declaration before mentioned shall not extend to any Letters Patents and Grants of Privilege for the term of fourteen years or under, hereafter to be made of, the sole working or making of any manner of new manufactures within this realm, to the true and first inventor and inventors of such manufactures, which others at the time of making such Letters Patents and Grants shall not use, so as also they be not contrary to the law, nor mischievous to the state . . . [t]he said fourteen years to be accounted from the date of the first Letters Patents, or Grant of such Privilege hereafter to be made, but that the same shall be of such force as they should be, if this Act had never been made, and of none other.”).

14. *See* Edward C. Walterscheid, *Defining the Patent and Copyright Term: Term Limits and the Intellectual Property Clause*, 7 J. INTELL. PROP. L. 315, 326 (2000).

15. *See* DAVID FULTON, *THE LAW AND PRACTICE RELATING TO PATENTS, TRADE MARKS, AND DESIGNS* 5 (3d ed. 1905) (noting that in some instances an apprenticeship was required before the person could exercise the art to his or her own advantage).

16. *See* Walterscheid, *Defining the Patent and Copyright Term: Term Limits and the Intellectual Property Clause*, *supra* note 14, at 326.

17. *See* FULTON, *supra* note 15, at 5 (“[I]f the inventor of a new manufacture trained an apprentice in the art for seven years, it was but just that he should have the services of the skilled workman, at skilled workman’s wages, for another seven years, before the pupil should be at liberty to exercise the art for his own personal advantage. Indeed, under the earliest practice it was customary to insert a proviso in the grant, requiring the inventor to take apprentices during the last seven years of the term, if he had not done so before.”); *see also* Marketa Trimble, *Patent Working*

In this way, the apprenticeship term became the basis of the patent term. There are still different theories about why the patent term is twice as long as the length of an apprenticeship. Some have said that fourteen years prevents an apprentice from stealing the master's trade secrets right away after his apprenticeship ends or competing with the master too soon.¹⁸ Others believe that the fourteen-year term could provide the inventor enough time to train multiple generations of apprentices, who can later carry out the technology and put it into broader application.¹⁹ Regardless, the apprenticeship term became the

Requirements: Historical and Comparative Perspectives, 6 U.C. IRVINE L. REV. 483, 497–98 (2016).

18. See Sean M. O'Connor, *The Lost "Art" of the Patent System*, 4 U. ILL. L. REV. 1397, 1477 (2015).

19. See SHEETAL THAKUR, PATENTING IN INDIA 61 (2014) ("After the enactment of Statute of Monopolies, the development of the law was left to the courts with few interventions by parliament until 1883. It was soon decided that a patentee must do something to make it possible for others to carry out the manner after the monopoly had expired. At first, it appears to have been sufficient if the patentee trained two apprentices who could later carry out the method. The time period of training an apprentice as seven years and the time taken for training two apprentices, i.e. 14 years, came to be equated with term of patent."); see also O'Connor, *supra* note 18, at 1477 n.520 ("Some commentators have speculated that this is where the early patent terms of 14 and 21 years come from. As multiples of seven, which was the number of years of a standard apprenticeship, the period of exclusivity would last through at least two generations of apprentices. This would both keep the master's apprentices from competing with him too soon (limiting the value of his patent grant) and keep the master training successive generations of apprentices in order to keep his grant."); Sarah R. Wasserman Rajec, *Free Trade in Patented Goods: International Exchange for Patents*, 29 BERKELEY TECH. L. J. 317, 336 n.84 (2014) (noting that some scholars have suggested that since the length of an apprenticeship is seven years, the purpose of the fourteen-year patent term was to teach several generations of apprentices, and also noting that the term limit was perhaps a compromise between those who preferred a traditional monopoly term of twenty-one years and those who favored a term of seven years to equal the length of a single apprenticeship); C. Michael White, *Why a Seventeen Year Patent?*, 38 J. PAT. OFF. SOC'Y 839, 841 (1956) (stating that the United States originally adopted the fourteen-year period then followed in England, which had been based on the time required for a craftsman to train two new sets of apprentices; the seventeen-year grant, now in effect, is the result of a compromise reached when an effort was made to extend the time to twenty years in lieu of the seven-year renewal then allowed); David Rogers, *The History, Purpose and Benefits of Patents*, SNELL & WILMER (Apr. 5, 2016), <https://www.swlaw.com/assets/pdf/news/2016/04/05/2016> ("The 17-year period was based on the colonial apprentice-master relationship. In colonial America, the custom (adopted from Britain) was that an apprentice worked for a master for 7 years before he was qualified as a tradesman. It was also custom that

foundation of the patent term. One apprenticeship term was too short, but three terms was too long. Two was just right. According to the Statute of Apprentices of 1563, an apprenticeship was seven years.²⁰ Hence, fourteen years became the standard patent term.²¹

B. THE EARLY U.S. HISTORY OF PATENT TERMS

Prior to the American revolution and subsequent independence from Great Britain, some of the colonial legislatures and assemblies were issuing patents.²² However, the English Statute of Monopolies was not always followed. For instance, patent terms varied from as little as two years to twenty-one years in states such as Connecticut and Massachusetts.²³

After the revolution, several states took over the role of issuing patents.²⁴ For instance, between 1779 and 1791, there were twenty-three state patents granted,²⁵ without enactment of a dedicated patent law. The only state that formally addressed patent rights prior to the U.S. Constitution was South Carolina in the Copyright Statute of 1784.²⁶ This law stated that “[i]nventors of useful machines shall have a like exclusive privilege of making or vending their machines for the like terms of 14 years, under the same privileges and restrictions hereby granted to, and imposed on authors of books.”²⁷ In practice, some patents were granted for as short as five years, at least until 1786,

the apprentice would not practice a secret learned from the master for two apprenticeship periods (i.e., 7 + 7, or 14 years).”).

20. See Statute of Artificers, 1563, 5 Eliz., c. 4 (Eng.).

21. See Statute of Monopolies 1623, 21 Jac. 1, c. 3 (Eng.).

22. See Edward C. Walterscheid, *Charting a Novel Course: The Creation of the Patent Act of 1790*, 25 AIPLA Q. J. 445, 451 (1997).

23. See Tyler T. Ochoa & Mark Rose, *The Anti-Monopoly Origins of the Patent and Copyright Clause*, 84 J. PAT. & TRADEMARK OFF. SOC’Y 909, 919 (2002) (explaining that several colonies enacted anti-monopoly statutes except to the extent a new invention justified protection by granting an exclusive right to the inventor).

24. See Walterscheid, *Charting a Novel Course: The Creation of the Patent Act of 1790*, *supra* note 22, at 452–53.

25. *Id.* at 452 n.28 (“Bugbee is the best extant source; he lists some 23 state patents as having been granted between 1779 and 1791 . . . He limits his coverage, however, to so-called patents of invention and excludes patents for importation. Even including patents of importation, it is unlikely that more than 30 patents were granted during this period.”).

26. *Id.*

27. See Bracha, *supra* note 8, at 111–12.

when fourteen years became a universal patent term among state patents.²⁸

The U.S. Constitution nationalized this issue and gave Congress the power over patents.²⁹ However, the Constitution does not provide any details on term length. Soon after ratification, Congress passed the Patent Act of 1790, adopting a patent term of up to fourteen years.³⁰ Because there was no discussion on patent term length in the First Federal Congress, and the fact that Statute of Monopolies of 1624 is considered the cornerstone of American patent law,³¹ the fourteen-year patent term is likely inherited from the Statute of Monopolies.

Although the statute leaves open the possibility of shorter patent terms, there is no evidence of any patent term of less than fourteen years. A patent classification analysis published by the U.S. Patent and Trademark Office (USPTO) notes that the “[e]xpiration dates for this time period are not available.³²

Toward the end of the fourteenth year from when patents were first granted under the Patent Act of 1790, many inventors started to complain that the patent term was insufficient to realize profits on their inventions.³³ After considering the option of enacting a general renewal term of between seven and fourteen years for patents, or the extension of the patent term on a case by case basis, Congress chose

28. See Ochoa & Rose, *supra* note 23, at 922.

29. U.S. CONST. art. I, § 8, cl. 8 (“The Congress shall have Power to . . . promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”).

30. See Patent Act of 1790, ch.7, § 1, 1 Stat. 109-112 (“It shall and may be lawful to and for the Secretary of State, the Secretary for the department of war, and the Attorney General, or any two of them . . . to cause letters patent to be made out in the name of the United States . . . thereupon granting to such petitioner or petitioners, his, her or their heirs, administrators or assigns for any term not exceeding fourteen years.”); see also THE FEDERALIST NO. 43 (James Madison) (noting that the protection of arts and sciences promotes the public welfare).

31. See Ramon A. Klitzke, *Historical Background of the English Patent Law*, 41 J. PAT. OFF. SOC’Y 615, 615 (1959).

32. See Alan C. Marco et al., *The USPTO Historical Patent Data Files 10* (USPTO, Working Paper No. 2015-1, 2015).

33. See Tyler T. Ochoa, *Patent and Copyright Term Extension and the Constitution: A Historical Perspective*, 49 J. COPYRIGHT SOC’Y U.S.A. 19, 52 (2001).

the latter.³⁴ To provide more guidelines, Congress passed a statute in 1832 specifying the conditions under which it would consider an extension.³⁵ Applicants were requested to provide information, including the grounds of the application, a statement of the “ascertained value” of the invention, and the “receipts and expenditures” of the patentee.³⁶ Such applications would not necessarily lead to a grant of extension,³⁷ and an extension would still need a special act by Congress.³⁸ Between 1808 and 1836, Congress issued a total of eleven patent extension statutes upon the requests of the patent holders.³⁹

The Patent Act of 1836 officially codified the patent term extension process.⁴⁰ While it retained the initial fourteen-year patent term, it included a procedure by which the Commissioner of the Patent Office could extend a patent for seven more years upon request.⁴¹ The request filed by the patent holder should demonstrate a lack of “reasonable remuneration for the time, ingenuity, and expense.”⁴² Unfortunately, the historical data on which patents were extended did not survive.⁴³

The extension process proved to be burdensome to the Commissioner of the Patent Office. As a compromise on the issue of patent term length, through the Patent Act of 1861, Congress settled on a flat term of seventeen years without any extension, starting from the date of issue of the patent.⁴⁴

34. *See id.* (noting that Congress preferred a renewal of extension to depend on the particular patent, not a fixed term of protection).

35. *Id.*

36. *See* Act of July 3, 1832, ch. 162, § 2, 1 Stat. 558, 559.

37. Robert P. Merges & Glenn H. Reynolds, *The Proper Scope of the Copyright and Patent Power*, 37 HARV. J. LEGIS. 45, 60 (2000) (stating that most requests for patent extensions have traditionally been denied).

38. *Id.*

39. Ochoa, *supra* note 33, at 52.

40. Patent Act of 1836, ch. 357, § 18, 5 Stat. 117.

41. *Id.*

42. *Id.*

43. *See* Alan C. Marco et al., *supra* note 32, at 12 (stating that much of the patent historical data and classification information was either missing or destroyed prior to 1840).

44. Ochoa, *supra* note 33, at 53.

II. NEGOTIATING HISTORY OF THE TRIPS AGREEMENT

The seventeen-year U.S. term continued until the issue was discussed during the Uruguay Round trade talks.⁴⁵ Article 27.1 of the TRIPS Agreement prevents discrimination against patents in particular fields,⁴⁶ and Article 33 then sets out a minimum patent term of twenty years.⁴⁷ As a result of these rules, taken together, governments must provide at least twenty years of patent protection to all “fields of technology.”⁴⁸ These rules reflect international obligations, and thus give off an air of consensus and certainty. However, the negotiations over these rules make clear that there were, in fact, a wide range of opinions on these issues.⁴⁹

Prior to the Uruguay Round negotiation, which began in 1986, approximately fifty countries, mostly developing, did not have patent protection for pharmaceutical products.⁵⁰ Additionally, a portion of the remaining countries only allowed patents of pharmaceutical processes but not the actual products.⁵¹ During the negotiation, the focus of Article 27.1 was the scope and exemptions of patentable subject matter.⁵² The term, “non-discrimination,” was introduced into the negotiation as a reflection of core General Agreement on Tariffs and Trade (GATT) principles,⁵³ such as national treatment and most-favorable nation (MFN), as proposed by the European Union (EU) and

45. See Patricia Montalvo, *How Will the New Twenty-Year Patent Term Affect You? A Look at the Trips Agreement and the Adoption of a Twenty-Year Patent Term*, 12 SANTA CLARA HIGH TECH. L. J. 139, 140, 142 (1996) (describing the shift in the U.S. patent term from a seventeen to a twenty-year term under the GATT implementing legislation).

46. TRIPS art. 27, *supra* note 1.

47. *Id.* art. 33.

48. *Id.* arts. 27, 33.

49. See TERENCE STEWART, *THE GATT URUGUAY ROUND A NEGOTIATING HISTORY* 474 (1986–1994).

50. *The TRIPS Agreement and Pharmaceuticals*, ASEAN WORKSHOP ON THE TRIPS AGREEMENT AND ITS IMPACT ON PHARMACEUTICALS 11 (May 2–4, 2000), <http://apps.who.int/medicinedocs/en/d/Jh1459e/>.

51. *Id.* at 7.

52. TRIPS art. 27, *supra* note 1.

53. See GATT Secretariat, Meeting of Negotiating Group of 12–14 July 1989, ¶ 3, GATT Doc. MTN.GNG/NG11/14 (Sept. 12, 1989).

Switzerland.⁵⁴ Both developing and developed countries expressed the intent to incorporate non-discrimination into the TRIPS Agreement as a fundamental principle, while there were some discussions over the scope and exceptions of the non-discrimination and MFN principles.⁵⁵ The term “discrimination” was not inserted into the patentable subject matter clause of Article 27.1 until the final version.⁵⁶ The concept of non-discrimination among the field of technology, which raised the question of whether certain industries should be exempted from TRIPS and therefore enjoy more flexible patent protection among member states, was discussed throughout the negotiation history under the issue of patentable subject matter.⁵⁷

Looking into the negotiating history of the TRIPS Agreement, it was clear that the participants were divided on the issues of subject matter and patent term.⁵⁸ Some countries, mostly developing countries, proposed excluding pharmaceutical products from patent-eligible subject matter either by explicitly listing it in the patent exemptions⁵⁹ or by incorporating a general exemption clause to give states the leeway to exclude other categories of inventions on the grounds of national interest and public health.⁶⁰ Most of these

54. *Id.* ¶¶ 51, 85 (proposing commitments on the application of non-discrimination, MFN, and national treatment principles).

55. See GATT Secretariat, Meeting of Negotiating Group of 14–16 May 1990, ¶ 17, GATT Doc. MTN.GNG/NG11/21 (June 22, 1990); see also GATT Secretariat, Meeting of Negotiating Group of 5–6 February 1990, ¶¶ 14, 20, GATT Doc. MTN.GNG/NG11/18 (Feb. 27, 1990).

56. TRIPS art 27, *supra* note 1.

57. See Standards and Principles Concerning the Availability, Scope and Use of Trade-Related Intellectual Property Rights, Communication from India, ¶¶ 19–20, GATT Doc. MTN.GNG/NG11/W/37 (July 10, 1989) [hereinafter Communication from India 1989]; see also Communication from Argentina, Brazil, Chile, China, Colombia, Cuba, Egypt, India, Nigeria, Peru, Tanzania and Uruguay, arts. 3–4, GATT Doc. MTN.GNG/NG11/W/71 (May 14, 1990) [Communication from Argentina et al.]; see *infra* notes 58–61.

58. See STEWART, *supra* note 49, at 474.

59. See Communication from India 1989, *supra* note 57 ¶ 18 (noting India and Spain’s suggestions that the GATT Negotiating Group consider developing countries’ exclusion of food, pharmaceuticals, and chemical products from patentability).

60. See Communication from Argentina et al. art. 4, *supra* note 57 (setting forth Argentina, Brazil, Chile, China, Colombia, Cuba, Egypt, India, Nigeria, Peru, Tanzania and Uruguay’s exemption clause precluding patent protection for inventions whose use would adversely affect public health).

countries also proposed a flexible patent duration determined by national interests in each country in either their draft proposals or discussions during the negotiation meeting.⁶¹

Proposals from the developed countries took a different view on these two issues. The United States,⁶² European Communities (now EU),⁶³ Nordic countries (Denmark, Finland, Norway, and Sweden),⁶⁴

61. See Standards and Principles Concerning the Availability, Scope and Use of Trade-Related Intellectual Property Rights, Communication from Colombia, art. 41, GATT Doc. MTN.GNG/TRIPS/W/2 (Oct. 16, 1991); see also Communication from Argentina, Brazil, Chile, China, Colombia, Cuba, Egypt, India, Nigeria, Peru, Tanzania and Uruguay, art. 4(3), GATT Doc. MTN.GNG/NG11/W/71 (May 14, 1990); Negotiating Group on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, Communication from Mexico, ¶ 3, GATT Doc. MTN.GNG/NG11/W/60 (Jan. 22, 1990); Negotiating Group on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, Communication from Brazil, ¶ 21, GATT Doc. MTN.GNG/NG11/W/57 (Dec. 11, 1989); Guidelines for Negotiations that Strike a Balance Between Intellectual Property Rights and Development Objectives, Communication from Peru, ¶ 1.4, GATT Doc. MTN.GNG/NG11/W/45 (Oct. 27, 1989); Communication from India 1989, *supra* note 57, ¶¶ 18, 26.

62. See Draft Agreement on the Trade-Related Aspects of Intellectual Property Rights, Communication from the United States, art. 2(1)(a), GATT Doc. MTN.GNG/NG11/W/70 (May 11, 1990) [hereinafter Communication from the United States]; see also Suggestion by the United States for Achieving the Negotiating Objective, Revision, ¶ 3, GATT Doc. MTN.GNG/NG11/W/14/Rev.1 (Oct. 17, 1988) [hereinafter Suggestion by the United States].

63. See Draft Agreement on Trade-Related Aspects of Intellectual Property Rights, Communication from the European Communities, art. 10(1), GATT Doc. MTN.GNG/NG11/W/68 (Mar. 29, 1990) [hereinafter Communication from the European Communities].

64. Proposal by the Nordic Countries for the Negotiations on Standards and Principles for Trade-Related Aspects of Intellectual Property Rights, ¶ 1.1, GATT Doc. MTN.GNG/NG11/W/36 (July 10, 1989) [hereinafter Proposal by the Nordic Countries].

Australia,⁶⁵ Switzerland,⁶⁶ New Zealand,⁶⁷ Canada,⁶⁸ Korea,⁶⁹ Japan,⁷⁰ and Hong Kong⁷¹ proposed to include all fields of technology in the TRIPS Agreement. On the matter of patent duration, there was some divergence between the countries. Australia and New Zealand historically had shorter patent terms and therefore advocated patent terms of fifteen and sixteen years respectively.⁷² Others suggested a fixed term of twenty years or higher.⁷³

65. Standards and Norms for Negotiations on Trade-Related Aspects of Intellectual Property Rights, Communication from Australia, ¶ 1, GATT Doc. MTN.GNG/NG11/W/35 (July 10, 1989) [hereinafter Communication from Australia].

66. Draft Amendment to the General Agreement on Tariffs and Trade on the Protection of Trade-Related Intellectual Property Rights, Communication from Switzerland, art. 229(2)–(3), GATT Doc. MTN.GNG/NG11/W/73 (May 14, 1990) [hereinafter Communication from Switzerland - Draft Amendment]; Standards and Principles Concerning the Availability, Scope and Use of Trade-Related Intellectual Property Rights, Communication from Switzerland, ¶¶ 1.1–1.2, GATT Doc. MTN.GNG/NG11/W/38 (July 11, 1989) [hereinafter Communication from Switzerland - Standards and Principles].

67. Standards and Principles for Negotiations on Trade-Related Aspects of Intellectual Property Rights, Communication from New Zealand, ¶ 1, GATT Doc. MTN.GNG/NG11/W/46 (Oct. 24, 1989) [hereinafter Communication from New Zealand].

68. Standards for Trade-Related Intellectual Property Rights, Submission from Canada, ¶ A(4), GATT Doc. MTN.GNG/NG11/W/47 (Oct. 25, 1989) [hereinafter Submission from Canada].

69. Standards and Enforcement of Intellectual Property Rights, Communication from the Republic of Korea, ¶ 2.1.1, GATT Doc. MTN.GNG/NG11/W/48 (Oct. 26, 1989) [hereinafter Communication from Republic of Korea].

70. Negotiating Group on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, Main Elements of a Legal Text for Trips, Communication from Japan, ¶ 2.1.1, GATT Doc. MTN.GNG/NG11/W/74 (May 15, 1990) [hereinafter Communication from Japan - Main Elements]; Negotiating Group on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, Submission by Japan, Addendum, ¶ 3, GATT Doc. MTN.GNG/NG11/W/17/Add.1 (Sept. 23, 1988) [hereinafter Submission by Japan - Addendum].

71. Standards for Trade-Related Intellectual Property Rights, Submission from Hong Kong, ¶¶ 11–13, GATT Doc. MTN.GNG/NG11/W/51 (Nov. 29, 1989) [hereinafter Submission from Hong Kong].

72. Communication from New Zealand, *supra* note 67, ¶ 3; Communication from Australia art. 5, *supra* note 65.

73. Communication from Japan - Main Elements, *supra* note 70, ¶ 4; Communication from Switzerland - Draft Amendment art. 231(1), *supra* note 66; Communication from the United States art. 25, *supra* note 62; Communication from

	Patent-eligible Subject Matter		Patent Term		
	Pharmaceutical products excluded or left to the discretion of states	Pharmaceutical products included	Less than 20 years	20 years or more	Left to the discretion of states
Country	India, Spain, Brazil, Mexico, Peru, Argentina, Chile, China, Colombia, Cuba, Egypt, Nigeria, Tanzania, and Uruguay	United States, European Community, Nordic countries, Australia, Switzerland, New Zealand, Canada, Korea, Japan, and Hong Kong	Australia and New Zealand	United States, European Community, Nordic countries, Switzerland, Canada, Korea, Japan, and Hong Kong	India, Spain, Brazil, Mexico, and Peru

The negotiating texts reflected these different views. In an informal draft text in 1990, the patent scope was close to the final version of the TRIPS Agreement.⁷⁴ The clause of patentable subject matter confirmed that all industries should be given the patent protection, which covered pharmaceutical and medical products (although there was no mention of non-discrimination):⁷⁵

1.1 Patents shall be [available] [granted] for [any inventions, whether products or processes, in all fields of technology,] [all products and processes] which are new, which are unobvious or involve an inventive step

the European Communities art. 25, *supra* note 63; Submission from Hong Kong, *supra* note 71, ¶ 29; Communication from Republic of Korea, *supra* note 69, ¶ 1.2; Submission from Canada, *supra* note 68, ¶ A(5); Communication from Switzerland - Standards and Principles, *supra* note 66, ¶ 1.3; Proposal by the Nordic Countries, *supra* note 64, ¶ 1.4; Suggestion by the United States, *supra* note 62, ¶ 3; Submission by Japan - Addendum, *supra* note 70, ¶ 3.

74. See generally Status of Work in the Negotiating Group, Chairman's Report to the GNG, GATT Doc. MTN.GNG/NG11/W/76 (July 23, 1990) (containing a "compilation of the options for legal commitments" suggested during negotiations to be considered for review).

75. *Id.* ¶ 5.1.1.

and which are useful or industrially applicable.⁷⁶

By contrast, the patent term clause was less settled. Several possibilities for this clause were included in the draft, reflecting the negotiation process and the prevalent views at the time:

4A.1 The term of protection shall be [at least] [15 years from the date of filing of the application, except for inventions in the field of pharmaceuticals for which the term shall be 20 years] [20 years from the date of filing of the application] [or where other applications are invoked in the said application, 20 years from the filing date of the earliest filed of the invoked applications which is not the priority date of the said application].

4A.2 PARTIES are encouraged to extend the term of patent protection in appropriate cases, to compensate for delays regarding the exploitation of the patented invention caused by regulatory approval processes.

4B It shall be a matter for national legislation to determine the duration of protection.⁷⁷

After this draft, two more changes were made before the parties finalized the TRIPS Agreement's text. Other than the general language that grants patent protection to every sector, Article 27.1 also included a non-discrimination clause to ensure the equal protection in all fields of technology.⁷⁸ With regard to the patent term length, a twenty-year fixed term, advocated by the U.S., prevailed.⁷⁹ Developing countries were convinced that they would benefit by gaining access to markets for agricultural and textile products under the World Trade Organization (WTO) treaties as a tradeoff for raising the intellectual property (IP) protection standard.⁸⁰ Another reason that they were willing to concede on the IP issues was because the WTO established the Dispute Settlement Body (DSB).⁸¹ The DSB was appealing to

76. *Id.*

77. *Id.* ¶ 4.A.

78. TRIPS art. 27, *supra* note 1.

79. *The TRIPS Agreement and Pharmaceuticals*, *supra* note 50, at 9, 19, 21.

80. *See id.* at 9, 11 (noting that after refusing to negotiate an agreement on intellectual property for almost 3 years, developing countries finally agreed to this tradeoff, and unfortunately most of them received less benefits than expected).

81. *Id.* at 9, 11.

developing countries because it stopped the United States from using Section 301 to retaliate against countries,⁸² which were deemed as non-compliant with adequate standards of IP by the U.S. government.⁸³ In exchange for the market access and the DSB, developing countries gave in on the issues of the patent-eligible subject matter and patent term. The final version of the TRIPS Agreement set the length of the patent term to a minimum of twenty years, and this term equally applies to all industries.⁸⁴

III. ECONOMISTS' SKEPTICISM ABOUT LONG, UNIFORM PATENT TERMS

As with many issues, economists' views on patents vary, so it is not possible to cite to a clear consensus in this regard.⁸⁵ Nevertheless, many economists have questioned the current patent system in relation to both its length and scope of coverage.⁸⁶ In recent years, perhaps because of strengthened protections, their criticisms have intensified.

Economic analysis of patent terms began in earnest in the late 1960's through the work of William Nordhaus, who looked at the "optimal patent life" and found that there was little effect on welfare from extending patent terms beyond ten years.⁸⁷ Follow-up work by F.M. Scherer proposed a flexible system under which patents would initially be granted a shorter term, with extensions where needed.⁸⁸ He believed that a flexible, product-specific patent term system would be appropriate.⁸⁹ He noted that a good policy "would tailor the life of each

82. *See id.* at 9, 11–12 (recognizing that this expectation of developing countries has not been fulfilled either because the United States continues to use Section 301).

83. *Id.*

84. *Id.* at 9, 21.

85. *See, e.g.,* Michele Boldrin & David K. Levine, *The Case Against Patents*, 27 J. ECON. PERSPECTIVES 3, 17 (2013), <http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.27.1.3> (discussing that while the political economy plays a key role in this subject, economists surprisingly have had very little to say regarding the understanding of why we have our current patent system).

86. Paul Klemperer, *How Broad Should the Scope of Patent Protection Be?*, 21 RAND J. ECON. 113, 113 (1990).

87. William D. Nordhaus, *The Optimum Life of a Patent: Reply*, 63 AM. ECON. REV. 428, 428 (1972).

88. F.M. Scherer, *Nordhaus' Theory of Optimal Patent Life: A Geometric Reinterpretation*, 62 AM. ECON. REV. 422, 422–23 (1972).

89. *See id.* at 426–27 ("A uniform policy of long-lived patent grants confers

patent to the economic characteristics of its underlying invention,” which could be achieved “through a flexible system of compulsory licensing, under which the patent recipient bears the burden of showing why his patent should not expire or be licensed at modest royalties to all applicants three or five years after its issue.”⁹⁰

In the following years, various legal and economic scholars have weighed in. Paul Klemperer, an economist at Oxford University, suggested that “optimal patent policies vary across different classes of products.”⁹¹ In the late 1990s, economist Thomas Mandeville pointed out the problem of a unified patent term system, in which he observed that “[a] new perspective on the patent system, indeed a new theory of the patent system is needed.”⁹² In this regard, Mandeville suggested taking into account of the “economic characteristics of information.”⁹³ Similarly, Lester Thurow questioned the rationality of providing an equal patent duration to all inventions on the grounds that the contribution and cost for each invention can be vastly different.⁹⁴ He proposed an optimal patent system, which would take into account the technology and income of the country, the industry, and the type of knowledge.⁹⁵ For instance, he used electronics and pharmaceutical invention as examples, with the former warranting a shorter term and the latter deserving longer protection. He also believed that “fundamental advances” and “logical extensions of existing knowledge” should be treated differently.⁹⁶

More recently, a number of lawyers and economists have advocated for flexible and shorter patent terms. Law professor Michael Carroll

excessive private rewards in these cases, compensated to some unknown extent by the social benefits realized from low benefit-cost projects which otherwise would not have been undertaken and by stimulus effects at the margin of projects which would have been undertaken even with short patent lives.”)

90. *Id.* at 427.

91. See Klemperer, *supra* note 86, at 127 (emphasizing how we must be very cautious about drawing policy conclusions from the simple model that this result derived from).

92. THOMAS MANDEVILLE, UNDERSTANDING NOVELTY: INFORMATION, TECHNOLOGICAL CHANGE, AND THE PATENT SYSTEM 35 (1996).

93. *Id.* at 91.

94. Lester Thurow, *Needed: A New System of Intellectual Property Rights*, 75 HARV. BUS. REV. 95, 103 (1997).

95. *Id.*

96. *Id.* at 98.

criticized the flat twenty-year patent term for all industries.⁹⁷ And in his book *Launching the Innovation Renaissance*, economist Alex Tabarrok also questioned the notion that all patents should be twenty years long.⁹⁸ He suggests that:

[P]atents should be stronger in industries with high innovation-to-imitation costs such as pharmaceuticals and weaker in industries with low innovation-to-imitation costs such as software. Patents of say three, 10 and 12 years could be offered with the divisions either based on industry—with software and business-method patents getting three years, pharmaceuticals 20 years, and other innovations 10 years—or based on evidence of sunk costs. An innovator that wanted a three-year patent, for example, need not offer any evidence on sunk costs and would receive a quick response. Innovators applying for 10- and 20-year patents would have to provide more information and would need to pass a higher hurdle.⁹⁹

In essence, the length of the term would be tied to the costs involved in innovating. Patent terms of far less than twenty years will often be sufficient.¹⁰⁰ Tabarrok has also stressed the importance of sunk costs in determining patent duration. He points out that:

[P]atent law extends protection to many classes of innovations—including software, medical procedures, and business processes as well as to many vague ‘ideas’ – where innovation costs are low relative to imitation cost. Unnecessary monopoly distortions and perhaps reduced innovation are the result. A patent system based on the economic theory of patents would take sunk costs into consideration – extending fewer protections when sunk costs are low. Sunk costs could be taken into consideration in the allowing of patentable product classes, in ruling on individual patents, in setting the

97. See Michael W. Carroll, *One for All: The Problem of Uniformity Cost in Intellectual Property Law*, 55 AM. U. L. REV. 845, 847 (2006) (“Applying a socially costly uniform solution to problems of differing magnitudes means that the law necessarily imposes uniformity cost by underprotecting those who invest, or would invest, in certain costly innovations and overprotecting those with low innovation costs or access to alternative appropriability mechanisms.”).

98. See ALEX TABARROK, *LAUNCHING THE INNOVATION RENAISSANCE: A NEW WAY TO BRING SMART IDEAS TO MARKET FAST* 27 (2011) (considering the idea that patents are supposed to incentivize inventions, but broad, vague claims and the allowance of retroactively changing claims incentivizes the patenting and not the invention).

99. *Id.*

100. See *id.* at 27–28 (noting that most countries already have a small patent system in place that grants seven to ten year patents for small innovations).

duration of patents, or in setting patent breadth.¹⁰¹

Along the same lines, federal judge and legal scholar Richard Posner also supports varying the patent term. In this regard, he has stated that “U.S. patent law does not discriminate among types of inventions or particular industries. This is, or should be, the most controversial feature of that law. The reason is that need for patent protection in order to provide incentives for innovation varies greatly across industries.”¹⁰² As an illustration, he notes some cases where a shorter patent duration is warranted:

[P]harmaceuticals are the poster child for the patent system. But few industries resemble pharmaceuticals in the respects that I’ve just described. In most, the cost of invention is low; or just being first confers a durable competitive advantage because consumers associate the inventing company’s brand name with the product itself; or just being first gives the first company in the market a head start in reducing its costs as it becomes more experienced at producing and marketing the product; or the product will be superseded soon anyway, so there’s no point to a patent monopoly that will last 20 years; or some or all of these factors are present. Most industries could get along fine without patent protection. . . . There are a variety of measures that could be taken to alleviate the problems I’ve described. They include reducing the patent term for inventors in industries that do not have the peculiar characteristics of pharmaceuticals that I described.¹⁰³

Other scholars focus on the length of patent term protection. Economist Gary Becker has argued that “[t]he current patent length of 20 years (longer for drug companies) from the date of filing for a patent can be cut in half without greatly discouraging innovation.”¹⁰⁴ He observed that “[e]ven pharmaceutical and biotech companies, the

101. See Alex Tabarrok, *Patent Theory versus Patent Law*, 1 CONTRIBUTIONS TO ECON. ANALYSIS & POL’Y 1, 21–22 (2002), <https://mason.gmu.edu/~atabarro/PatentPublished.pdf> (finding that changing the breadth of patents would be the easiest for our current system to accommodate).

102. Richard Posner, *Why There are Too Many Patents in America*, ATLANTIC (June 12, 2012), <http://www.theatlantic.com/business/archive/2012/07/why-there-are-too-many-patents-in-america/259725/>.

103. *Id.*

104. Gary Becker, *On Reforming the Patent System*, BECKER-POSNER BLOG (July 21, 2013), <http://www.becker-posner-blog.com/2013/07/on-reforming-the-patent-system-becker.html>.

main examples where patents are clearly necessary to encourage innovation, usually do not need more than about a decade of monopoly power to encourage their very large investments in new drugs.”¹⁰⁵ This view is supported by law professor Brian Love, who noted the negative impact of a long patent term:

In a world in which at least some products are out of date by the time they hit store shelves, the last few years of a two-decade-long patent term seem unlikely to incentivize greater innovation. To the contrary, it appears that the waning years of patent protection primarily benefit litigation-oriented patentees who do little more with their aging patent rights than impose steep legal costs on those selling successful products.¹⁰⁶

In *The Case Against Patents*, economists Michele Boldrin and David K. Levine offer a broader attack on patents:

Both theory and evidence suggest that while patents can have a partial equilibrium effect of improving incentives to invent, the general equilibrium effect on innovation can be negative. The historical and international evidence suggests that while weak patent systems may mildly increase innovation with limited side effects, strong patent systems retard innovation with many negative side effects.¹⁰⁷

They note that “[p]atents are time limited, which makes it relatively easy to phase them out by phasing in ever shorter patent durations.”¹⁰⁸ They also suggest that “[i]f the US economy is to have patents, we may want to start tailoring their length and breadth to different sectoral needs.”¹⁰⁹

Their conclusion is echoed in a recent *Economist* cover story, *Time to Fix Patents*, which calls the current patent system a creator of “a parasitic ecology of trolls and defensive patent-holders,” and calls for a shorter patent term:

Patents also last too long. Protection for 20 years might make sense in the

105. *Id.*

106. Brian Love, *An Empirical Study of Patent Litigation Timing: Could a Patent Term Reduction Decimate Trolls Without Harming Innovators?*, 161 U. PA. L. REV. 1309, 1409 (2013).

107. Boldrin & Levine, *supra* note 85, at 3.

108. *Id.* at 18.

109. *Id.* at 19.

pharmaceutical industry because to test a drug and bring it to market can take more than a decade. But in industries like information technology, the time from brain wave to production line, or line of code, is much shorter. When patents lag behind the pace of innovation, firms end up with monopolies on the building-blocks of an industry. . . . Even pharmaceutical firms could live with shorter patents if the regulatory regime allowed them to bring treatments to market sooner and for less upfront cost.¹¹⁰

IV. CONCLUSION

More than twenty years after the adoption of the TRIPS Agreement, discussions concerning patent terms have largely disappeared in the international arena. However, economists continue to remind us of the lack of an economic foundation for the current patent term system.

With regard to a variable patent term, a uniform patent system for all products does have its upsides. For starters, the uniform system reduces the administrative cost and simplifies the system.¹¹¹ Without having to distinguish different characteristics of claimed inventions, which can be abstract and obscure, the process will be more cost-effective.¹¹² Political economy considerations also weigh in favor of uniformity since it may increase the cost of rent seeking by individuals and other interest groups.¹¹³ In practice, it minimizes the chance for competitors to game the system to attain the most favorable treatment.¹¹⁴

On the other hand, as noted above, many economists suggest that

110. *Time to Fix Patents*, ECONOMIST (Aug. 8, 2015), <https://www.economist.com/leaders/2015/08/08/time-to-fix-patents>.

111. Michael W. Carroll, *One Size Does Not Fit All: A Framework for Tailoring Intellectual Property Rights*, 70 OHIO ST. L. J. 1361, 1399 (2009).

112. See JAE HUN PARK, PATENTS AND INDUSTRY STANDARDS 162–63 (2010) (recalling the high administrative costs involved with differential treatment and recognizing that it is impossible to find the right length and scope of patents in each industry); see also ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT 204 (2004) (explaining the difficulty in implementing differential treatment because of the inevitable tendency of patentees to put themselves in the position of the most favorable treatment).

113. See Carroll, *supra* note 111, at 1398–99 (commenting that interest group involvement in copyright and patent legislation has grown immensely in the last few years).

114. JAFFE & LERNER, *supra* note 112, at 204.

“discrimination” across sectors, instead of the current flat patent term, can be beneficial.¹¹⁵ They argue that economic welfare is improved if elements such as difficulty, cost, benefit, and other characteristics of the industry are taken into account when granting patent protection.

At the present time, there is no movement to reform the existing system of patent terms. There are a few economists and lawyers who write about this issue, but the larger public is not engaged in this debate. The absence of a broad consensus for change makes reform difficult. At the same time, there are widespread concerns about the costs of pharmaceutical products.¹¹⁶ Wide realization that long patent terms lead to high costs of certain products could lead to changes to the system

With regard to practical changes that might be made, as explained above, economists’ critiques make various suggestions for reform, but do not necessarily set out a concrete alternative for a domestic patent term system. Thus, details of possible new domestic systems for patent terms are lacking. However, while there is no fully fleshed out replacement to draw on, and no comprehensive reform to propose, there is a narrower path to making changes to the current system. Under the TRIPS Agreement, the patent term must be at least twenty years and must apply to all products.¹¹⁷ If that requirement was removed, governments would then have the discretion to experiment with different domestic systems. In these circumstances, they could at least begin to have a conversation about how patent terms might be altered in welfare improving ways.

115. See discussion *infra* Part III (recalling that patents in varying industries require different periods of protection in order to incentivize innovation).

116. See Tahir Amin, *The Problem with High Drug Prices Isn't 'Foreign Freeloading,' It's the Patent System*, CNBC (June 27, 2018), <https://www.cnbc.com/2018/06/25/high-drug-prices-caused-by-us-patent-system.html> (explaining that high costs of pharmaceutical products in the United States are caused by the unfair pricing systems created from the strongest drug patent monopolies at any point in the last century).

117. *The TRIPS Agreement and Pharmaceuticals*, *supra* note 50, at 9, 21.