GLOBALIZATION AND THE TECHNOLOGY STANDARDS GAME: BALANCING CONCERNS OF PROTECTIONISM AND INTELLECTUAL PROPERTY IN INTERNATIONAL STANDARDS

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"Standards are fundamentally political and have nothing to do with technology."[1]

I. INTRODUCTION

In an era of increasing globalization, protectionism in the form of nationally mandated technology standards cannot be the answer. To persuade countries to forgo such measures, however, there must be fairness in the international system for the preparation, adoption, and implementation of standards. In May 2003, China's governmental standard-setting bodies approved the WLAN Authentication and Privacy Infrastructure (WAPI) security standard for wireless devices and decreed that by December of that year, it should be incorporated into all wireless devices sold or imported into China.[2] Due to incompatibility between the WAPI standard and existing international standards, this mandatory approach would have fractured the world market for wireless local area network (WLAN) products. In addition, western companies would be required to license WAPI technology from a handful of Chinese companies, under terms that might

1. Lynnette Luna, *Reality Game*, MOBILE RADIO TECH., Jan. 2007, *available at* http://mrtmag.com/mag/radio_reality_game (quoting Carl Cargill, chief standards officer for Sun Microsystems).

2. *See infra* Part IV.A for an explanation of the WAPI standard and these events.

have required the foreign companies to disclose details of their own proprietary technologies. China adopted this approach even though there was an existing and widely accepted international standard for WLAN communications known as the 802.11 standard. Under strong pressure from the highest levels of the United States government, the Chinese government later suspended its mandate. The Chinese then sought, unsuccessfully, to have the WAPI technology adopted as an international standard before the International Organization for Standardization (ISO). To this day, China continues to promote the WAPI standard by other means.

Standards for technology have become a significant factor in international trade. At a time when global information and communications technologies ("ICT")[3] increasingly require compatible and harmonized standards to be fully effective, the role of standards is assuming increasing policy importance. This is particularly true as more countries recognize and act on the premise that standards can be leveraged to advance national economic interests. China's demonstrated intention to promote domestic standards, expressing their concern that intellectual property (IP) and western dominance in standard-setting bodies hamper their adoption of international standards and thus their participation in international trade, has caused tension to arise between China and the United States. China's actions over the last few years, seeking to set its own domestic standards instead of adopting existing international standards, shifts focus to the impact on international trade and the corresponding legal framework of the World Trade Organization (WTO).[4] While trade barriers of the past—high tariffs and quotas imposed on imports—have been greatly reduced or in some circumstances eliminated, less obvious impediments often referred to as non-tariff barriers ("NTBs")[5] have in many cases replaced them.[6]

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3. For purposes of this article, information and communications technology ("ICT") refers to computer hardware and software, semiconductors, telecommunications, and the internet. *See, e.g.*, Mark A. Lemley, *Ten Things to Do About Patent Holdup of Standards (And One* Not *To)*, 48 B.C. L. REV. 149-50 (2007).

4. *See infra* Part V (discussing the WTO and its rules concerning standards and technical barriers to trade).

5. Non-tariff barriers are restrictions imposed on imports but not in the usual forms of a tariff or quota. *See, e.g.*, AM. NAT'L STANDARDS INST., UNITED STATES STANDARDS STRATEGY 12 (2005) [hereinafter ANSI] ("As tariff barriers have been reduced, technical standards have become more prominent as potential barriers to market access for products and services.").

6. A recent OECD Report states that "[t]he leading players in the field of international standards share the perception that trade liberalization has moved on from its earlier focus on tariffs, quotas, and related issues, and into the area of NTBs (non-tariffs barriers); that standardization forms a legitimate area of study in that context . . . ." Org. for Econ. Cooperation & Dev. [OECD], Working Party of the Trade Comm., *Regulatory*

NTBs have attracted increasing attention as complex new forms of trade protectionism, and one area ripe for the incursion of NTBs is ICT standards.

Standards can be leveraged legitimately to advance the objectives of economic development and national competitiveness. At the same time, however, national standards can be used to protect domestic industries from global competition.[7] The WTO's Agreement on Technical Barriers to Trade ("TBT Agreement")[8] recognizes the important contribution that international standards can make, but also cautions that standards should not be used to create unnecessary barriers.[9] As a means of harmonization, the TBT Agreement requires that, where relevant international standards exist and subject to certain exceptions, governments must use them as a basis for any mandatory national standards (referred to as "technical regulations" in the TBT Agreement).[10] The claim shared by a number of interested parties, including governments, against China is that it is focusing on home-grown standards, developed in a national standard-setting system that is insufficiently open and transparent, to the detriment of existing international standards. China has responded that the mandatory adoption of international standards comes at a significant cost, particularly for developing countries. It has complained of unfair treatment when seeking to participate in the international standards system, suggesting that IP rights create obstacles for them and other developing countries by hindering access to new technologies and imposing significant costs in the form of royalty payments.

In this context, it is important to consider concerns of protectionism, on the one hand, and fairness in the system for the preparation, adoption, and implementation of standards, on the other. To hold countries such as China accountable to adopt technology standards in a manner that complies with its international trade obligations, the existing system for inter-

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Reform and International Standardization, ¶ 1, TD/TC/WP(98)36/FINAL (Jan. 28, 1999).

7. The presence of multiple standards, or of a required national standard differing from existing international standards, can significantly increase costs for foreign firms, or severely limit their market access. The national standard may be strategically interposed to drive up costs for foreign companies or impede their ability to obtain required certification of their goods or services.

8. Agreement on Technical Barriers to Trade, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, Legal Instruments—Results of the Uruguay Round, *available at* http://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm [hereinafter TBT Agreement].

9. *Id.* at preamble, ¶¶ 2, 4.

10. *Id.* at art. 2.4.

national standards should be open, accessible, and fair to all potential participants. I contend that, particularly in view of the demands of the ICT sector, meeting these objectives requires that IP issues be addressed in the trade and standards context. IP is central to the development of standards in the ICT industries. The more technical the content, the more likely that IP rights—most often in the form of patents—will be involved. Yet an uneasy tension exists between trade law obligations to use relevant international standards and the possibility that such adoption will entail payment of royalties to foreign IP owners. If the goal is to use international standards as an important means to overcome national regulatory barriers, then more consideration needs to be given to the role of IP as it relates to international standards and trade and, in particular, as an element to be factored into the framework of the WTO's TBT Agreement.

My aim in this Article is to explore the relationship between international standards, trade law, and IP. While there has been scholarly examination of standards in relation to the IP and antitrust issues, particularly from a U.S. perspective,[11] there has been much less attention paid to standards and their indeterminate nature as trade facilitators and indispensable elements of the ICT industry, or as potential measures of protectionism when applied inappropriately.[12] I focus, as a test case, on China's development of a proprietary encryption standard for WLAN communications—the WAPI standard. The WAPI case has recently caught the atten-

11. *See* Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889 (2002); Michael A. Carrier, *Why Antitrust Should Defer to the Intellectual Property Rules of Standard-Setting Organizations: A Commentary on Teece & Sherry*, 87 MINN. L. REV. 2019 (2003); Patrick D. Curran, *Standard-Setting Organizations: Patents, Price Fixing, and Per Se Legality*, 70 U. CHI. L. REV. 983 (2003); Daniel J. Gifford, *Developing Models for a Coherent Treatment of Standard-Setting Issues Under Patent, Copyright, and Antitrust Laws*, 43 IDEA 331 (2003); Lemley, *supra* note 3; Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2007); Kimberly A. Moore, *Worthless Patents*, 20 BERKELEY TECH. L.J. 1521, 1526 (2005); Janice M. Mueller, *Patenting Industry Standards*, 34 J. MARSHALL L. REV. 897 (2001); David J. Teece & Edward F. Sherry, *Standards Setting and Antitrust*, 87 MINN. L. REV. 1913 (2003); Kraig A. Jakobsen, Comment, *Revisiting Standard-Setting Organizations' Patent Policies*, 3 NW. J. TECH. & INTELL. PROP. 43 (2004); Pamela Samuelson, *Questioning Copyrights in Standards*, Berkeley Ctr. L. & Tech., Paper 22 (2006), http://repositories.cdlib.org/bclt/lts/22.

12. Jan M. McDonald, *Domestic Regulation, International Standards, and Technical Barriers to Trade*, 4 WORLD TRADE REV. 249 (2005). For a useful analysis of the TBT Agreement and its terms, *see also* Gabrielle Marceau & Joel P. Trachtman, *The Technical Barriers to Trade Agreement, the Sanitary and Phytosanitary Measures Agreement, and the General Agreement on Tariffs and Trade*, 36 J. WORLD TRADE 811 (2002).

tion of those studying standards, trade, and public policy.[13] It serves to illustrate standards' double-edged potential. It also highlights the IP dimension to international standards, identifying a source of real friction within the system. How do we balance the legitimate rights of IP owners to receive compensation against the interests of those countries and their constituents required to pursue harmonization by implementing international standards? For international standard setting in the ICT sector, the goal of promoting innovation must be squared with the goal of expanding international trade through harmonization.

My claim is that to balance and achieve these objectives, the legal recognition of international standards within the WTO regime should be revised to integrate a policy toward IP rights. Thoughtful rules governing IP rights have been developed by many national and international standard-setting bodies. I suggest that it is time to integrate these rules into the TBT Agreement framework. The WTO's Committee on Technical Barriers to Trade ("CTBT")[14] adopted, as a central feature of its second triennial review of the Agreement, the *Decision of the Committee on Principles for the Development of International Standards, Guides, and Recommendations with Relation to Articles 2, 5, and Annex 3 of the Agreement* ("CTBT Principles").[15] The CTBT Principles address a comprehensive array of issues underpinning fairness in international standard setting, including transparency, openness, impartiality and consensus, effectiveness and relevance, coherence, and measures to foster developing country participation. Yet the CTBT Principles, like the TBT Agreement itself, are silent on the issue of IP.

My proposal is that the CTBT Principles should be amended to address the treatment of IP rights (in particular patents) in international standard setting. Stated most broadly, the balance to be achieved is that standard-setting processes should respect the rights of IP owners to receive

13. *See* Richard P. Suttmeier & Yao Xiangkui, *China's Post-WTO Technology Policy: Standards, Software, and the Changing Nature of Techno-Nationalism*, 7 NBR SPECIAL REPORTS (2004); Zia K. Cromer, Comment, *China's WAPI Policy: Security Measure or Trade Protectionism?*, 2005 DUKE L. & TECH. REV. 18 (2005).

14. The CTBT oversees operation of the TBT Agreement, with representatives from every WTO member country. It has responsibility for the ongoing triennial review process, and reviewing accession commitments under the TBT Agreement for new WTO members.

15. Committee on Technical Barriers to Trade, *Decision of the Committee on Principles for the Development of International Standards, Guides, and Recommendations with Relation to Articles 2, 5, and Annex 3 of the Agreement*, Annex 4, Second Triennial Review of the Operation and Implementation of the Agreement on Technical Barriers to Trade, G/TBT/9 (Nov. 13, 2000).

reasonable compensation while ensuring that those seeking to implement standards can make an informed choice during the standards development process and have access—on fair terms—to the IP rights incorporated in standards.[16]

In Part II, I set the stage with background on ICT standards, international standard setting, and international trade. I discuss how standards are developed, explaining the diversity in approaches between the United States, European Union (EU), and China. In Part III, I chronicle the recent strains between the United States and China caused by international standard setting and the public policy issues that are implicated. In Part IV, I focus on the WAPI case. I review China's aborted attempt to mandate WAPI as a national technical regulation, analyze the motivations behind it, and discuss China's strategy for standards and related IP issues. In Part V, I discuss the TBT Agreement, review China's WTO accession commitments, and analyze China's policies concerning the WAPI standard in order to assess whether they are consistent with WTO rules. Finally, in Part VI I look specifically at IP and international standards. I argue that the objectives of harmonization and fairness in international trade and standard setting require not only that countries refrain from violating existing terms of the TBT Agreement, but that the WTO expand its framework for that Agreement so that IP rights are properly addressed in the standards development process. These measures should be helpful in addressing concerns of countries with emerging economies, while reinforcing IP rules that are already well established in many standard-setting fora. A balanced policy governing IP rights will promote harmonization and strengthen international standards, while supporting the rights of IP owners to receive reasonable compensation.

II. ICT STANDARDS AND DIVERSITY IN INTERNATIONAL STANDARD SETTING

There is no denying the importance of harmonized standards in an age of globalization. An OECD study in 1999 stated that "[t]he impact of standards on trade is so widespread that, on purely economic grounds, almost all [trade] sectors would justify attention; one estimate claims that up to 80% of trade (equivalent to around $4 trillion annually) is affected by

16. This balanced objective is similar to one stated among the "imperatives for action" in ANSI's *United States Standards Strategy*: "The standardization process must respect the rights of intellectual property owners while ensuring users have access to the intellectual property rights (IPR) incorporated in standards." *See supra* note 5, at 5.

standards or associated technical regulations."[17] To be sure, standards are "an integral part of the largely invisible infrastructure of the modern world that makes things work."[18] They are particularly essential in making things work well together. In this Part, I provide background on standard setting, focusing on ICT standards, and an overview of the different approaches in the United States, China, and the EU. I highlight the potential for abuse that can arise in any of these systems, touching on concerns that support the need for some minimum harmonized principles governing IP rights in standard setting. I also provide background on how IP rights become important in the standard-setting process, resulting in pressures at the international level.

A. Diverse Approaches for ICT Standard Setting in the U.S., China and EU

A standard can be defined simply as "any set of technical specifications that either provides or is intended to provide a common design for a product or process."[19] As an example, the Hypertext Transfer Protocol (HTTP) is an important standard in internet communications, establishing an international protocol that regulates the exchange of data (e.g., text and graphic files) between websites and browsers, thereby enabling internet users to access (or "surf") content on the World Wide Web. Standards serve multiple purposes including innovation, efficiency, safety, quality, reliability, and interoperability among various complementary products and services.[20]

Technology standards are vital in a global economy that is increasingly dependent on ICT products and services. In many respects, the ICT sector is leading the way toward a deepening integration of the world market.[21] With the more powerful flow of ideas, information, technology,

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17. OECD, *supra* note 6, at ¶ 3.

18. Samuelson, *supra* note 11, at 1.

19. *See* Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, *supra* note 11, at 1896. In Part V, I discuss the definitions of "standard" and its counterpart, the "technical regulation," under the TBT Agreement. *See infra* Section V.A.

20. ISO states that between 1947 and October 2007, it has published more than 15,000 international standards, ranging from standards for traditional activities, such as agriculture and construction through mechanical engineering to medical devices to the newest information technology developments, such as the digital coding of audiovisual signals for multimedia applications. *See* About ISO, http://www.iso.org/iso/en/aboutiso/introduction/index.html#eleven (last visited Dec. 7, 2007).

21. *See, e.g.*, THOMAS FRIEDMAN, THE WORLD IS FLAT: A BRIEF HISTORY OF THE TWENTY-FIRST CENTURY, 76 (2005) (quoting Joel Cawley, head of IBM's strategic planning unit, "Standards don't eliminate innovation, they just allow you to focus it. They

finance, and commerce across borders, national governments are finding it increasingly difficult to regulate the ways in which these activities occur. A recent article by Andrew Updegrove, *ICT Standard Setting Today: A System Under Stress*, surveys some of the challenges facing the ICT sector and standard setting in the context of globalization.[22] Among them, the prevalence of connected networked environments, corresponding interoperability demands, short innovation cycles, and IP issues are significant.[23] ICT products and services are increasingly used in networked environments, and the need for interoperability (or compatibility) standards is extensive and growing.[24] The rate of ICT innovation has accelerated enormously, driven in significant part by shorter product life cycles as well as the global internet and its ability to disseminate code and information to an international audience.[25] Yet there are concerns that the standards-making process moves too slowly, especially in the ICT area.[26] The standard-setting system for ICT has failed to evolve sufficiently, instead remaining slow, expensive, and balkanized, based on a model stemming from when standards were designed primarily for large, industrial users.[27]

Unlike when a more limited number of government or non-governmental bodies at the national level played significant roles in standard setting, today many different types of standard-setting bodies proliferate. A first distinction can be made between institutional and de facto

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allow you to focus on where the real value lies, which is usually everything you can add above and around the standard.").

22. Andrew Updegrove, *ICT Standard Setting Today: A System Under Stress*, CONSORTIUM STANDARDS BULL., Apr. 2007, http://www.consortiuminfo.org/bulletins/apr07.php#feature.

23. *Id.*

24. In the networked environment, interoperability standards by nature must be capable of use by many members of an industry and their consumers. Such standards ensure compatibility and are thus more likely to be exclusive than standards in other areas. *See* Lemley, *supra* note 11, at 1897. These interoperability standards can become extremely valuable, not by virtue of any intrinsic value, but due to network effects: the spread of the network itself and its increasing usefulness as more consumers join. *Id.* at 1896; *see also* JONATHAN E. NUECHTERLEIN AND PHILIP J. WEISER, DIGITAL CROSSROADS: AMERICAN TELECOMMUNICATIONS POLICY IN THE INTERNET AGE 4-10 (2005) (describing the network effect as it originally arose in the telecommunications industry).

25. Greg Papadopoulos, Presentation at Standardization and the Law: Developing the Golden Mean for Global Trade, Stanford University Program in Law, Science & Technology (Sept. 22, 2005) (unpublished slides, on file with author).

26. *See id.*; Carl Cargill & Sherrie Bolin, Standardization: A Failing Paradigm 8 (May 2000) (unpublished paper presented at the Standards and Public Policy Conference, Federal Reserve Bank of Chicago), *available at* http://www.chicagofed.org/news_and_conferences/conferences_and_events/files/cargill.pdf. *See also* Updegrove, *supra* note 22.

27. Papadopoulos, *supra* note 25; *see also* Updegrove, *supra* note 22.

standards. Institutional standards are those defined and adopted by some form of standard-setting organization, whereas de facto standards are often based on proprietary designs that win a leading position in the market.[28] Many would suggest that for ICT standards, "most aspects of the modern networked world are controlled primarily by commercial forces" with little or no interference from laws or regulation.[29] Standards in this area are self-regulated in the sense that technologies become standards either through de facto dominance in the marketplace or voluntary consensus achieved in one of the many varied standard-setting bodies.

At the level of formally approved standards, this consensus can occur through accredited national or international standard-setting organizations (SSOs), unaccredited industry-based groups often referred to as "consortia," or direct government involvement.[30] Standard setting can occur at the national, regional, or international levels. The international system for standards is complex, due in significant part to the diversity of approaches followed in different parts of the world for standards. The OECD, in its report on international standardization, observes that "[w]hat has emerged as most striking . . . is the diversity of [the numerous standards bodies'] structure and methods of operation."[31] Much of the substantive standard-setting activity has historically taken place at the national level, which presents a mismatch to the needs of harmonization for global ICT standards. "Due to the historical predominance of domestic economic activity, national systems of standardization in advanced industrialized countries developed and solidified . . . long before institutionalized international cooperation in this realm became a major issue."[32] These national systems carry significant "institutional legacies" that can operate in self-reinforcing ways[33] and interfere both with prospects of increased participation in standard-setting activity and with successfully shifting this activ-

28. *See* WORLD TRADE ORGANIZATION, WORLD TRADE REPORT 2005—EXPLORING LINKS BETWEEN TRADE, STANDARDS AND THE WTO 75 (2005), *available at* http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report05_e.pdf.

29. *See* Andrew Updegrove, *ICT, Accessibility and Self-Regulation*, CONSORTIUM STANDARDS BULL., Feb. 1, 2007, http://www.consortium.info.org/bulletins/feb07.php#feature.

30. *Id.*

31. OECD, *supra* note 6, at ¶ 64.

32. Walter Mattli & Tim Büthe, *Setting International Standards: Technological Rationality or Primacy of Power?*, 56 WORLD POLITICS 1, 19 (2003) (arguing that "revolutionary technological changes" fueled by the explosive growth of ICT and "rapid economic integration at the regional and global levels" have "fundamentally altered this once placid world of standards and standards-developing organizations ('SDOs'), triggering the growth of international or regional standards").

33. *See id.*

ity to the international level.[34] A recent survey of U.S. and European businesses found that "vast majorities . . . on both sides of the Atlantic expect standardization to take place increasingly at the international level."[35] However, at least for the survey's U.S. respondents, less than half indicated they would welcome this shift.[36] Regardless of attitudes, an increasing amount of standard-setting activity is taking place at the international level.[37] One commentator emphasized that for "ICT in particular, the concept of national standard has become archaic."[38]

The U.S. system for standard setting has been characterized by a decentralized, pluralistic, and market-based approach with a high degree of competition among numerous SSOs and consortia.[39] One set of commentators emphasize the high degree of disarray in the absence of a strong central coordinating agent.[40] The U.S. private-sector-based standards community includes approximately 300 trade associations, 130 professional and scientific societies, 40 general membership organizations, and more than 500 consortia, which together are responsible for some 49,000 standards.[41] Attempts to bring coherence to such a balkanized system, for example through the establishment of the American National Standards Institute (ANSI), have had limited success.[42] A consequence of this system is a plethora of narrowly focused and competing SSOs or consortia, resulting in an inconsistent and unpredictable approach on issues such as inclusiveness, transparency, and IP rights.[43] These groups may be open in their membership policies, or impose a more restrictive approach (thus creating potential problems of IP rights and access to the results of their

34. To the extent that national standards activity is used as a device to protect domestic enterprises from competition from foreign firms, there is ample motivation to disregard international standards.

35. Mattli & Büthe, *supra* note 32, at 32.

36. *Id.* at 39. While 88% and 95% of U.S. and European firms, respectively, indicated they expect standards will increasingly be developed at the international level, only 43% of U.S. firms (contrasting with 83% of European firms) voiced agreement with the statement that "standards *should* be developed first and foremost at the international level." *Id.*

37. *Id.* at 2.

38. Updegrove, *supra* note 22.

39. Mattli & Büthe, *supra* note 32, at 23.

40. *See id.* at 4-25.

41. *Id.* at 23; *see also* Updegrove, *supra* note 22.

42. Mattli & Büthe, *supra* note 32, at 24. ANSI is a private sector organization that serves a coordinating function and acts as a representative for the U.S. standard-setting community in international standards organizations.

43. Papadopoulos, *supra* note 25.

work).[44] Among the legal problems that can arise are issues of antitrust, unfair competition, or IP infringement.[45] In view of this fragmented approach and the U.S. government's *laissez faire* stance, it may be no surprise that the U.S. government would express apprehension toward a heavily centralized, government-led, top-down approach such as that taken by the Chinese.

The Standardization Administration of China (SAC), established in 2001, heads a complex and hierarchical bureaucracy which is responsible for approving and enacting standards in China.[46] The SAC has vice-ministerial status under authorization from China's State Council and is managed by the Administration for Quality Supervision, Inspection and Quarantine (AQSIQ). SAC works closely together with China's Ministry of Information Industry (MII), setting standards in fields such as electronics, telecommunications, radio, film, and television.[47] SAC has responsibility for the management and coordination of 260 technical committees and 422 subcommittees (with approximately 27,800 technical specialists), as well as for overseas standard setting for central government agencies.[48] The China Electronics Standardization Institute (CESI) plays an important role for the ICT industry.[49] One of China's key goals is to reduce the excessive diversity in local standards and harmonize these with national standards.[50] Companies and industrial associations are now playing a more active role in standard setting, raising questions about how they will interface with the Chinese government.[51]

China has made standard setting a core part of its national strategy to emerge as a world leader in science and technology by the year 2020.[52] Accordingly, China has adopted a long-term standards strategy with the launch of two standards programs in 2002—a technical standards devel-

44. OECD, *supra* note 6, at ¶ 76.

45. *See, e.g.*, Robert Pitofsky, Presentation at Antitrust, Technology, and Intellectual Property Conference, Berkeley Center for Law and Technology, Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy (Mar. 2, 2001); Curran, *supra* note 11.

46. *See* Brian J. DeLacey et al., Government Intervention in Standardization: The Case of WAPI 8 (Sept. 2006) (unpublished working paper, on file with author), *available at* http://ssrn.com/abstract=930930. SAC consists of volunteers from companies, standardizing bodies, and individuals engaged in standard setting. SAC serves as China's representative to most international standards organizations. *Id.*

47. *Id.*

48. *See* Suttmeier & Xiangkui, *supra* note 13, at 25.

49. *Id.* at 27.

50. DeLacey et al., *supra* note 46, at 8.

51. Suttmeier & Xiangkui, *supra* note 13, at 27.

52. DeLacey et al., *supra* note 46, at 9.

opment strategy, and the establishment of a national technical standards system—with strategic goals to be accomplished in three phases:

- Form a new voluntary technical standards system and enhance the market adaptability of technical standards by 2010;
- Complete and perfect the technical standards system and raise the level of Chinese technical standards development by 2020; and
- Ensure that Chinese technical standards hold a pre-eminent and prominent international status by 2050.[53]

While China has been upgrading its standard-setting infrastructure, concerns remain about difficulties faced by foreign stakeholders attempting to participate in Chinese standard-setting processes.[54] The process of preparing standards remains opaque, and foreign firms lack sufficient advance notice and opportunity to comment on new standards.[55] "To the extent that foreign companies are involved in the drafting of standards, their role is usually that of observer, with the Chinese side being especially reluctant to invite foreign participation in high-tech areas."[56] There are also reports that China's efforts to harmonize Chinese and international standards are weak.[57]

In Europe, there is strong recognition of the importance of standards for regional economic benefit. A paper by Walter Mattli and Tim Büthe observes that "[i]n stark contrast to the American system, standardization in Europe is centralized, coordinated, regulated, subsidized, and inclusive."[58] European standard-setting bodies are part of a hierarchical infrastructure.[59] Each European country has a national SSO (e.g., the British

53. Teresa Cendrowska, *Enabling US-Chinese Cooperation in Standards and Conformity Assessment*, ASTM STANDARDIZATION NEWS, Apr. 2005, http://www.astm.org/cgi-bin/SoftCart.exe/SNEWS/APRIL_2005/cendrowska_apr05.html?E+mystore (referring to comments of Liu Fei, director of operations in the Beijing office of the Consortium for Standards Conformity and Assessment (CSCA). China has been identified by some commentators as the likely global technology standard setter of the twenty-first century.). *See also* Bob McDowell, *China Technology Standards?*, FORTUNE, Mar. 5, 2004, at 1; Peter Lewis, *China Sets the Standards*, CNN MONEY, Feb. 23, 2004, http://money.cnn.com/magazines/fortune/fortune_archive_2004/02/23/36224/index.htm.

54. *See* DeLacey et al., *supra* note 46, at 9; Suttmeier & Xiangkui, *supra* note 13, at 26.

55. Suttmeier & Xiangkui, *supra* note 13, at 26.

56. *Id.*

57. *Id.*

58. *See* Mattli & Büthe, *supra* note 32, at 25.

59. *Id.* at 25.

Standards Institution) which adopts technical specifications and represents national interests at the European and international levels.[60] Most national SSOs are subject to government regulation that requires them to include a wide representation of interests and comply with comprehensive rules.[61] European governments offer significant subsidies in support of standard-setting work.[62] At the regional level, the EU's objectives for standards include promoting economic integration among Member countries.[63] The system includes a regional layer, with European standards bodies such as the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC), accompanied by Europe-wide regulation.[64] The European approach can be characterized as one of aggressive industrial policy with strategic public finance support.[65] Just as in the U.S., legal issues such as competition law concerns may arise from interactions among companies in standard-setting activities.[66] Raymond Kammer, director of the National Institute of Standards and Technology (NIST), described the European proactive approach in his testimony to the U.S. Congress: "Europe does have a strategy and it's running at full throttle . . . European governments and industries be-

60. *Id.*

61. *Id.* European SSOs include among their membership a diverse constituency of experts, trade associations, consumer groups, scientific organizations, and public agencies. The number of national experts involved in standard-setting activities at any time is in the tens of thousands. *Id.*

62. *Id.*

63. The European Commission's 2001 Working Paper, *European Policy Principles on International Standardization,* highlights that "Europe has an interest in international standardization because of its potential to eliminate technical barriers to trade and to increase market access for all." European Commission, *European Policy Principles on International Standardization* 4 (Working Paper No. SEC 1296, 2001).

64. *Id.* The 1998 Directive Laying Down Procedures for Providing Information in the Field of Technical Standards recognizes that standards policy and procedures for disseminating relevant information are important to the free movement of goods and services in the European Union. *See generally* Council Directive 98/34, 1998 O.J. (L 204) (EC).

65. *See* Mattli & Büthe, *supra* note 32, at 29.

66. *See generally* Maurits Dolmans, *Standards for Standards*, 26 FORDHAM INT'L L.J. 163 (2002); Carter Eltzroth, IPR Policy of the DVB Project: Pooling But Not Disclosing (Nov. 19, 2006) (unpublished manuscript, on file with author). One particular example involved a challenge before the European Commission brought by MicroElectronica against Sun Microsystems. MicroElectronica asserted that Sun had failed to make a timely disclosure of an "essential patent" for a standard of the European Telecommunications Standards Institute (ETSI). An essential patent is one whose claims cover some of the technology or specifications integral to a standard, such that the patent must be licensed in order to use the standard without infringement. ETSI took corrective action, which involved a removal of Sun's declaration. *See* Eltzroth, *supra*, at 12-13.

lieve that they can create a competitive advantage in world markets by strongly influencing the content of international standards."[67]

As the strategies outlined *supra* demonstrate, standards in the ICT sector, just as in other sectors of the economy, can create winners and losers in the marketplace while shaping national or regional competitiveness. The WTO recently devoted the World Trade Report 2005 to an examination of the links between trade, standards, and the WTO regime.[68] The Report emphasizes that standards are important to the ICT industries, as reflected in the high number of standards and degree of harmonization in this sector, particularly where network externalities are present.[69] The Report explains the concerns from a trade perspective, indicating "[w]here network externality effects are strong, compatibility standards can also be a source of market power."[70] In the ICT sector, firms can garner an important, if not decisive, advantage when their standard is adopted as the de facto industry standard. This can be particularly evident for network industries as they "have a tendency to tipping—that is, when a certain technology has reached a critical mass it tends to dominate the whole market."[71] Firms owning different technologies may engage in fierce competition with each other in order to persuade a sufficiently large number of consumers to choose their product.[72]

The 2005 World Trade Report explains how this standard-setting dynamic can play out in competition between countries:

> To the extent that promoters of competing standards come from different countries and the winner can claim rents from the adoption of their standard, strategic trade policy considerations come into play. A government can try to tip the balance in favour of its national champion by mandating the use of the firm's standard at home. This would be in the hope that an installed base of users would create a strong enough bandwagon effect to convince foreign suppliers to switch to the national firm's standard in other markets.[73]

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67. *See* Eltzroth, *supra* note 66, at 12-13 (quoting *Hearing on International Standards: Technical Barriers to Trade Before the Subcomm. on Technology of the H. Comm. on Science*, 105th Cong. (1998) (statement of Raymond Kammer, Director, National Institute of Standards and Technology).)

68. *See* WORLD TRADE ORGANIZATION, *supra* note 28.

69. *Id.* at 61.

70. *Id.* at 41.

71. *Id.* at xxvi.

72. *Id.* at 36.

73. *Id.* at 41.

Government involvement—whether through regulation, preferential treatment to domestic firms, or measures that make it more difficult for foreign firms—can implicate the WTO trade rules. As the 2005 Report puts it, the WTO "deals with the rules of international trade and inevitably has to deal with the role of standards in international trade."[74] Moreover, "[i]n a global system, coherence between multilateral trade rules and standard-setting policies is necessary in order to avoid conflicts among trading partners."[75]

The development of standards using diverse approaches and by different types of organizations—whether governmental, quasi-governmental, or private—complicates the situation with respect to appropriate regulation at the international level. As a further complicating feature, standard-setting organizations operate in a more global context for the technology that is the subject of their standards processes. The question that arises is how, in the face of this diversity, can there be any common approach on fundamental issues for standard setting such as inclusion and transparency, let alone a common policy for IP rights? The OECD study mentioned *supra* suggests a partial solution, stating that "[t]o deal with [these] issues . . . , the players will be better equipped if they have accurate, transparent information about what goes on in the standardization field. In other words, transparency is a valid goal in its own right."[76] All of this cautions that from an international perspective, international regulation should not place a straitjacket on these diverse systems for standards development. However, ignoring that the underlying issues (e.g., IP rights) can cause trade frictions is not adequate either.

B. IP Rights in ICT Standards

IP rights matter in technology standard setting.[77] Scholars, the courts, and the media have recently paid considerable attention to this issue.[78] As one well-known scholar in this area puts it:

> [O]ne central fact about the [ICT] sector . . . is the multiplicity of patents that developers must deal with. . . . There are so many IT

74. WORLD TRADE ORGANIZATION, *supra* note 28, at xxv.

75. *Id.* at xxxvi.

76. OECD, *supra* note 6, at ¶ 82.

77. A fundamental right of IP owners is the right to exclude others, which has almost self-evident implications for technology standard setting. As one standards expert states, "[t]he need to deal with intellectual property rights . . . lies at the core of standard setting." Andrew Updegrove, *Intellectual Property Rights and Standard Setting*, CONSORTIUM STANDARDS BULL., Mar. 2007, http://www.consortiuminfo.org/bulletins/mar07.php#feature.

78. *See* sources cited *supra* note 11.

> patents because of the nature of these technologies and the ways in which they interact; it is almost always the case that a product in the IT field combines a number of different components and therefore a number of different patents.[79]

An ICT product can easily require that the rights to more than 100 patents be cleared to get the product to market.[80] As discussed *supra*, if one firm in the market can dominate through the creation of a de facto standard, or alternatively secure a patent which covers key aspects of the preferred standard, it can exert substantial leverage. At the extreme, if that firm secures critical control points in a network standard through proprietary IP claims, it can threaten to block implementations altogether unless royalties are paid.[81] These royalties can be substantial, especially if the network is large.

This situation is known as "patent holdup," in which patent owners "capture not just the value of the inventive contribution that they have made—something they ought to be entitled to—but also some greater amount of money than their invention is worth."[82] A number of factors enable this, including the threat of damages (including treble damages in the U.S.) or injunctions, or the fact that innovators have often already made irreversible investments that can drive up settlement values in the face of these IP claims.[83] In the standards context, not just one company but many in the industry may have made such investments—the risk is

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79. *See* Lemley, *supra* note 3, at 150.

80. *Id.* at 151.

81. *See* Papadopoulos, *supra* note 25.

82. Lemley, *supra* note 3, at 152.

83. *Id.* at 151-55. The patent holdup issue surfaced recently before the U.S. Supreme Court in a case involving whether to grant injunctive relief for patent infringement. In *eBay Inc. v. MercExchange, L.L.C.*, 126 S. Ct. 1837 (2006), the concurring opinion of Justices Kennedy, Stevens, Souter, and Breyer states:

> An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees . . . . For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent . . . . When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest.

therefore that "patent owners can demand sums of money that are far out of proportion to the actual inventive contribution that they have made."[84]

Standard-setting organizations need a set of rules governing IP rights to minimize (or avoid) these problems, reducing the risk that a completed standard will encounter IP-related obstacles while facilitating its broader implementation. A number of different approaches—some with wide and international acceptance—have been developed to address the issue of IP rights in standard setting.[85] To consider a more comprehensive approach, for example, Mark Lemley, in his recent article *Ten Things to Do About Patent Holdup of Standards (And One* Not *To)*, introduces a list of potentially helpful measures:

> SSOs could get members to agree in advance of the standard to license patent rights on reasonable and nondiscriminatory ("RAND") terms, bind SSO members to that RAND policy by license agreements, require patentees to specify the content of their RAND licenses ex ante, impose penalty defaults to force disclosure, and/or establish a step-down royalty rate procedure.[86]

Another commentator raises the question, perhaps somewhat dramatically: "Will eminent domain laws be extended to cover IPR, if that IPR is asserted to block or unduly tax the usage of essential, standards-based ICT services?"[87]

For purposes of international regulation, such advanced considerations may not yet be widely accepted in diverse international standard-setting systems, particularly where there may be important differences on the national level concerning treatment of certain IP rights such as patent rights.[88] However, as discussed in Part III *infra*, there can be no denying the frictions that can be generated, particularly at the international level, given the integral role of IP rights in technology standard setting. Despite the potential for friction, the TBT Agreement is silent on the issue of IP

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84. Lemley, *supra* note 3, at 154; *see also* Lemley, *supra* note 11, at 1893 ("SSOs increasingly encounter situations in which one or more companies claim to own proprietary rights that cover a proposed industry standard. This prevents the industry from adopting the standard without the permission of the IP owner or owners.").

85. *See generally* Lemley, *supra* note 11.

86. Lemley, *supra* note 3, at 155.

87. Updegrove, *supra* note 22, at 8. This would amount to a compulsory license for IP embedded in standards.

88. For example, Andrew Updegrove states in a recent issue of the Consortium Standards Bulletin that "[i]t would be an extreme understatement to suggest that the technology industry has reached a state of clear consensus on what constitutes the ideal IPR policy." Updegrove, *supra* note 77, at 24.

rights in international standard setting. For example, the obligation under the TBT Agreement to use relevant international standards as a basis for national standards[89] is not conditioned on whether a particular standard is encumbered by IP rights and therefore could be costly to implement. However, countries such as China may build up national resentment towards the need to pay royalties to foreign patent owners in order to manufacture products complying with international standards set elsewhere.

There is a way in which IP can be factored into the international standard-setting analysis. An overriding concern for standards development is to encourage the early disclosure of patented technology necessary for the implementation of a standard. In addition, if patents are found to be involved, it is equally important to obtain a statement of licensing position from the patent owner (i.e., whether or not the owner is willing to license the patented technology and on what terms) as early as possible in the standards development cycle. In Part VI I recommend that two basic principles—early disclosure of IP rights (patents) and declaration of position concerning willingness to license those rights—should be incorporated in the TBT Agreement framework of principles governing standards development. Early disclosure of IP rights and a declaration concerning licensing position will facilitate informed choices by standard-setting bodies, so that the impact of any IP rights on technology selection can be evaluated in advance. The standards body can choose to use a standard that may be encumbered by IP rights, or seek to move the standard in a direction where such IP rights will not be implicated. The relative simplicity of focusing on two important elements makes this approach suitable in the context of internationally diverse standard-setting systems, avoiding concerns of over-constraining regulation. Working in tandem with other principles for international standards in the TBT Agreement, such as openness, transparency, and non-discrimination, these two IP principles will strengthen international standards. They provide means by which countries can evaluate the IP position of a standard in advance (i.e., during its development), rather than object to the burden of IP rights after an international standard is already established.

III. TENSIONS BETWEEN THE UNITED STATES AND CHINA IN INTERNATIONAL STANDARDS

Tensions have developed between China and the United States regarding trade and standards. One point of contention concerns, on the one hand, China's approach to standard setting, particularly for ICT goods,

89. *See infra* note 320-21 and accompanying text.

and on the other, the role of IP rights in international standard setting. While the ICT industry increasingly demands harmonized standards to serve the imperatives of competition, interoperability, and efficiency, particularly in networked environments, China has signaled its intention to follow a different direction. By seeking to set its own domestic standards instead of relying on international standards, China not only creates tensions but also raises trade law issues under WTO rules. The Chinese have responded by contending that standards that incorporate proprietary IP rights are controlled mainly by developed countries, causing unfair competition and having a negative impact on international trade.

A. The United States' Views

China is an obvious choice for U.S. government attention, given its recent emergence as the world's fourth largest economy and its role as one of the largest trading partners with the U.S.[90] Although China often avers the position of a developing country in the international standards debate, China defies easy classification as developing or developed country. Twenty-five years ago, its borders, markets, and economy were largely closed to the world. With its accession to the WTO in December 2001, China assumed free trade obligations under the WTO agreements, including the TBT Agreement.[91]

The United States Trade Representative (USTR), in the last four annual reports to the U.S. Congress concerning China's compliance with WTO accession commitments, has raised continuing concern over China's forceful approach to promote domestic Chinese standards.[92] For example, in its 2006 Report, the USTR commented that "concern has grown over the past few years, as China is actively pursuing the development of unique requirements, despite the existence of well-established international standards, as a means for protecting domestic companies from com-

90. Keith Bradsher, *Chinese Economy Grows to 4th Largest in the World,* N.Y. TIMES, Jan. 25, 2006. Statistics from mid-July 2007 indicate that China is on track to pass Germany in 2007 and become the world's third largest economy rated by Gross Domestic Product. *See also China Poised to Become Third-Largest Economy,* MARKET WATCH, July 15, 2007, http://www.marketwatch.com/news/story/china-poised-pass-germany-worlds/story.aspx?guid=%7B9A653FE8-70DA-48F3-AE20-44C77B142A0C%7D.

91. See *infra* Part V concerning China's accession to the WTO and related responsibilities.

92. *See generally* USTR China Affairs Home Page, http://www.ustr.gov/World_Regions/North_Asia/China/Section_Index.html (last visited Dec. 19, 2007) (contains links to the USTR's annual reports to Congress for the years 2003-2006).

peting foreign standards and technologies."[93] The 2006 Report refers to Chinese measures including "the continuing pursuit of unique national standards in many areas of high technology that could lead to the extraction of technology or intellectual property from foreign right holders."[94] More generally, the 2006 Report states that:

> China has continued to resort to industrial policies that limit market access for non-Chinese origin goods and foreign service providers. . . . In some cases, the objective of these policies seems to be to promote the development of Chinese industries that are higher up the economic value chain than the industries that make up China's current labor-intensive base.[95]

Sizing up the state of affairs, the Report finds that "[t]he United States and China made little progress in resolving U.S. concerns regarding these industrial policies in 2006."[96]

Various U.S. industries doing business abroad have also expressed anxiety over China's resistance to international standards. In 2004, the U.S. Department of Commerce (DOC) prepared a report specifically addressing standards, which listed similar concerns. The DOC report was based on consultations with domestic industry, finding that "[i]nput from industry clearly showed significant concern with China and its development and promotion of domestic standards."[97] In particular, the DOC report states that a 2004 U.S. General Accounting Office survey of American companies with a presence in China found that "standards and certification issues ranked *first* in importance on a list of specific China WTO implementation commitment areas, above customs procedures, tariffs, and intellectual property rights."[98] The report observes that "[t]hese results suggest a growing awareness in the business community of standards as a key trade issue for U.S. exporters to China."[99]

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93. USTR, 2006 REPORT TO CONGRESS ON CHINA'S WTO COMPLIANCE 47 (2006), *available at* http://www.ustr.gov/assets/Document_Library/Reports_Publications/2006/asset_upload_file688_10223.pdf.

94. *Id.* at 7.

95. *Id.*

96. *Id.*

97. U.S. DEPT. OF COMMERCE, STANDARDS & COMPETITIVENESS: COORDINATING FOR RESULTS, 19 (May 2004).

98. *Id.* (emphasis added).

99. *Id.* The DOC report does note, as one potential success in this area, that "China did reaffirm its commitment to technology neutrality for 3G telecommunications standards." *Id.* Beginning in 2004, the U.S. telecommunications industry signaled concerns about the Chinese government's "increasing interference" regarding the selection of 3G telecommunications standards. *Id.* at 48. Although publicly stating at the time that it

The views of U.S. industries have also been voiced through ANSI, which serves to coordinate and promote U.S. voluntary consensus standards and represents the U.S. in non-treaty regional and international standard-setting activities.[100] In testimony to Congress in May 2005, ANSI representative David Karmol stated that "[e]vents of the past few years indicate that stakeholders within [China] may have been considering a strategy of using national standards as trade barriers to shelter the nation's growing industries."[101] These comments align with views expressed in two papers published by ANSI in June 2004 and October 2005. In the first paper, ANSI reports that:

> U.S. industry is facing challenges in countries (such as China) that appear to be (a) mandating conformance to nationalized standards developed in a closed process, and (b) devising and implementing related intellectual property policies that are not transparent to U.S. companies and in many cases run counter to international norms.[102]

ANSI refers to the WAPI case as an example of these practices, while cautioning that "[t]he importance of China's standards activities is much broader than WAPI."[103] Referring to the "pervasive nature of these activities" and their relation to IP, ANSI claims that China "appears to be re-

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would support technological neutrality with respect to the adoption of 3G standards, by the end of 2004 there was pressure from the Chinese government "to ensure a place for China's home-grown 3G telecommunications standard." *Id.* More recently in February 2006, China declared TD-SCDMA technology to be the national standard for 3G telecommunications, and concerns mounted again. The U.S. government raised the issue of technological neutrality at meetings with China in April 2006. *Id.* at 4, 48. At these meetings China re-stated a commitment to technological neutrality for 3G standards, and "agreed to issue licenses for all 3G standards in a technologically neutral manner that does not advantage one standard over others." *Id.* at 48. The USTR 2006 Report indicates that the U.S. government will continue to monitor these developments and stand ready to re-engage China "to ensure that China's regulators adhere to China's . . . commitments." *Id.*; *see also* USTR, THE U.S.-CHINA JOINT COMMISSION ON COMMERCE AND TRADE (JCCT) OUTCOMES ON U.S. REQUESTS (2006), *available at* http://www.ustr.gov/assets/Document_Library/Fact_Sheets/2006/asset_upload_file91_ 9286.pdf.

100. *See* ANSI, *supra* note 5, at 4.

101. *Europe, China and the Use of Technical Standards as Trade Barriers: How Should the U.S. Respond?: Hearing before the Subcomm. On Environment, Technology & Standards of the H. Comm. on Science*, 110th Cong. 3 (2005) (statement of David Karmol, Vice Pres., Public Policy and Gov't Aff., ANSI).

102. ANSI, INTELLECTUAL PROPERTY RIGHTS POLICIES IN STANDARDS DEVELOPMENT ORGANIZATIONS AND THE IMPACT ON TRADE ISSUES WITH THE PEOPLE'S REPUBLIC OF CHINA 2 (June 10, 2004).

103. *Id.* at 2-3.

viewing international standards and changing them through national adoption process, and then attempting to neutralize the impact of any patents [held by foreign owners]."[104] In the second report of October 2005, ANSI again highlights the WAPI case and explains a more general basis for concern: "As the world's largest contract manufacturer, the standardization policies and practices of China have significant ramifications for American firms that wish to export to the PRC market or who wish to source manufacturing there."[105] ANSI is concerned that Chinese standards may impede international trade by acting as protectionist devices creating barriers to the domestic Chinese market, and also by causing costly fragmentation in international markets.

In February 2006, United States Trade Representative Rob Portman announced the results of a comprehensive U.S. government review of China's trade measures, the *Top-to-Bottom Review of US-China Trade Relations*.[106] Portman referred to China as "a mature trading partner" of the U.S. that has to "live up to its responsibilities."[107] He emphasized that "Chinese exporters have benefited enormously from the openness of the US market—more than US exporters have benefited from China's WTO

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104. *Id.* at 3, 5. A similar statement was made before the Trade Policy Staff Committee in September 2004 by the U.S. Information Technology Office (USITO), a non-governmental organization, as follows:

> USITO is especially concerned about a tendency to use locally developed standards, in place of internationally recognized standards, and technical regulations to protect domestic industry from foreign competition, contrary to China's accession commitments and to the requirements of the WTO [TBT Agreement]. The WAPI standard is a clear example of this, and our submission highlights similar efforts that are underway.

Mark Bohannon, Gen. Counsel & Senior Vice President, Software & Info. Indus. Ass'n, Prepared Statement of the U.S. Information Technology Office (USITO) (Sept. 23, 2004). USITO membership includes the American Electronics Association, Information Technology Industry Council, Semiconductor Industry Association, Software and Information Industry Association, and more than 50 companies and entities in the high tech sector operating in China. *Id.*

105. ANSI, GLOBAL APPROACH KEY TO FUTURE OF CHINESE STANDARDIZATION ACTIVITIES, CRITICAL ISSUE PAPERS 1 (2005).

106. USTR, U.S.-CHINA TRADE RELATIONS: ENTERING A NEW PHASE OF GREATER ACCOUNTABILITY AND ENFORCEMENT, TOP TO BOTTOM REVIEW (2006), *available at* http://www.ustr.gov/assets/Document_Library/Reports_Publications/2006/asset_upload_file921_8938.pdf.

107. Ambassador Rob Portman, Remarks at Press Conference Announcing USTR's Top-to-Bottom Review (Feb. 14, 2006), *available at* http://www.ustr.gov/assets/Document_Library/Transcripts/2006/February/asset_upload_file704_8947.pdf.

accession."[108] Regarding standards, the Top-to-Bottom Review finds that this is one of the areas causing "trade friction."[109] He urged that improvements should be made to increase China's participation in international standard-setting organizations and to ensure that Chinese standards are developed and implemented in accordance with WTO requirements.[110] Portman summed up the United States position as follows: "overall, our US-China trade relationship today lacks equity, durability and balance in the opportunities it provides."[111]

B. China's Views

1. General Views on the Issue

A number of sources report on China's views concerning standards, IP rights, and their relation to international trade. An April 2007 speech by Yi Xiaozhun, the vice-minister of China's Ministry of Commerce, indicates China's concerns. He stated that "[d]elayed or inadequate IPR disclosure, stringent IPR licensing conditions and expensive licensing fees run counter to fair competition, hinder the promotion and application of new technologies, obstruct the normal operation of international trade and impede the harmonious development of global economy and society."[112] The vice-minister emphasized that "[d]eveloping countries are the worst hit by such problems which effectively hinders their greater participation in economic globalization."[113] From China's perspective, a primary concern is that standards vested with the public interest can be affected when "hidden" underlying patents give monopolistic licensing power, usually to companies in developed countries where most of the ownership of the world's patents is located.[114] This "inappropriate convergence" between standards and IP rights causes problems.[115] The situation is exacerbated when industry experts participating in consortia "use monopoly power to push their interests in standard-setting."[116] The vice-minister concludes that "China holds that in order to ensure smooth implementation of the

108. Letter from Rob Portman, Ambassador, USTR, to Charles B. Rangel, Ranking Member, Comm. on Ways & Means, U.S. House of Representatives (Feb. 2006) (on file with author).

109. USTR, *supra* note 106, at 14-15.

110. *Id.* at 13-15.

111. Portman, *supra* note 107.

112. William New, *China Leads Developing Country Push for Balance in IP and Standards*, IP WATCH 1 (Apr. 24, 2007).

113. *Id.*

114. *Id.* at 2.

115. *Id.* at 1.

116. *Id.* at 2.

TBT Agreement, attention should be given on the one hand to the efficiency and quality of setting international standards, and on the other hand to the difficulties members face in adopting international standards."[117]

Another Chinese commentator, Ni Guangnan, a fellow at the Chinese Academy of Engineering, stated at the same April conference that China plans a series of responsive measures "in order to help its companies which have been struggling with high royalty payments charged by patent-holders whose technologies were accepted in standards."[118] "They will form their own patent pools, and will gain the support of international standards development organiations, and will participate in the drafting of standards favourable to China."[119] China will also support open standards for critical areas and "ex ante RAND" terms in other areas, meaning the disclosure of IP rights and their related licensing terms on a reasonable and non-discriminatory basis before the establishment of a standard.[120]

The Chinese standard-setting organization for electronics, the China Electronic Standardization Institute (CESI), has expressed similar views on these issues. A 2003 article in the CESI newsletter, *Information Technology & Standardization*, details concerns and possible Chinese responses.[121] According to CESI, China has fallen victim to a new form of NTB referred to as an "IP centric technology barrier."[122] Because countries such as the U.S. cannot compete with China on the cost of producing technology goods, CESI asserts that developed countries use complex barriers—based on the existing system of laws, treaties, regulations, and standards—to suppress the progress of developing countries.[123] First, the developed countries "wrote IP into [the] WTO rules," so that they could "use

117. *Id.* at 1. *See also* Baisheng An, Chinese Ministry of Commerce, Department of WTO Affairs, Speech at Stanford Law School: Exploring the Solution(s) for Intellectual Property Rights Protection in Standardization: A Two-Way Approach (Sept. 2005) (on file with author).

118. New, *supra* note 112, at 2.

119. *Id.*

120. *Id.* at 2-3.

121. Chinese Electronic Standards Institute, *Review on Technology Barriers Related with Intellectual Property*, INFO. TECH. & STANDARDIZATION, Sept. 2003, *translated in* Simmtester.com, Dec. 17, 2003, http://simmtester.com/page/news/showpubnews.asp?title=Review+on+Technology+Barriers+Related+with+Intellectual+Property&num=103 [hereinafter CESI].

122. *Id.* at 2; *see also* Osama Hussain & Dennis Fernandez, *Strategic Intellectual Property and Emerging Standards for Entering the Chinese Market*, IPFRONTLINE, Mar. 17, 2005, at 2, http://www.ipfrontline.com/downloads/fernandez_china.pdf (analyzing the CESI article).

123. CESI, *supra* note 121, at 1-2.

WTO and TRIPS[124] to protect their intellectual property standards."[125] Next, "[t]he developed countries deliberately include their IP technology in the process of standardization."[126] When a country like China seeks to export technological goods incorporating such standards to a developed country, that country can "essentially block[] out importing goods legally."[127] The developed countries have used "technological advancement and IP position to counter the price advantage of the developing countries."[128] This situation creates the IP-centric technology barrier for Chinese goods. CESI's position here reflects deep resentment of the choices confronting Chinese companies exporting technological goods. In many cases they must either pay royalties to a foreign IP owner or risk an enforcement action and therefore being blocked from the foreign market. CESI suggests that China should develop counter-strategies including (i) using the patent system to promote Chinese technological advancement, with support from the Chinese government; (ii) "vigorous[] support setting pioneer standards" from the Chinese government, and participation by companies in setting international standards; and (iii) taking full advantage of the TBT Agreement and SPS Agreement,[129] including using "exemptions within them to remove technical barriers imposed on us."[130]

The Chinese government has developed a plan for standards and IP rights, reflecting a more general strategy in which China is building its future on home-grown innovation.[131] In February 2006, the Chinese government issued a high-level document which frames China's innovation strategy, the State Council's Guidelines on National Medium- and Long-Term Program on Science and Technological Development (2006-

124. "TRIPS" refers to the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments—Results of the Uruguay Round, 33 I.L.M. 81 (1994) [hereinafter TRIPS], *available at* http://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm.

125. CESI, *supra* note 121, at 3.

126. *Id.* at 2-3.

127. *Id.*

128. *Id.*

129. "SPS Agreement" refers to the WTO Agreement on Sanitary and Phytosanitary Measures, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, Legal Instruments—Results of the Uruguay Round, *available at* http://www.wto.org/english/docs_e/legal_e/15sps_01_e.htm.

130. CESI, *supra* note 121, at 6.

131. Alan W. Wolff, *China's Drive Toward Innovation*, ISSUES SCI. & TECH., Spring 2007, at 54.

2020).[132] This document calls for government to "actively take part in the formulation of international standards and drive the transferring of domestic technological standards to international standards."[133] In view of the strong vestiges of a centralized command economy and pervasive government involvement in business as well as what one commentator terms a "singularity of purpose" on the part of the Chinese government, one should expect that government will diligently execute its strategy.[134]

2. Arguments Before the WTO

Recently, the Chinese government has begun to make its case at the WTO before the CTBT. In a formal communication submitted on May 23, 2005, the Chinese government stated:

> China is of the view that, IPR issues in preparing and adopting international standards have become an obstacle for Members to adopt international standards and facilitate international trade. It is necessary for the WTO to consider negative impacts of this issue on multilateral trade and explore appropriate trade policies to resolve difficulties arising from this issue.[135]

The Chinese communication also referred to the fact that international standards bodies such as ISO, the International Electrotechnical Committee (IEC), and the International Telecommunication Union (ITU) have established policies to address the relationship between standards and IP rights.[136] China suggested, however, that, "limited by their functions and due to the complexity of the issue itself," these organizations cannot resolve all the relevant difficulties.

China emphasized that the issue of IP rights in standardization is of close relevance to the TBT Agreement and has important development implications. In this regard, the communication referred specifically to the

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132. *Id.* at 55. *See also* Chinese Government Official Web Portal, China Issues S & T Development Guidelines, http://www.gov.cn/english/2006-02/09/content_183426.htm (last visited Nov. 20, 2007).

133. Wolff, *supra* note 131, at 57. Another example is the recently promulgated Shanghai Municipal Government Intellectual Property Strategy, which calls for government to "actively promote the formulation and implementation of technical standards with self-owned intellectual property rights and translate that technological advantage into a marketplace advantage to maximize the benefits of intellectual property rights." *Id.* at 56-57.

134. *Id.* at 54.

135. Communication from the People's Republic of China on Intellectual Property Right (IPR) Issues in Standardization, G/TBT/W/251 (May 25, 2005), *available at* http://sms.mofcom.gov.cn/table/0527_wto_en.doc.

136. *Id.* at I.3.

obligation under Article 2.4 of the TBT Agreement to adopt relevant international standards as a basis for national mandatory standards. Although China's comments are somewhat opaque (perhaps intentionally so), the view that emerges is one of concern that the mandatory adoption of international standards is unfair if those standards are encumbered by IP rights, which could impose costs (in the form of royalties) on those using the standards. China continued by stating that it is necessary "to take into account the difficulties Members may encounter in the application of international standards."[137] China requested that the CTBT discuss these issues during its Triennial Review of the TBT Agreement, "so as to develop proper approaches and policies to promote the development and implementation of international standards as well as more effective implementation of the TBT Agreement."[138]

China's communication to the CTBT generated questions from other WTO member governments. At the June 2005 CTBT meeting, several countries including Brazil, Mexico, and Canada suggested that China should elaborate on the nature of the problem, clarify its proposal, and indicate what was expected of the Committee.[139] China then circulated an informal Q & A document, which attempted to address these questions.[140] The position paper acknowledges that:

> It is legitimate for Intellectual Property Right (IPR) holders to make their claims under standardization. Meanwhile, considering standardization could magnify IPR claims and provide IPR holders with more license fees and competitive advantages, and recognizing standard's nature as public goods, excessive IPR claims in the context of standardization will have negative effects on public interests. Therefore, IPR claims under standardization should be given special attention.[141]

China indicated that it had put forward its proposal "based on the difficulties information and communication technology (ICT) industries have encountered in their development."[142] In particular, the "negative effect of excessive IPR claims on international standardization is especially serious

137. *Id.* at II.9.

138. *Id.* at II.8.

139. *See* World Trade Organization, Committee on Technical Barriers to Trade, Minutes of Meeting of June 16-17, 2005, ¶¶ 100-06, G/TBT/M/36 (2005).

140. An Baisheng, Dept. for WTO Affairs, China Ministry of Commerce, Replies to Member Questions, *Chinese Submission on Intellectual Property Issues in Standardization*, appended to G/TBT/W/251 (May 2005).

141. *Id.* at 1.

142. *Id.* at 2.

in [the] global digital economy due to externality of standards in network industries."[143] China urged that work which had already been done at ISO, IEC, and ITU concerning IP policies and standards would form a "good technical basis" for discussing the issue at the WTO.[144] The Chinese paper suggested that a useful starting point would be to focus on two areas concerning patents: transparency (i.e., disclosure of patent information) in standard setting, and elaborating on the RAND[145] licensing principle to define "reasonable" and "non-discriminatory."[146]

The CTBT discussed China's proposal more fully at its next meeting in November 2005, in connection with setting the agenda of work items to be included in the TBT Agreement's fourth triennial review.[147] The U.S. representative stated that, even after having "consulted bilaterally with China, with a view to better understanding the relationship, if any, with the provisions of the TBT Agreement," the U.S. still "could not see any such relationship."[148] Other delegations sought further clarification of China's proposal, questioned whether the CTBT was the proper forum to address the IP issues, or indicated that they were still studying the issues.[149] China acknowledged that the topic was complex and needed further clarification, and indicated it would provide further elaboration why it believed the topic was of close relevance to the TBT Agreement. The CTBT chairman concluded that there was no general agreement "at this point to consider the topic of intellectual property right issues in standardization as an element of the Fourth Triennial Review."[150]

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143. *Id.*

144. *Id.* In answer to the question of whether these issues would be better addressed by WTO's TRIPS Council, China acknowledged that there are key IP-related issues, but the TRIPS Agreement does not concentrate on issues concerning standards. China suggested that the CTBT and TRIPS Council could have parallel discussions, or even establish a Special Cross-Committee working group. The Chinese paper also referred to Article 40 of the TRIPS Agreement, which provides, inter alia, that "members agree that some licensing practices or conditions pertaining to intellectual property rights which restrain competition may have adverse effects on trade and may impede the transfer and dissemination of technology." *Id.*

145. "RAND" is the acronym for "reasonable and non-discriminatory" licensing, a type of licensing used in standard-setting processes. In the normal case companies agree that, if they hold patents on any technologies which become "essential" to the standard, they will allow others implementing the standard to use those patents in return for reasonable licensing fees. *See* Lemley, *supra* note 11, at 1903-06, 1964-66.

146. Baisheng, *supra* note 140, at 3.

147. *See* World Trade Organization, Committee on Technical Barriers to Trade, Minutes of Meeting of November 2, 2005, ¶¶ 109-23, G/TBT/M/37 (Dec. 22, 2005).

148. *Id.* at ¶ 111.

149. *Id.* at ¶¶ 112-13, 120-21.

150. *Id.* at ¶ 123.

China has persisted in raising the issue of IP rights in standardization at the WTO. At a more recent CTBT meeting in March 2006, China provided additional background, emphasizing "that the international community was increasingly paying attention to IPR issues in standardization."[151] China asserted that at both the government and company levels, "there existed a certain unwillingness to adopt international standards as the basis of national standards and technical regulations if there was no common rule to regulate IPRs in standardization."[152] China referred again to ISO, IEC, and ITU, all of which had "recognized the impact of . . . IPR issues and had endeavoured to solve the problems" by formulating "basic principles for patent disclosure and licensing arrangements which were widely cited by other standards development organizations."[153] In China's view, these principles constituted a "sound technical basis and a roadmap" for the discussion in the WTO.[154] China cited examples of work being done on these issues by other national and inter-governmental organizations.[155] China argued that "it was important to strike a balance between IPR holders and standard implementers so as to create a win-win situation."[156] In particular, "IPR issues in standardization did not mean that IPR holders would lose and the IPR users would gain: the real problem, currently, was that there were not adequate rules to respond to IPR issues in standardization in the international community, including in the WTO framework."[157] In sum, China stated that the "subject was of great significance to the integrity of international standardization community and multilateral trade system and China was therefore of the belief that this issue needed to be carried forward within WTO."[158]

In response, several delegations questioned whether China was raising the topic merely for discussion and information exchange, or wanted new guidelines or the establishment of new rules under the TBT Agreement.[159] The U.S. representative reiterated her delegation's comments from the last meeting, but noted that China's paper had "made an interesting statement that there were no WTO rules to address this issue."[160] The U.S. wanted to

151. World Trade Organization, Committee on Technical Barriers to Trade, Minutes of Meetings of March 15 & 17, ¶¶ 140-53, G/TBT/M/38 (May 23, 2006).
152. *Id.* at ¶ 145.
153. *Id.* at ¶ 142.
154. *Id.*
155. *See id.* at ¶ 143.
156. *Id.* at ¶ 144.
157. *Id.*
158. *Id.* at ¶ 146.
159. *See id.* at ¶¶ 147-49.
160. *Id.* at ¶ 149.

know whether China wanted new rules, which would change the nature of the discussion before the CTBT. China responded that the objective of raising the issue under the Triennial Review process was to have information exchange so as to familiarize WTO members with the issue.[161]

All of this discussion at the CTBT has been capped off by China's amended submission in November 2006: *Background Paper for Chinese Submission to WTO on Intellectual Property Right Issues in Standardization.*[162] In its last word on the subject, China makes many of the same points while continuing to build its case. It observes that companies holding IP rights make significant contributions in worldwide standard setting, and "[t]his is particularly true in high-tech sectors, where standardizations are often initiated and mainly advanced by those enterprises equipped with key and sophisticated proprietary technologies."[163] The paper refers to the WTO's World Trade Report 2005, which as noted *supra* devoted special attention to the links between trade, standards, and the WTO regime.[164] China argues that there is an obvious trend toward proprietary technology entering into standards. China reiterates that the integration of IP rights into standards can be problematic and may have a negative impact on standardization and international trade.[165] The paper provides several examples where problems with IP rights in standard setting, such as failure to disclose an essential patent or refusal to license technology, exerts a chill on legitimate standard-setting activity.[166] China asserts:

> The real problem . . . now is that there are no sufficient rules to respond to IPR issues in standardization within [the] international community, including WTO framework. Without well-defined rule[s] to follow, inefficiency arises and disputes result to the detriments of both IPR holders and IPR users, who come from both developing and developed Members. While it is important to protect the rights and interests of IPR holders, it's equally significant that new international standards and advanced IPR technologies are applied as widely as possible in order to

161. *See id.* at ¶ 150.

162. *See generally* Background Paper for Chinese Submission to WTO, *Intellectual Property Right Issues in Standardization,* G/TBT/W/251/Add., at 1 (Nov. 9, 2006) [hereinafter Background Paper].

163. *Id.* at ¶ 5.

164. *See supra* note 68 and accompanying text. The 2005 World Trade Report refers to a study finding "that sectors with a higher propensity for standardization . . . tend to be more patent-intensive and export intensive." WORLD TRADE ORGANIZATION, *supra* note 28, at 59.

165. *See* Background Paper, *supra* note 162, at ¶ 9.

166. *See id.* at ¶¶ 10-13.

> enhance efficient, high quality production and to facilitate world trade to the interests of consumers worldwide.[167]

China's paper concludes short of requesting that the CTBT adopt any particular measures in the near term. Instead, it asks that WTO member countries, as well as international standard-setting bodies, provide the CTBT with information regarding practices and experience with IP policies in standardization.

IV. CHINA'S WAPI STANDARD

Part III illustrates significant differences between the priorities of China and the U.S. on international standard-setting issues. On the U.S. side, the concern is with China's promotion of domestic technology standards—developed in non-transparent national processes—as potential barriers to international trade. By contrast, the Chinese are focused on IP rights, their asserted control by Western companies, and the potential that such control will have a negative impact on international standard setting and trade. The WAPI case—China's mandate of an encryption standard for WLAN communications that would be applicable to domestic and imported equipment—presents a well-documented account[168] with implications for both countries' positions in this standards clash.

The WAPI case highlights how countries use standards to gain national competitive advantage. It illustrates China's nascent approach to the development of domestic standards, which can act as potential barriers to trade and threaten efforts at harmonization. It also demonstrates China's underlying motivations for promoting national standards, which are closely connected to the perceived unfairness and frictions created by foreign-owned IP rights. It signals not only the trade law complexity in this area, but also the important role that IP now plays in international standard setting for technology. Finally, it provides insight into the role of government in standard setting, with strategic measures by the Chinese and U.S. governments demonstrating that standards in the ICT sector implicate pub-

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167. *Id.* at ¶ 18.

168. *See* USTR, 2005 REPORT TO CONGRESS ON CHINA'S WTO COMPLIANCE 43-45 (2005), *available at* http://www.ustr.gov/assets/Document_Library/Reports_Publications/2005/asset_upload_file293_8580.pdf; *see also* Cromer, *supra* note 13; DeLacey et al., *supra* note 46; Andrew Updegrove, *Breaking Down Trade Barriers: Avoiding the China Syndrome*, CONSORTIUM STANDARDS BULL., May 2004, http://consortiuminfo.org/bulletins/may04.php#trends. Numerous additional stories about WAPI have appeared in the press and are cited *infra*.

lic policy issues, and that both governments recognize this point.[169] In this Part, I first review the WAPI case in Section A and then turn in Section B to discuss how it reflects key dimensions of China's emerging standards strategy.

A. The WAPI Case

The Chinese WLAN standard, called GB15629.11-2003, is similar to the existing and widely accepted standard for WLAN communications developed by the Institute of Electrical and Electronics Engineers (IEEE), known as the 802.11 standard.[170] Both are compatibility standards designed to facilitate communication between wireless devices. Examples of ICT equipment that may use these technologies include PCs, laptops, routers, and handheld devices. After years of technical negotiations between members of industry in what has been called a bottom-up approach to standard setting, the IEEE first released the 802.11 standard in 1997.[171] The standard-setting process for the 802.11 standard has itself been called "a battleground for commercial groups vying to place their IP at the center of the 802.11 standard."[172] In 1999, ISO approved 802.11 as an international standard, published as ISO 8802.11:1999.[173] The broad-based support and rapid marketplace adoption of the 802.11 standard attested to its success, yet also shifted increasing concern toward security. Security was not a subject of particular focus in the early development and implementations of the 802.11 standard; in fact, security was originally purposefully

169. The topic of public policy in standard setting is explored in a paper by DeLacey et al., *supra* note 46. The authors quote from a paper by Cabral Luis & Tobias Kretschner, *Standards Battles and Public Policy*, *in* STANDARDS AND PUBLIC POLICY (Shane Greenstein and Victor Stango eds., 2007), to make the point that "given the importance of network industries, it is surprising that little attention has been paid to public policy." DeLacey et al., *supra* note 46, at 2. The authors examine the WAPI case to draw lessons concerning government involvement in standard setting, noting that "the appropriate government role is important both for public policy and business strategy." *Id.*

170. *See* Sumner Lemon, *Controversy over Chinese WLAN Standard Deepens*, INFOWORLD, Dec. 10, 2003, http://www.infoworld.com/article/03/12/10/HNchinese controversy_1.html.

171. *See* DeLacey et al., *supra* note 46, at 3, 5-6.

172. *Id.* at 7.

173. *See* Letter from Paul Nikolich, Chairman, Institute of Electrical and Electronics Engineers (IEEE), 802 Local and Metropolitan Area Network (LAN/MAN) Standards Committee, to Li Zhonghai, Chairman, Standardization Administration of China (SAC), and Wang Xudong, Minister, Ministry of Information Industry (MII) (Nov. 23, 2003), *available at* http://ieee802.org/16/liaison/docs/L80216-03_19.pdf.

weak due to export restrictions by some governments.[174] However, due to generally acknowledged security problems with the 802.11 standard, the IEEE in May 2001 established a task force to improve the 802.11 standard's security, which rolled out the security-enhanced 802.11i specification in 2004.[175] China did not join the IEEE task force efforts to develop new security protocols that could be grafted onto the 802.11 standard. Instead, starting in 2001 with the support of the Chinese government in a top-down approach, the Chinese WLAN standard was developed to use a home-grown security protocol called WAPI, which stands for WLAN Authentication and Privacy Infrastructure.[176] The WAPI technology employs an encryption algorithm that China has considered to be a state secret, thereby making it difficult for third parties to assess the technology and develop confidence in its use.[177] The incorporation of this security technology makes the Chinese and IEEE standards incompatible for users.[178] This technical incompatibility effectively results in competition between the 802.11 and WAPI security standards.

In May 2003 the Chinese national standards bodies, SAC and MII, approved WAPI as a national standard and stipulated that by December of that year, all wireless devices sold or imported into China would need to incorporate WAPI technology.[179] When December 2003 arrived, China began to implement WAPI regulations, but permitted a transition period extending the deadline for compulsory compliance until June 1, 2004.[180] Conforming to this standard would have forced foreign equipment vendors to obtain rights to WAPI technology from one of a small group of Chinese companies selected by the Chinese government, each of which had access

174. *See* BROADBAND WIRELESS EXCHANGE MAG., http://www.bbwexchange.com/wireless_internet_access/802.11g_wireless_internet_access.asp (last visited Oct. 28, 2007). These restrictions were later relaxed.

175. *See* DeLacey et al., *supra* note 46, at 6-7, 13.

176. *Id.* at 3, 10-11 (giving a history of the development of WAPI technology, explaining China's top-down national approach to standards); *see also* Sumner Lemon, *Clouds Hang Low Over Chinese WLAN Standard*, INFOWORLD, Dec. 19, 2003, http://www.infoworld.com/article/03/12/19/HNchinesewlan_1.html.

177. DeLacey et al., *supra* note 46, at 10. China's State Encryption and Management Committee (SEMC) has confirmed that the encryption technologies in WAPI have been implemented in accordance with Directive 237, a decree issued by China's State Council, the country's highest administrative body. *See also* Lemon, *supra* note 176. Directive 237 provides that scientific research and production of commercial encryption cipher products should be conducted under conditions of security and secrecy. *Id.*

178. DeLacey et al., *supra* note 46, at 10.

179. *Id.* at 11; *see also* Lemon, *supra* note 170.

180. *See* DeLacey et al., *supra* note 46, at 11; *see also* Lemon, *supra* note 170.

to the core WAPI encryption technology.[181] Various reports suggested that these Chinese companies, a number of which were competitors to the foreign equipment vendors, would be under no obligation to license the WAPI technology.[182] Thus, in addition to concerns over market access, there was also uneasiness about lack of access to relevant IP rights for WAPI and that the Chinese companies could, in turn, demand detailed access to the foreign companies' technology, raising issues about the protection of their IP rights.[183] With a large installed base of devices already using the 802.11 standard, there were also significant cost issues to be considered in any effort to switch over to WAPI technology.[184]

In the worst case, implementation of a mandatory Chinese WAPI standard and restrictive licensing requirements would have significantly changed a market that had previously been open to foreign companies, thereby creating a technical barrier to trade. Not only would it serve as a troubling precedent for standards in the ICT sector, but from a technical interoperability perspective, implementation of the national standard would undermine efforts to harmonize these standards globally. By March 2006 the installed base of IEEE 802.11-capable devices exceeded 200 million worldwide, whereas implementations of the WAPI standard were limited to China.[185] The mandatory WAPI standard would split the global market for wireless networking products in two: one based on the Chinese standard and the other based on the IEEE/ISO standard. This point was

181. DeLacey et al., *supra* note 46, at 11; *see also* Lemon, *supra* note 170. In December 2003 the Chinese government released a list of Chinese companies designated as obligatory production partners of any foreign manufacturers or importers of WLAN technology. *See* Ann Rollins, Presentation at American National Standards Institute Annual Conference: Securing The Future of Wi-Fi: How China Made the Right Decision, slide 3 (Oct. 13, 2004) (on file with author).

182. *See* Lemon, *supra* note 170.

183. *Id.*; *see also* DeLacey et al., *supra* note 46, at 2; USTR, *supra* note 168, at 43; Suttmeier & Xiangkui, *supra* note 13, at 28. "At the time, there was concern that the initiative, which required outside companies to partner with licensed Chinese companies for access to the WAPI technology, would lead to price-gouging and possible theft of intellectual property." Peter Pollack, *China Reinvigorates WAPI Push*, ARS TECHNICA, Mar. 9, 2006, http://arstechnica.com/news.ars/post/20060309-6353.html. The USTR 2006 Report notes similar concerns. Following the SAC's issuance of a draft measure—the Interim Regulations for National Standards Relating to Patents—public statements by Chinese government officials generated concerns that the final draft could require compulsory licensing of patented technologies that are used for national standards, or the sharing of patented technologies on a royalty-free basis in exchange for opportunity to participate in developing standards. USTR, *supra* note 93, at 49.

184. *See* DeLacey et al., *supra* note 46, at 12; *see also* Suttmeier & Xiangkui, *supra* note 13, at 28.

185. DeLacey et al., *supra* note 46, at 10-11, 24 ex. 6.

made in a November 2003 letter from Paul Nikolich, chairman of the IEEE 802 LAN/MAN Standards Committee to SAC Chairman, Li Zhonghai, and to China's Minister of Information Industry, Wang Xudong:

> [W]e are concerned regarding the requirement to support the new WLAN Authentication and Privacy Infrastructure (WAPI) security protocol. We believe that globally-adopted standards provide great benefits both for manufacturers and users, and we have seen many examples of the successes of our standards. Therefore, we are always concerned by activities that limit their global use. We believe that mandatory implementation of the WAPI protocols would unnecessarily fracture the world market for WLAN products. We are concerned that mandatory use of the standard would prohibit the use of 802.11 standard products and thereby limit choice and increase costs to users.[186]

Nikolich's letter invited the Chinese to participate in the IEEE's 802 standards process, while acknowledging that "802.11 security is not optimal and [we] have been working to improve it through the 802.11i project."[187]

The industry and U.S. government reacted strongly to the Chinese WAPI initiative. Leading industry companies like Intel and Broadcom indicated they would not support WAPI.[188] The U.S. government, asserting the incompatibility of the WAPI standard with China's WTO commitments, repeatedly raised its concerns. In an unprecedented high-level letter of March 15, 2004 to China's Vice Premier, Zeng Peiyan, three high-level U.S. representatives—U.S. Trade Representative Robert B. Zoellick, Secretary of Commerce Donald I. Evans, and Secretary of State Colin L. Powell—stated the United States objection to the WAPI standard:

> China would be the only country in the world mandating a specific encryption standard for general consumer use. Since this standard is unique to China, implementation will impose a significant new burden on both foreign and Chinese domestic suppliers. Furthermore, implementation of this standard will make Chinese products incompatible with internationally-accepted standards, isolating China from the larger world market. . . . We

186. Letter of Paul Nikolich, *supra* note 173.

187. *Id.*

188. Sumner Lemon, *No Compromise on WAPI as Intel's Barrett Heads to China*, COMPUTERWORLD, Apr. 6, 2004, http://www.computerworld.com/action/article.do?command=viewArticleBasic&articleId=91955; Tony Smith, *China Tells Intel to Calm Down over Wi-Fi*, THE REGISTER, Mar. 12, 2004, http://www.theregister.co.uk/2004/03/12/china_tells_intel_to_calm/.

> are particularly concerned that the new rules would require foreign suppliers to enter into joint ventures with Chinese companies and transfer technology to them. Such compelled investment and technology transfer would appear to be inconsistent with China's WTO commitments.[189]

Vice President Dick Cheney raised the issue again in high-level meetings in April 2004. The U.S. was particularly concerned about the precedent set if China was permitted to enforce mandatory national standards in the high technology sector.[190]

In response to the industry and diplomatic pressures, the issue was seemingly resolved at a meeting of the US-China Joint Commission on Commerce and Trade (JCCT), a special government consultative body formed to address bilateral trade issues. In April 2004, at a JCCT meeting with China's Vice Premier Wu Yi chairing for the Chinese and Donald Evans and Robert Zoellick co-chairing for the U.S., it appeared that progress had been made. The Chinese delegation announced that it would indefinitely delay implementation of WAPI as a mandatory national wireless encryption standard.[191]

China, however, did not give up on its efforts to promote WAPI. In November 2004, China submitted the WAPI standard for consideration as an international standard before ISO.[192] At ISO, the WAPI standard found competition from the proposed security amendment to the 802.11 standard, known as 802.11i, which was also being submitted to ISO for approval as an ISO-recognized international standard.[193] During the ensuing period, there were claims by Chinese parties that China was receiving unfair treatment as it promoted WAPI for adoption as an international standard, through an anti-WAPI campaign that went well beyond the boundaries of normal ISO rules and procedures.[194] In February 2005, the Chinese

189. The full text of the March 15, 2004 letter was published by BUSINESS WEEK at http://www.businessweek.com/magazine/content/04_11/b3874018.htm.

190. USTR, *supra* note 168, at 43.

191. *Id.* at 43; Trade Facts, The US-China JCCT: Outcomes on Major US Trade Concerns, http://www.ustr.gov/Document_Library/Fact_Sheets/2004/The_US-China_JCCT_Outcomes_on_Major_US_Trade_Concerns.html (last visited Dec. 6, 2007); *see also* Michael Kanellos, *China, U.S. Strike Trade Accord*, CNET NEWS.COM, Apr. 21, 2004, http://www.news.com/China%2C-U.S.-strike-trade-accord/2100-7351_3-5197087.html.

192. DeLacey et al., *supra* note 46, at 13.

193. *Id.* The IEEE's 802.11i protocol added new security enhancements and was submitted to ISO for consideration as an international standard at the same time.

194. *See* DeLacey et al., *supra* note 46, at 13-14; Tang Fuchun, *Call to Back WAPI Standard*, CHINA.ORG.CN, Apr. 15, 2005, http://www.china.org.cn/english/2005/Apr/

delegation withdrew from an ISO meeting in Frankfurt, Germany, alleging "unfair treatment" and that WAPI was blocked by "international monopoly forces."[195] In July 2005 the SAC issued a WAPI Briefing paper, in which it emphasized "the importance of upholding the principles of fairness and procedural due process" as its proposal was considered before ISO.[196] Eventually, by fall 2005, the proposed competing security standards—WAPI and 802.11i—were both given fast-track consideration for voting in the relevant ISO committee.[197] In effect, ISO would vote to choose between the incompatible standards. Meanwhile, in January 2006, the Chinese government directed that all government purchases should give priority to products with WAPI-compatible technologies.[198] Leading up to the ISO vote in March 2006, Chinese sources emphasized that the WAPI technology was superior and claimed that the "IEEE's anti-WAPI campaign has gone beyond normal standardization boundaries and violated many ISO rules and principles."[199] On the eve of the ISO vote, a group of twenty-two Chinese companies, backed by the Chinese government, formed the WAPI Industry Alliance to promote the adoption of the security protocol, particularly in China's domestic market.[200] However, serious concerns remained about WAPI. The IEEE prepared a summary document in which it laid out its claims in favor of fast-track adoption of

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125979.htm; *Amid Controversy, China Strongly Backs Home-Grown WLAN Security Technology in Competition with Intel*, PEOPLE'S DAILY ONLINE, Mar. 6, 2006, http://english.peopledaily.com.cn/200603/06/eng20060306_248151.html [hereinafter *Amid Controversy*].

195. Liu Yan, *ISO Meetings Fail to Back WAPI Standard*, CHINA DAILY, Feb. 25, 2005, at 9, *available at* http://www.chinadaily.com.cn/english/doc/2005-02/25/content_419204.htm; *see also* DeLacey et al., *supra* note 46, at 14. There had been some hope that the WAPI and 802.11i security standards could be harmonized through cooperation in the relevant ISO committee, but this effort failed. Mike Clendenin, *WAPI Battle Exposes Technology Rifts with China*, EE TIMES, Mar. 17, 2006, http://www.eetimes.com/showArticle.jhtml?articleID=183700631.

196. STANDARDIZATION ADMINISTRATION OF CHINA, WAPI BRIEFING NO. 1, at 1 (2005).

197. DeLacey et al., *supra* note 46, at 14.

198. *Id.*; *see also* Jessica Wang, *Analysis International Says China's WAPI Industrial Alliance Should Think in the Interest of the Whole Community*, EE TIMES, Jan. 24, 2006, http://www.eetimes.com/press_releases/prnewswire/showPressRelease.jhtml?articleID=X422627&CompanyId=1; Posting of Andrew Updegrove to ConsortiumInfo.org Standards Blog, http://www.consortiuminfo.org/standardsblog/ (Jan. 9, 2006, 10:43 PST);.

199. *See Amid Controversy*, *supra* note 194.

200. Sumner Lemon, *WAPI Supporters Ready a Last Stand in China*, INFOWORLD, Mar. 8, 2006, http://www.infoworld.com/article/06/03/08/76201_HNwapichina_1.html; *see also* Pollack, *supra* note 183. The WAPI Industry Alliance has grown to include top Chinese computer and telecommunications companies.

the 802.11i proposal, while listing issues weighing against the WAPI proposal.[201]

In early March 2006, ISO members voted to reject the proposed WAPI standard and instead to adopt the IEEE's 802.11i security specification.[202] Reports suggest that members were particularly concerned about adopting WAPI as an international standard due to the continuing secrecy surrounding its undisclosed security algorithm, which created uncertainty and made assessment of the WAPI standard difficult.[203] Regardless of whether or not WAPI might have had technical advantages, members worried about incompatibility, a non-transparent standards development process, and lack of WAPI implementations in the marketplace.[204] A number of ISO members expressed the desire to harmonize the two proposals, but with the working assumption that the 802.11 standard would form the basis to which potentially useful elements of WAPI could be added.[205]

The Chinese responded vigorously to the rejection. The China Broadband Wireless IP Standard Group ("China BWIPS"), the official supporter of the WAPI standard and an organization authorized by the Chinese MII, accused those supporting the 802.11i security standard of "a lot of dirty tricks including deception, misinformation, confusion and reckless charging to lobby against WAPI."[206] China's official news service, Xinhua News Agency, announced that the Chinese government would continue to support WAPI, and that the rejection by ISO would not affect its domestic use in China.[207] Regarding harmonization, China would not agree to "'the hypocritical proposal of forcing the seriously handicapped [802.]11i proposal into an international standard and then using WAPI's advanced

201. *See* DeLacey et al., *supra* note 46, at 14, 24 ex. 6.

202. Stephen Lawson & Sumner Lemon, *ISO Rejects China's WAPI Security Protocol*, NETWORK WORLD, Mar. 13, 2006, http://www.networkworld.comnews/2006/031306-china-wireless-security.html. The proposal to adopt WAPI as a standard was defeated with 17 votes against and 8 in favor. The adoption of 802.11i was approved by 24 votes in favor and 3 against. *See also* DeLacey et al., *supra* note 46, at 14; Joe McDonald, *China Encryption System Rejected*, ASSOCIATED PRESS (Mar. 13, 2006).

203. Lawson & Lemon, *supra* note 202. By comparison, the relevant algorithms for the 802.11i security protocol are not held secretly.

204. *See* DeLacey et al., *supra* note 46, at 24 exh. 6.

205. *Id.* at 14-15.

206. Joe McDonald, *Encryption Rivals Accused of Dirty Tricks*, REDORBIT, Mar. 14, 2006, http://www.redorbit.com/news/technology/428177/encryption_rivals_accused_of_dirty_tricks/index.html (quoting press statement issued by Xinhua News Agency); *see also China Strongly Against 802.11i for Spreading Misinformation*, PEOPLE'S DAILY ONLINE, Mar. 20, 2006, http://english.people.com.cn/200603/15/print20060315_250842.html.

207. Lawson & Lemon, *supra* note 202.

technology to fix 802.11i's security loopholes.'"[208] China BWIPS and SAC made additional submissions, claiming ethical and procedural violations of the ISO fast-track process, and lodging an appeal requesting ISO to nullify its decision.[209] The Chinese government officially weighed in to support this appeal.[210] In June 2006, during a follow-up meeting in the Czech Republic hastily convened by ISO, the Chinese delegation walked out, asserting an "unfair atmosphere."[211]

Since then, China has continued promoting WAPI both before ISO[212] and domestically, building upon the Chinese government's procurement and the development of a WAPI industry chain through the efforts of the WAPI Industry Alliance.[213] The vice-minister of China's MII recently used the signing ceremony for Intel's new integrated circuit manufacturing facility in Dalian, China to urge Intel to support WAPI.[214] China has made "public the WAPI algorithm so that foreign manufacturers can enter the wireless LAN market in China."[215] However, Japan has protested that the manner in which this is planned to take place may have violated the TBT Agreement because Chinese authorities are planning to disclose the tech-

208. DeLacey et al., *supra* note 46, at 15 (quoting *China to Appeal for Fair Position of Home-Grown Wireless Security Tech*, Xinhuanet, Mar. 13, 2006, http://news3.xinhuanet.com/english/2006-03/14/content_4299901.htm); *see also* Posting of Andrew Updegrove to ConsortiumInfo.org Standards Blog, http://www.consortiuminfo.org/standardsblog/ (Mar. 16, 2006, 09:18 PST).

209. *See* DeLacey et al., *supra* note 46, at 4, 15; Natali T. Del Comte, *China Disputes Wi-Fi Security Proposal*, PC MAG., May 31, 2006; Chris Hawke, *China: U.S. is in Wireless 'Conspiracy,'* USA TODAY, May 29, 2006, http://www.usatoday.com/tech/news/2006-05-29-china-encryption_x.htm.

210. *China—Update: Appeal Over ISO WAPI Decision Gets Government Backing*, WIRELESS ASIA/PACIFIC DAILY BULL., June 1, 2006.

211. Chris Hawke, *China Walks out of Encryption Meeting*, USA TODAY, June 10, 2006, http://www.usatoday.com/tech/news/2006-06-11-china-encryption_x.htm. The SAC released a statement through the official Xinhua News Agency, that "[i]n this extremely unfair atmosphere, it is meaningless for the Chinese delegation to continue attending the meeting." *Id.*; *see also* DeLacey et al., *supra* note 46, at 4.

212. One report states that China is "rallying several third-world countries in Africa and South America for votes in the ISO," and has hosted summits for African and South American countries to discuss these issues. *See* Luna, *supra* note 1.

213. *See Chinese Firms Still Pushing WAPI*, SINOCAST CHINA IT WATCH, Oct. 26, 2006; *China to Roll Out WAPI Products Extensively in 2007*, CHINA TELECOM WKLY., Mar. 9, 2007; *Companies Throw Weight Behind WAPI*, CHINADAILY.COM.CN, May 23, 2007, http://www.chinadaily.com.cn/bizchina/2007-05/23/content_878468.htm.

214. *MII Official Urges Intel to Support WAPI*, CHINA TELECOM WKLY., Mar. 20, 2007.

215. Committee on Technical Barriers to Trade, *Transitional Review Mechanism in Connection with Paragraph 18 of the Protocol on the Accession of the People's Republic of China: Questions and Comments from Japan to China*, ¶¶ 25-27, G/TBT/W/270.

nical WAPI content to domestic firms six months before disclosing the same information to foreign firms.[216]

Despite protests from China, the failure of the proposed WAPI standard to achieve approval in the March 2006 ISO vote should not be considered merely the result of an aggressive opposition by the IEEE and other industry stakeholders. As noted *supra*, substantive concerns about the WAPI standard persisted, including the secrecy of the security algorithm; the incompatibility with existing wireless devices; the lack of WAPI implementations in the marketplace; a non-transparent Chinese standards development process in which non-Chinese parties were not permitted to participate; and the lack of transparency (or even understanding) concerning the IP policies governing access to the WAPI technology.[217] A recent detailed account of the WAPI case states, "[p]articipation in the [WAPI] standards process was closed and opaque, and when the two standards collided on the global standards stage, rather than engaging IEEE on questions surrounding technology differences between 802.11 and WAPI, WAPI supporters focused on issues of due process and attempted to discredit the IEEE's process."[218] Regarding IP rights, the study found that:

> With WAPI . . . , there were considerable ambiguities surrounding the technology, with no access to relevant intellectual property. The only way to build the technology was to partner with one of 24 [Chinese] firms involved in promulgating the standard, but the nature of these partnerships was unclear, and outside firms worried about revealing related intellectual property in exchange.[219]

Citing WAPI as an example, the EU, in a submission to the CTBT, raised similar concerns about compulsory home-grown standards, lack of transparency, exclusion of European companies from Chinese standards development bodies, and certification difficulties.[220] The EU "stressed that a unilateral decision by China to adopt mandatory specific encryption re-

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216. *Id.*

217. *See* DeLacey et al., *supra* note 46, at 2-3, 15-16, 24 ex. 6.

218. *Id.* at 16.

219. *Id.* at 2.

220. Committee on Technical Barriers to Trade, *Communication from the European Union*, ¶¶ 8-14, G/TBT/W/272 (Oct. 17, 2006); *see also* Committee on Technical Barriers to Trade, *Fourth Annual Transitional Review Mandated in Paragraph 18 of the Protocol of Accession of the People's Republic of China*, ¶¶ 3, 5, G/TBT/17 (Nov. 9, 2005).

quirements in an area where an international standard was being prepared would be inconsistent with Article 2.4 of the TBT Agreement."[221]

As set forth *supra*, China has made public statements raising concerns about fairness in international standard setting, particularly with regard to Western control of standards and IP rights as an obstacle to harmonization and trade. The WAPI case shows, however, that China's home-grown approach, involving a closed and opaque process with ambiguities on treatment of IP rights, may suffer from some of the same standard-setting "sins." China's general concerns about IP rights, and its particular protests about unfair treatment in the ISO fast-track process, appear to be at odds with its own unilateral standards development approach for the WAPI technology. One could say that China should practice what it has begun to preach.

The following table provides a side-by-side comparison of certain relevant standard-setting factors, as of March 2006, in relation to the WAPI and 802.11i proposals, drawing in part on points raised in an IEEE executive summary document:[222]

802.11i proposal	**WAPI proposal**
Broad disagreement about which technology is superior	
Developed in bottom-up standards development process with contributions from over 500 engineers in 30 countries	Developed in top-down standards development process with no contributions from firms outside China
Open and transparent standards development process	Closed and non-transparent standards development process
Reviewed by international cryptographic community	No review by international cryptographic community because underlying security algorithms were undisclosed
Open and fully specified standard	Proposed standard allegedly contained ambiguities and syntactic errors
Available to anyone for implementation, with licensing of relevant IP rights according to RAND	Beyond select group of Chinese firms, unclear if, and under what terms concerning IP rights, WAPI would be available to other domestic or foreign firms for implementation

221. Committee on Technical Barriers to Trade, *Minutes of the Meeting of June 7-9, 2006*, ¶ 64, G/TBT/M/39 (July 31, 2006).

222. DeLacey et al., *supra* note 46, at 24 ex. 6.

Certified interoperability of devices manufactured by over 500 companies	Limited certification to small group of Chinese firms
Backward compatibility with large installed base of pre-802.11i systems	No backward compatibility, and incompatible with planned enhancements of 802.11
Re-uses deployed authentication technologies	Does not allow for re-use of existing authentication technologies
Installed base of 802.11i-capable devices exceeds 200 million globally	Has no known commercial deployment. Attempts by non-Chinese companies to procure any version of a WAPI device have failed

B. China's Motivation for WAPI and its Standards Strategy

In view of the discussion *supra*, it is apparent why China would be motivated to develop and implement its own WLAN security standard. Not only security matters, but also concerns for the promotion of economic and technological development, shape its standards strategy. China has repeatedly asserted that, despite its wide adoption, there were security deficiencies in the 802.11 standard.[223] The chairman of the IEEE 802.11 standards committee acknowledged that security was an issue, which in turn provided impetus for development of the 802.11i security amendment.[224] China indicated that these technical issues implicate national information security concerns as well, with the possible involvement of Chinese defense and national security interests in the development of WAPI.[225]

However, other reasons clearly drive China's approach on WAPI. Shen Changxiang, a member of the Chinese Academy of Engineering and the State Information Advisory Committee, states that "[t]he WAPI stan-

223. *See* Fuchun, *supra* note 194; *Amid Controversy, supra* note 194; *see also* Updegrove, *supra* note 168.

224. *See* Letter of Paul Nikolich, *supra* note 173.

225. A Chinese representative stated in a CTBT meeting that "WAPI standards were developed to protect national information safety, and stressed that this was in line with the TBT Agreement." Committee on Technical Barriers to Trade, *Minutes of the Meeting of 7-9 June 2006*, ¶ 66, G/TBT/M/39 (July 31, 2006); *see also* Suttmeier & Xiangkui, *supra* note 1313, at 29.

dard concerns both national security and economic interests."[226] Capturing more economic return seems to be an integral incentive.[227]

Another related incentive is promoting the growth of Chinese technology industries. One perspective emphasizes that "[n]ational pride and interest in promoting Chinese industry also plays an important role and reinforces the view that China is uneasy about the considerable influence which U.S. companies and government agencies have in international standard setting."[228] Qin Zhuqiang, the WAPI Industry Alliance's vice-secretary-general, also expressed views concerning the role of IP rights in relation to China's WAPI stance: "The Chinese national policy is to develop self-owned IP and encourage innovation."[229] Moreover, the WAPI case represents one of the first times China has proposed a standard involving Chinese patents in the networking area.[230] By contrast, implementation of various versions of the 802.11 standard could require licensing of IP rights from foreign owners.[231] Xu Guanhua, science minister of China's Ministry of Science and Technology, has echoed this view, indicating in a speech in 2002 that, in relation to IP rights, China will pay much more attention to the development of its own technical standards in fields such as ICT and biotechnology.[232] Shen Changxiang states, "There have long been

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226. *See* Fuchun, *supra* note 194.

227. *See* DeLacey et al., *supra* note 46, at 10 (quoting from July 28, 2006 interview with Zhuqiang Qin).

228. Suttmeier & Xiangkui, *supra* note 13, at 29. One analyst adds that "China is becoming increasingly frustrated that they've been excluded from the standard-setting process," and "[m]ost standards have been handed to them as a de facto [standard]." Elena Malykhina, *China Won't Take Backseat on Standards for Long*, INFO. WEEK, June 5, 2006, at 28 (quoting George Koo, senior advisor of Chinese services group at Deloitte & Touche).

229. DeLacey et al., *supra* note 46, at 12.

230. *See* DeLacey et al., *supra* note 46, at 12.

231. *Id.* at 2, 16; *see also* Andrew Updegrove, *Deploying an Aggressive Standards Strategy Under the WTO*, CONSORTIUM STANDARDS BULL., Apr. 2005, http://www.consortiuminfo.org/bulletins/apr05.php. Indeed, in the U.S. there are disputes about payment of royalties under two versions of the 802.11 wireless standard. *See* Marguerite Reardon, *Wi-Fi Standards Face Patent Threat*, CNET NEWS.COM, Nov. 20, 2006, http://www.news.com/2100-7351-6137372.html. Australia's national science agency, the Commonwealth Scientific and Industrial Research Organization (CSIRO), claims that it holds patent rights covering the widely used 802.11a and 802.11g standards. CSIRO disclosed its patent to the IEEE in 1997, when that standards body was working to improve the standard. At one point, the IEEE sent a letter to CSIRO acknowledging that part of the technology used in the new standards was covered by CSIRO's patent and asking whether it wanted to license the technology to industry for free or charge a reasonable fee. CSIRO indicated that it would charge a fee for use of the technology. *Id.*

232. Suttmeier & Xiangkui, *supra* note 13, at 15-16.

worries that China's information industry relies too much on foreign countries for its core technology. Getting patents is important for the competitive ability of businesses, but industrial standards are key for the whole sector, and even to the nation . . . ."[233] Andrew Updegrove describes these strategic concerns in practical terms:

> Some standards bear significant royalty loads, which can empower some parts of the world (e.g., the West) with significant trade advantages, because their vendors can sell high-margin, branded products, while nations in other regions (e.g., emerging countries) are relegated to the status of low-cost, low margin job shops supplying finished goods to the owners of the patents that underlie controlling standards, but unable to sell similar goods, at high margins, directly to end-users. Such advantages can tempt those with large markets and production capabilities (e.g., China) to create their own domestic standards, in order to level the economic playing field, notwithstanding the constraints on such behaviors contained in the [TBT Agreement].[234]

Thus, controlling industrial or technology standards can be central to obtaining a larger share of the potential economic and financial returns, even if there is a risk of impediments to existing trade. Producing goods to one's own standard means no need to pay royalties to a third-party domestic or foreign patent owner. Setting standards nationally generates potential access to technology at lower cost (i.e., without payment of foreign royalties), no matter what the intended purpose for use of the technology.

China undoubtedly understands the importance of standards for strategic and competitive advantage. While government and economic forces within China cannot be viewed as monolithic,[235] China's drive to create homegrown standards has nonetheless been aptly characterized as an attempt to control the "technological terms of its participation in the global economy."[236] A May 2004 report by Richard Suttmeier and Yao Xiangkui, *NBR Special Report: China's Post-WTO Technology Policy: Standards,*

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233. Fuchun, *supra* note 194.

234. *See* Updegrove, *supra* note 22.

235. *See* Philip Qu & Carl Polley, *The New Standard-Bearer,* IEEE SPECTRUM, Dec. 2005, at 52, *available at* http://www.spectrum.ieee.org/print/2361; *see also* Suttmeier & Xiangkui, *supra* note 13, at 6. Many Chinese firms have interests in the standards established by global multinational corporations rather than in those promoted by the Chinese government, giving rise to cross-cutting positions. *Id.*

236. *Setting Standards,* CHINA ECON. REV., June 2005, http://www.chinaeconomicreview.com/cer/2005_06/Setting_standards.html (quoting Peter Suttmeier of the University of Oregon).

Software, and the Changing Nature of Techno-Nationalism (the "NBR Report"), examined China's national standards strategy, concluding:

> China has been actively developing a new technology policy based on the promotion of its own technical standards. These activities impinge upon business decisions and raise questions about China's commitment to honor its World Trade Organization (WTO) obligations, and are thus attracting increasing attention from foreign business leaders and government officials. . . . We suggest that the standards strategy is best understood in terms of a "neo-techno-nationalism," in which technological development in support of national economic and security interests is pursued through leveraging the opportunities presented by globalization for national advantage.[237]

The NBR Report advises that there are "complex motivations" behind China's standards strategies. With respect to standards and IP rights held by foreign owners, it elaborates a Chinese viewpoint:

> [China's] participation in the global economy is largely defined by its role in international production networks established by others. These networks employ technical standards and technological architectures set by the multinational corporations (MNCs), which are able to capture value from their control over standards and intellectual property. Thus, while China's *absolute* gains have been significant, it remains more than a little dissatisfied with the *relative* gains it realizes in comparison with international technology leaders—often seeing itself, for instance, in a

237. Suttmeier & Xiangkui, *supra* note 13, at 3. The NBR Report was sponsored by the National Bureau of Asian Research, and builds on the views of authors such as Sangbae Kim and Jeffrey Hart, who have stated:

> [T]echnological competition in the global information industries—the leading sector in the contemporary global political economy—is currently moving beyond competition over technological innovation per se. The technological winner is now the one who manages to control de facto market standards while at the same time protecting intellectual property rights.

Id. at 17 (quoting Sangbae Kim & Jeffrey Hart, *The Global Political Economy of Wintelism: A New Mode of Power and Governance in the Global Computer Industry*, *in* INFORMATION TECHNOLOGIES AND GLOBAL POLITICS 143, 143 (James Rosenau & J.P. Singh, eds., 2002)).

> "patent trap" that requires it to pay substantial royalties to others out of the sales of its manufacturers.[238]

China's long-term intention thus appears to be clear: to move up the economic value chain through a strategic focus on standards. The NBR Report suggests that this strategy will depend upon mediating between the extremes of "narrow techno-nationalism," such as single-minded support for Chinese-based standards that may cause friction and resentment from existing trading partners, and "techno-globalism," which is insensitive to national economic and security interests.[239] If China goes too far in either direction, its strategy on standards will not be as effective.

My analysis of the WAPI case and China's interventions before the CTBT shows that China's standards strategy has multiple dimensions. The discussion in this Article has identified at least four tracks on which China relies:

(i) Emphasize the development and promotion of indigenous national standards, such as WAPI, using China's domestic market to increase their use and acceptance;

(ii) Use the leverage associated with the desire by foreign companies for a presence in the Chinese domestic market, or participation in Chinese standards development activities, to negotiate more favorable terms for access to foreign IP and technology;

(iii) Test the waters of international standard setting, such as promoting WAPI for recognition as an international standard before ISO; and

(iv) Move for change within the framework of the TBT Agreement before the CTBT, claiming unfairness in international standard setting and seeking more detailed rules governing IP in connection with international standards.

China's submissions to the CTBT, reviewed *supra* in Part III, are consistent with these views and underscore concerns, in particular, about the relationship between IP rights and international standards. China has sought to bring increasing attention to the links between standards, trade, and IP, slowly building a foundation for change. At the same time, it has

238. *Id.* at 3-4. The NBR Report gives the example of Chinese-made DVD players (China now makes approximately 90% of the world's DVD players), which were impounded at European ports in 2002 because Chinese manufacturers had allegedly not paid for the patents used. *Id.* at 11. The demand was for US$20 per unit royalty on DVD players carrying a sales price of US$90. *Id.*

239. Suttmeier & Xiangkui, *supra* note 13, at 17.

actively promoted domestically developed standards both domestically and internationally, as demonstrated in the WAPI case, to foster further technological and economic development. In the short to medium term, Chinese companies—involved as manufacturers in global production networks—must be aware of standards in various export markets and cannot avoid using many existing international standards needed for the goods they produce.[240] It is thus no surprise that China is pressing for increased attention to IP issues which it perceives as obstacles to trade. Success in this area could pave the way for lower costs, greater compatibility, and increased exports. In Part VI *infra*, I focus on China's fourth track, agreeing with its position to the extent that policies governing IP rights in international standard setting should be incorporated into the TBT Agreement framework.

China could possibly return to a mandatory approach for WAPI or other similar technologies, particularly being quite unfamiliar with the WTO disciplines, the participatory processes at ISO, and the potential incursion into its domestic regulatory autonomy. However, this would not necessarily serve China's interests as it seeks to deepen its integration into the international economy. More likely, as China's economic power grows and it becomes more adept at playing the standards game, it will hold increasing leverage and find new means for pressing its concerns. Thus far, however, China's entreaties before the WTO to adopt new policies concerning IP and standards have been undercut by its handling of the WAPI standard. In the next Part, I examine the legal question of whether China's WAPI policy is consistent with its WTO obligations, especially under the terms of the TBT Agreement.

V. ANALYZING THE WAPI CASE UNDER WTO RULES

While academics have extensively examined standards in relation to IP and antitrust issues,[241] they have focused much less on standards and their double-edged roles as harmonizing mechanisms to facilitate trade or as problematic NTBs. The WAPI case has now provided a useful example for studying ICT standards and international trade.[242] As mentioned *supra*, the WTO in its World Trade Report 2005 chose as its annual policy fea-

240. *See* Qu & Polley, *supra* note 235, at 52. More than forty percent of China's standards across all industries mirror international standards. *Id.* The USTR 2006 Report notes that the Chinese supervisory standards agency, AQSIQ, has since China's accession to the WTO issued rules designed to facilitate China's adoption of international standards. USTR, *supra* note 93, at 46.

241. *See* sources cited *supra* note 11.

242. *See* Suttmeier & Xiangkui, *supra* note 13, at 27-31; Cromer, *supra* note 13.

ture an examination of the links between standards, international trade, and the WTO regime, thereby illustrating the increasing attention to these issues at the international level.[243] The WTO's former Director-General, Supachai Panitchpakdi, highlighted in his foreword that standards are essential for facilitating well-functioning markets where technical compatibility is important—such as networked environments. He emphasized, moreover, that "a stable and mutually supportive relationship between standards regimes and international trade rules is central to the effective functioning of the trading system."[244] Yet he also admonished that "the design and operation of standards must also be such as to avoid the misappropriation or capture of public policy in these areas to construct unwarranted obstacles to competition and trade."[245] This WTO view of standards reflects their dual nature from a trade perspective—as trade facilitators and an indispensable element in the modern economy, yet when applied inappropriately as a device of protectionism. Governments, too, increasingly recognize that standards are valid strategic tools to foster the competitiveness of their industries, but they can also face temptation to cross the line and use them for protectionism.

I endeavor in this Part to build on the contributions noted *supra*, providing an analysis of relevant WTO trade obligations and their application to the WAPI case, while considering counterarguments that have been, or could have been, raised by the Chinese government. In this sense, the WAPI case also serves to illustrate standards' indeterminate nature as trade facilitators and harmonizing elements in the ICT industry, on the one hand, or as potential measures of protectionism when applied inappropriately, on the other. While the Chinese government has taken active steps to promote the use of technology standards developed within China, this by itself is not necessarily problematic from a trade perspective. The EU, as discussed *supra*, has for years taken an approach to standard setting that is proactive, centralized, and subsidized.[246] However, some of the Chinese government measures used to promote WAPI, including its initial (but later suspended) mandate that all wireless devices sold or imported into China must be WAPI-compliant, can be viewed as protectionism, raising concerns in relation to WTO obligations. In Section A, I provide background on the TBT Agreement and, in Section B, China's WTO accession

243. *See supra* text accompanying note 68.

244. Supachai Panitchpakdi, *Foreword* to WORLD TRADE ORGANIZATION, *supra* note 28, at iii.

245. *Id.*

246. *See* Walter Mattli & Tim Büthe, *supra* note 32, at 10-11, 25.

commitments. I then analyze in Section C whether China's WAPI policy has been consistent with WTO rules.

A. The WTO and TBT Agreement

Established on January 1, 1995 in Geneva, the WTO represents the logical capstone of post-World War II efforts by governments to remove barriers impeding international trade. The history of the developments leading up to the WTO has been extensively documented.[247] Building on the foundations of the General Agreement on Tariffs and Trade (GATT), which existed provisionally for 47 years yet nevertheless achieved global success in reducing the old-line trade barriers of tariffs and quotas,[248] the WTO incorporates a package of multilateral agreements which respond to the increasingly complex devices, such as NTBs, that can be used to protect domestic interests and inhibit competition from imports.[249] These NTBs have been called "the crucial terrain of trade policy today," becoming "significantly more important" as tariffs have been substantially reduced under more than four decades of the GATT regime.[250]

NTBs first became a priority for negotiations during the Tokyo Round in the 1970s. The negotiations for reducing NTBs were complex, and the Round resulted in nine different special agreements on non-tariff measures, which were called "codes" because they involved reasonably concrete obligations.[251] Among these limited membership codes, the Agreement on Technical Barriers to Trade, signed in April 1979 (the "Standards Code"), proved to be one of the most successful, with forty-seven governments (more than any other code) eventually signing it.[252] Some fifteen

247. *See generally* JOHN H. JACKSON, THE WORLD TRADE ORGANIZATION: CONSTITUTION AND JURISPRUDENCE (1998); THE WORLD TRADE ORGANIZATION: LAW, PRACTICE, AND POLICY (Mitsuo Matsushita, Thomas H. Schoenbaum & Petros C. Mavroidis eds., 2d ed. 2006); THE GATT URUGUAY ROUND: A NEGOTIATING HISTORY (Terence P. Stewart ed., 1999); WORLD TRADE ORGANIZATION, GUIDE TO THE URUGUAY ROUND AGREEMENTS (1999).

248. Since the creation of GATT it has been estimated that the average tariff rate of industrialized countries has been reduced from 40% to 4%. *See* USTR, *supra* note 106, at 7.

249. Eight rounds of multilateral trade negotiations under the GATT system have served to greatly reduce tariffs and other barriers to trade. *See* Jackson, *supra* note 247, at 20; Matsushita et al., *supra* note 247, at 5.

250. Jackson, *supra* note 247, at 21. Professor Jackson continues on this point: "Many domestic producer interests would begin turning to a variety of non-tariff barriers (more than a thousand) as a way to minimize the competition from imports, since tariffs would no longer provide that type of protection."

251. *Id.* at 21.

252. WORLD TRADE ORGANIZATION, GUIDE TO THE URUGUAY ROUND AGREEMENTS, *supra* note 247, at 71.

years later, the Uruguay Round of negotiations focused on these codes as part of the multilateral agreement establishing the WTO itself. "A major advance of the Uruguay Round result and the WTO is to bring these updated 'side agreements' into the core of the WTO/GATT legal structures, although a number of difficult legal questions about the relationships of these various texts to each other and to the GATT still exist."[253] The new TBT Agreement emerging from the Uruguay Round, unlike its predecessor the Standards Code, is fully integrated into the WTO system, with its provisions binding all WTO members and any disputes arising under it governed by the WTO's dispute settlement rules.[254]

The broad purposes of the TBT Agreement are set forth in its Preamble, including:

(i) Encouraging international standards and conformity assessment systems, in recognition of "the important contribution that international standards and conformity assessment systems can make . . . by improving efficiency of production and facilitating the conduct of international trade;" and

(ii) Ensuring that technical regulations and standards . . . and procedures for assessment of conformity with technical regulations and standards, do not create unnecessary obstacles to international trade.[255]

The Preamble states that WTO members should nevertheless be entitled to take measures to protect national security and the environment, to ensure quality of exports and prevent deceptive practices, and to protect human, animal, or plant life or health, so long as these measures are not discriminatory or disguised restrictions on trade.[256] The Preamble recognizes the contribution which international standards can make to the transfer of technology from developed to developing countries, while acknowledging that developing countries may encounter difficulties and require assistance in the development and application of technical regulations, standards, and procedures for conformity assessment.[257]

The TBT Agreement is concerned with standards and technical regulations—only measures that fall within the scope of the definitions of a

253. Jackson, *supra* note 247, at 22.

254. WORLD TRADE ORGANIZATION, GUIDE TO THE URUGUAY ROUND AGREEMENTS, *supra* note 247, at 71.

255. TBT Agreement, *supra* note 8, at preamble, Art. 5.1.2.

256. *Id.* at ¶¶ 6-7.

257. *Id.* at ¶¶ 8-9.

standard or technical regulation are subject to the Agreement's disciplines.[258] The TBT Agreement defines "standard" as a "[d]ocument approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, *with which compliance is not mandatory.*"[259] When the specification is intended to be voluntary in application, the term "standard" is used, whereas specifications with regulatory force (i.e., where compliance is mandatory) are referred to as "technical regulations."[260] "Most of the principles applied by the TBT Agreement to technical regulations also apply to voluntary standards which are covered by the Code of Good Practice for the Preparation, Adoption and Application of Standards (Annex 3 of the Agreement)."[261] Thus, while the principles for the preparation and adoption of technical regulations and standards are the same, the former are normally issued by a governmental body and require mandatory compliance, while the latter are developed by various standard-setting bodies for voluntary adoption.

The structure of the TBT Agreement covers three sets of activities, carried on at several different levels.[262] The first set involves WTO member responsibilities for the preparation, adoption, and application of *technical regulations*, with Article 2 specifying responsibilities for central governments and Article 3 specifying responsibilities for local government and non-governmental bodies within their territories.[263] The second set of activities concerns responsibilities for the preparation, adoption, and implementation of *standards* by "standardizing bodies" and is covered in Article 4, with relevant guiding principles set forth in Annex 3 in a Code of Good Practice.[264] The third set covers *conformity assessment procedures*—that is, confirming and certifying that technical regulations and standards have been complied with.[265] Across these three sets of activities, the TBT Agreement applies the basic GATT 1994 principles of non-

258. McDonald, *supra* note 12, at 252.

259. TBT Agreement, *supra* note 8, at Annex 1 (Terms and Their Definitions for the Purpose of This Agreement), ¶ 2 (emphasis added).

260. *Id.* at ¶ 1; *see also* OECD, *supra* note 6, at ¶ 2.

261. WORLD TRADE ORGANIZATION, *supra* note 28, at 131.

262. WORLD TRADE ORGANIZATION, GUIDE TO THE URUGUAY ROUND AGREEMENTS, *supra* note 247, at 73.

263. TBT Agreement, *supra* note 8, at arts. 2, 3.

264. *Id.* at Annex 3 (Code of Good Practice for the Preparation, Adoption and Application of Standards).

265. WORLD TRADE ORGANIZATION, GUIDE TO THE URUGUAY ROUND AGREEMENTS, *supra* note 247, at 73. With respect to conformity assessment procedures, Articles 5 and 6 pertain to central government bodies, Articles 7 and 8 cover local and non-governmental bodies respectively, and Article 9 is for international and regional systems.

discrimination, transparency, and consultation, while introducing the TBT Agreement's special emphasis on harmonization and member countries' duty to avoid creating unnecessary obstacles to international trade.[266]

In view of the responsibilities concerning use of international standards, it is noteworthy that this term is not defined in the TBT Agreement or Annex I, although the CTBT Principles improve on this situation by defining characteristics that should be integral to the process of developing an international standard.[267] The Agreement and its annexes are also silent on the issue of IP.

B. China's Accession Commitments

Prior to China's accession to the WTO, China and interested WTO members negotiated bilaterally concerning China's market access commitments and concessions, including, for example, the tariffs that would apply on imports of industrial and agricultural goods, and the commitments China would make to open up its market to foreign companies.[268] These trade-liberalizing concessions and commitments were consolidated into China's Goods and Services Schedules, which apply to all WTO members.[269] In addition, the WTO Working Group Party (composed of all WTO members) engaged in multilateral negotiations with China concerning the rules that would govern trade with China. These commitments are set forth in China's Protocol of Accession[270] and in an accompanying Report of the Working Party ("Working Party Report").[271] The Working Party Report records a number of the key commitments by China concerning standards, in response to concerns raised by Working Party members:

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266. As the WTO dispute settlement Appellate Body has found: "We observe that, although the *TBT Agreement* is intended to 'further the objectives of GATT 1994,' it does so through a specialized legal regime that applies solely to a limited class of measures. For these measures, the *TBT Agreement* imposes obligations on Members that seem to be *different* from, and *additional* to, the obligations imposed on Members under the GATT 1994." Appellate Body Report, *European Communities—Measures Affecting Asbestos and Asbestos-Containing Products*, ¶ 80 WT/DS135/AB/R (*adopted* Apr. 5, 2001) [hereinafter *EC-Asbestos*].

267. *See infra* Section V.C.4.

268. USTR, *supra* note 93, at 11.

269. *Id.*

270. World Trade Organization, *Protocol on the Accession of the People's Republic of China*, ¶ 7.2, WT/L/432 (Nov. 23, 2001), *available at* http://docsonline.wto.org/imrd/directdoc.asp?DDFDocuments/t/WT/L/432.doc.

271. World Trade Organization, *Report of the Working Party of the Accession of China*, WT/MIN(01)/3 (Nov. 10, 2001), *available at* http://www.wto.org/english/thewto_e/acc_e/wp_acc_china_e.doc.

- Questions were raised about the opportunity for public consultation and comment on proposed Chinese standards, technical regulations, and conformity assessment procedures. China confirmed that, upon accession, its procedures would clearly indicate minimum timeframes for allowing public comment and that comments would be given due consideration regardless of origin.[272]

- Members requested information on China's plans for using international standards as a basis for new Chinese standards, as well as details on Chinese plans to review existing standards so as to harmonize them with international standards.[273] China responded that it is a member of ISO, IEC, and ITU, and actively participates in the development of relevant international standards. Within four months of accession, China would notify acceptance of the TBT Agreement's Code of Good Practice. In addition, the representative of China stated that China has a clear policy to periodically review existing standards, among other reasons, to harmonize them with relevant international standards where appropriate.[274] The working party took note of these commitments.[275]

- "Some members of the Working Party also expressed concern that China did not use relevant and available international standards as the basis for some of its existing technical regulations."[276] The Chinese representative said that China's active adoption of international standards as the basis for technical regulations was a basic policy for accelerating its industrial modernization and promoting economic growth. As a result of China's efforts, the use of international standards as the basis for technical regulations has increased from 12% to 40% and China planned to increase this by a further 10% in the next five years.[277] China would provide relevant notifications concerning its progress as provided under the TBT Agreement, and the members again noted these commitments.[278]

- Members raised concerns that Chinese provisions for technical regulations and conformity assessment did not adequately address fundamental obligations such as transparency, non-discrimination,

272. *Id.* at ¶ 178.
273. *Id.* at ¶ 179.
274. *Id.* at ¶ 180.
275. *Id.*
276. *Id.* at ¶ 183.
277. *Id.* at ¶ 184.
278. *Id.*

> national treatment, and avoidance of unnecessary barriers to trade.[279] The Chinese representative responded that to eliminate unnecessary barriers to trade, China would not maintain multiple or duplicative conformity assessment procedures, nor would it impose requirements exclusively on imported products.[280]

WTO members formally approved China's accession to the WTO, and China later joined, in 2001.[281] In the Protocol of Accession, China agreed that in implementing the core national treatment obligation of Article III of GATT 1994, it would eliminate non-tariff measures that cannot be justified under the WTO agreement.[282] China also agreed that it would comply with the TBT Agreement, bringing all technical regulations, standards, and conformity assessment procedures into conformity.[283]

In the negotiations leading up to the Protocol of Accession, the parties had initially intended to include specific language confirming China's responsibilities to use relevant international standards as a basis for China's technical regulations, standards, and conformity assessment procedures, in accordance with Article 2 of the TBT Agreement. The draft text provided as follows:

> China's standards, technical regulations and conformity assessment procedures shall be based[, *to the maximum extent possible*,] on relevant international standards, where they exist, except where use of different standards, technical regulations and conformity assessment procedures are justified to the TBT Committee pursuant to Article 2.4 of the TBT Agreement as necessary to fulfill: the legitimate objective of national security; prevention of deceptive practices; or protection of human health or safety, animal or plant life or health, or the environment. Any such standards, technical regulations and conformity assessment procedures shall be administered so as not to create unnecessary barriers to trade.[284]

China had insisted on inclusion of the phrase "to the maximum extent possible" noted in the brackets. The issue was part of a more general discussion regarding China's claim to be a developing country, and thus its

279. *Id.* at ¶ 189.
280. *Id.* at ¶ 192.
281. USTR, *supra* note 93, at 11.
282. World Trade Organization, *supra* note 270, at ¶ 7.2.
283. *Id.* at ¶¶ 13.2, 13.4(a).
284. *See* Ichiro Araki, *China and the Agreement on Technical Barriers to Trade* 8 (RIETI Discussion Paper Series 02-E-008, 2002) (quoting paragraph 15 of the draft Protocol) (alteration in original).

entitlement to "special and differential treatment" under Article 12 of the TBT Agreement.[285] The parties could not agree, and the Working Party sought an explicit commitment by China that it would not invoke Article 12.[286] China would not agree to this demand. In the end, it became futile for the Working Party to pursue mutually acceptable language. The final Protocol says nothing about specific responsibilities to use international standards, but only (as indicated *supra*) that China will comply with the TBT Agreement. The Protocol is also silent on whether China is entitled to recourse as a developing country.[287]

In light of China's aggressive push behind the WAPI standard and its openly stated concerns about IP rights as an obstacle to following international standards, the Working Party Report and Protocol negotiations are revealing, signaling that China and the WTO Working Party members may have anticipated that these issues would soon arise to create tensions.

C. Analysis of the WAPI Case

Four areas under the TBT Agreement are especially relevant for analyzing the WAPI case: according national treatment to foreign producers; avoiding measures that constitute unnecessary obstacles to trade; using relevant international standards; and adhering to the CTBT Principles for the Development of International Standards. Each of these areas, comprising part of the rules and principles to which China agreed on accession to the WTO, should guide the standards development and implementation process for WTO members.

1. National Treatment (Non-Discrimination)

The national treatment obligation, providing that foreign products must receive treatment no less favorable than that given to similar domestic products, can often be a source of dispute among nations.[288] In some cases, domestic measures will overreach or be shaped to unnecessarily restrain imports, while in other cases legitimate policy goals, including those listed in the general exceptions of GATT Article XX,[289] will relieve a

285. *Id.* at 10.

286. *Id.* at 11.

287. *Id.*

288. JOHN JACKSON, THE WORLD TRADING SYSTEM: LAW AND POLICY OF INTERNATIONAL ECONOMIC RELATIONS 189 (1989).

289. GATT Article XX lists general exceptions to the non-discrimination principle, including measures necessary to protect public morals or human, animal, or plant life or health. Such measures should not be applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries, or a disguised restriction on international trade. *Id.*

measure from being inconsistent with GATT obligations.[290] The temptation of governments to shape regulatory measures so as to favor domestic products can be great.[291] For these reasons, it was important that China agreed in the Protocol of Accession that, in implementing the core GATT Article III national treatment obligation, it would eliminate non-tariff measures that cannot be justified under the provisions of the WTO agreement.[292]

The TBT Agreement synthesizes the GATT national treatment (Article III) and most-favored-nation (Article I) principles into a single non-discrimination obligation in Article 2.1 concerning technical regulations.[293] Article 2.1 provides as follows:

> Members shall ensure that in respect of technical regulations, products imported from the territory of any Member shall be accorded treatment no less favourable than that accorded to like products of national origin and to like products originating in any other country.[294]

The WTO dispute settlement Appellate Body has analyzed similar language in GATT Article III:4[295] concerning national treatment and determined that, for a violation to be established, three elements must be satisfied:

- The foreign and domestic products at issue must be "like products;"
- The measure at issue must be a law, regulation, or requirement (under the TBT Agreement a technical regulation) "affecting" the internal sale or use of the foreign products; and

290. *Id.* at 189-90.

291. *Id.* at 190.

292. *See supra* note 282 and accompanying text.

293. McDonald, *supra* note 12, at 257.

294. TBT Agreement, *supra* note 8, at art. 2.1. The non-discrimination principle is also stated for standards and conformity assessment in Article 5 & Annex 3 (Code of Good Practice), ¶ D. *See also* WORLD TRADE ORGANIZATION, GUIDE TO THE URUGUAY ROUND AGREEMENTS, *supra* note 247, at 73.

295. Article III:4 of GATT 1994 provides in relevant part that: "[t]he products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favorable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use."

- The foreign products must be accorded "less favourable" treatment than the like domestic product.[296]

The WTO Appellate Body in *EC-Asbestos*, analyzing the TBT Agreement and GATT Article III:4, found that, with regard to "like products," a determination of "likeness" in this context is "fundamentally, a determination about the nature and extent of a competitive relationship between and among products."[297] This reading would allow for a relatively "broad product scope" for issues of "likeness."[298] The analysis should be made on a case-by-case basis, and the Appellate Body has developed a set of four criteria for analyzing "likeness": (i) the properties, nature, and quality of the products; (ii) the end uses of the products; (iii) consumers' tastes and habits with respect to the products; and (iv) the tariff classification of the products.[299] Applying these factors and the overarching concept of "competitive relationship" to a comparison of wireless products incorporating the WAPI encryption standard and the 802.11i standard, it is apparent that they have similar physical properties and virtually identical end uses (although there is debate about which technology is superior), would likely be considered comparable if not perfect substitutes from the consumer perspective, would be classified under the same tariff classification, and thus could be considered market rivals. They should be considered like products.

Considering the second element of the WTO Appellate Body's test, the Chinese policy mandating incorporation of the WAPI technology would certainly have had an "effect" on the internal sale or use of foreign wireless equipment incorporating the 802.11i standard—it would have banned such foreign equipment. The Appellate Body held that, to determine whether foreign products are treated "less favourably" than domestic products, the third element of its test, it should "examin[e] whether the measure modifies the *conditions of competition* in the relevant market to the detriment of imported products."[300] It is self-evident that a ban on the import or sale of 802.11i products would result in their "less favourable" treatment than domestic WAPI products.

Therefore, in simple terms, any effort to prevent sale of equipment using the 802.11i standard while mandating WAPI could be viewed as a violation of the national treatment principle, found in both GATT III:4 and in

296. Appellate Body Report, *Korea—Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, ¶ 133, WT/DS169/AB/R (Dec. 11, 2000) [hereinafter *Korea-Beef*].

297. *EC-Asbestos, supra* note 266, at ¶ 99.

298. *Id.* at ¶ 100.

299. *Id.* at ¶ 101.

300. *Korea-Beef, supra* note 296, at ¶ 137.

Article 2.1 of the TBT Agreement. Even with the indefinite suspension of the mandatory WAPI approach, if access to WAPI becomes a practical necessity in the Chinese market, conditioning WAPI's use on restrictive licensing arrangements with Chinese companies could also violate national treatment obligations. As noted *supra*, however, more recent reports suggest that China has planned to disclose and license the technical WAPI content to both domestic and foreign firms. Japan has claimed, however, that the domestic Chinese firms would be given access to the technology six months before foreign firms.[301] This priority access for domestic firms, creating delay for foreign firms that could cause detriment to their ability to compete in the Chinese market, would also create national treatment problems. To be consistent with its obligations under the TBT Agreement and GATT Article III, the Chinese government must be careful to structure its government-sanctioned standards development and implementation strategies so as not cross the line toward favoring domestic firms.

2. *Unnecessary Obstacle to International Trade*

A second point to be considered is whether, under Article 2.2 of the TBT Agreement, China's WAPI policy would create an unnecessary obstacle to trade, or otherwise be more trade-restrictive than necessary to fulfill any legitimate objective. The TBT Agreement provides in Article 2.2 that WTO member countries must ensure that technical regulations are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. For this purpose, technical regulations must not be more trade-restrictive than necessary to achieve a legitimate objective, taking into account the risks nonfulfillment of that objective would create. Such legitimate objectives are, *inter alia*, national security requirements, the prevention of deceptive practices, protection of human health or safety, animal or plant life or health, or the environment. In assessing such risks, relevant elements of consideration are available scientific and technical information, related processing technology, or intended end uses of products.[302] This provision incorporates and restates a number of the general exceptions under GATT Articles XX and XXI.[303]

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301. *See supra* note 216 and accompanying text.

302. TBT Agreement, *supra* note 8, at art. 2.2. The same principle is stated for standards and conformity assessment. *See id.* at arts. 3.1, 3.4, 4.1, 5.1.2, 8.1, 9.2 & Annex 3 (Code of Good Practice), ¶ E.

303. Article XXI of GATT 1994 creates a security exception to the national treatment requirement, providing in pertinent part that nothing in the GATT shall be construed "to prevent any contracting party from taking any action which it considers necessary for the protection of its essential security interests."

China could contend that even if its WAPI policy gives potential grounds for a national treatment violation, the policy is excused as necessary to fulfill a legitimate objective, such as implementing national information security requirements. China has repeatedly asserted security deficiencies in the existing 802.11 standard, and invoked national information security in support of its WAPI policy.[304] China's formal position has been that when international standards cannot fulfill such a legitimate objective, a WTO member has the right to adopt its own standards.[305] China may lack trust in Western-designed security technologies, precisely because their claim is that this technology as incorporated into wireless communications may be used to advance their own national security purposes. Why would they trust Western technology for sensitive national security purposes? Thus, it could be quite difficult to second-guess a country's invocation of national security concerns, particularly regarding standards that relate to information security at a time when global terrorism has been on the rise.[306]

On the other hand, given that the 802.11i security protocol—approved in the ISO March 2006 fast-track vote—was developed to improve the security of wireless devices, it may be more difficult for China to justify that its approach falls within the national security exception. Would the 802.11i technology satisfy not only commercially motivated security concerns but also those relating to government use? If a dispute were to devolve into a technical comparison of the two technologies, Article 2.2 has set forth elements of consideration for assessing risks, which noted *supra* include scientific and technical information, related processing technology, or intended end uses of products.[307] Moreover, even if the security concerns are legitimate, why does this mean that a national WAPI standard must be mandated for *all* uses (e.g., commercial), not just for governmental applications?

In this respect, the TBT Agreement's directive that technical regulations shall not be more trade-restrictive than *necessary* to fulfill a legitimate objective suggests China's compulsory approach was overbroad to the extent it embraced both commercial and governmental security applications.[308] The Appellate Body has said the word "necessary" should be

304. *See* Committee on Technical Barriers to Trade, *Minutes of Meeting of June 7-9, 2006*, ¶ 66, G/TBT/M/39 (July 31, 2006).

305. Committee on Technical Barriers to Trade, *Minutes of Meeting of November 2, 2005*, ¶ 64, G/TBT/M/37 (Dec. 22, 2005).

306. Cromer, *supra* note 13, at ¶ 23.

307. *See supra* note 302 and accompanying text.

308. *Id.*

interpreted as closer to the meaning of "indispensable," rather than merely "making a contribution" to some objective.[309] To determine whether a measure is "necessary" involves weighing a series of factors, including the importance of the interest at stake, how well the challenged measure contributes to the ends pursued, and what effect the measure has on trade.[310] Also relevant is whether there exists an alternative that is consistent with WTO obligations.

In the WAPI case, more narrowly tailored means, such as requiring WAPI for use by the Chinese government itself, could have been used to meet national security objectives, while minimizing the disruptive impact on trade in existing commercial wireless products. In addition, any restrictive licensing practices for WAPI technology could be grounds for an independent claim that the manner in which China has chosen to implement its WAPI policy violates Article 2.2.[311] China would have to justify such licensing practices as not more trade-restrictive than necessary to fulfill legitimate objectives. Finally, China's unilateral action in developing the WAPI standard, characterized by the EU as an exclusionary and non-transparent standard-setting process,[312] is also damaging to its case.[313] In a similar set of circumstances, the United States was found to violate WTO obligations in the *Shrimp Turtle* case due in large part to the unilateral approach the United States used to impose a standard, rather than negotiate with its trade partners, in pursuing a solution to the problem of sea turtle conservation.[314]

One other point is that factors such as national economic advantage, IP rights, and related issues of payment of foreign royalties are not listed among possible "legitimate objectives" that would justify the WAPI policy or China's derogation from the national treatment principle. Under WTO rules, China has no basis for asserting that IP issues, which it claims have become an obstacle to trade, provide grounds for mandating a national WAPI technical regulation (particularly one developed in a closed and exclusionary process). In this respect, I contend that IP rights should not be grounds for departure from an existing international standard, but should instead be a factor to consider in determining whether a standard should achieve international recognition in the first place. In sum, China's

309. *See Korea-Beef, supra* note 296, at ¶ 161.

310. *Id.* at ¶¶ 163-64. *See also* Cromer, *supra* note 13, at ¶ 21.

311. *Id.* at ¶ 15.

312. *See supra* note 208 and accompanying text.

313. Cromer, *supra* note 13, at ¶ 21.

314. *See* Panel Report, *United States—Import Prohibition on Certain Shrimp and Shrimp Products*, ¶ 166, WT/DS58/AB/R (May 15, 1998).

approach on WAPI raises valid yet complex concerns about whether its measures should be viewed as creating an unnecessary obstacle to trade, or as merely no more trade-restrictive than necessary to meet China's legitimate national information security objectives.

3. Use of Relevant International Standards

This Section considers whether China's refusal to follow the wireless 802.11 standard is a violation of the TBT Agreement's obligation to use relevant international standards. First, background is provided on the TBT Agreement obligations in this regard. Next, the analysis requires that we consider whether WAPI should be viewed as a "technical regulation" or "standard" under the TBT Agreement. The focus then shifts to the 802.11 specification to determine whether it can be considered a "relevant international standard" that could have been effectively used to fulfill China's legitimate regulatory objectives.

The TBT Agreement emphasizes harmonization of standards as a means to prevent their use for protectionist motives, to remove unnecessary obstacles to trade, and to facilitate trade by creating conditions for economies of scale.[315] The Agreement thus contains a number of provisions to encourage harmonization of technical regulations, standards, and conformity assessment procedures. It "accomplishes this by requiring countries to follow international technical standards where they exist, and by justifying deviations from those standards in certain circumstances."[316] While WTO members are free to decline to adopt any standard at all in a given instance,[317] when they do so they should use relevant international standards as a basis for their technical regulations and national standards, except when an international standard would be ineffective for achieving

315. McDonald, *supra* note 12, at 270.

316. Cromer, *supra* note 13, at ¶ 9.

317. McDonald, *supra* note 12, at 260. Jan McDonald comments that:

> Members that have technical regulations in place may have to modify them to fit international standards, while other Members are free to ignore international measures and to keep domestic standards low or non-existent. Indeed, it appears that a Member that has declined to adopt any standard, even the relevant international standard, is still free to challenge the technical regulation of another Member that is more restrictive than the international standard.

Id. McDonald argues that this approach "fuels the risk of regulatory stagnation, if not a race towards the bottom, since high-standards countries will be loathe to raise their standards even higher when others are not required to introduce even the basic minima." *Id.* at 261.

the legitimate objectives pursued.[318] The TBT Agreement extends this responsibility to central and local governments and non-governmental bodies, albeit with different levels of required adherence.[319]

Article 2.4 of the TBT agreement provides that:

> Where *technical regulations* are required and relevant international standards exist or their completion is imminent, Members *shall* use them, or the relevant parts of them, *as a basis* for their technical regulations except when such international standards or the relevant parts would be ineffective or inappropriate means for the fulfillment of the legitimate objectives pursued, for instance because of fundamental climatic or geographical factors or fundamental technological problems.[320]

Article 2.4 can be taken to mean that "where an international standard exists, and that standard would be effective in accomplishing a government's legitimate regulatory objectives, the international standard *must* be used" when the government acts by implementing a technical regulation to achieve its ends.[321] For standards, the Code of Good Practice imposes a similar obligation on member nations as to their central government standardizing bodies.[322] As an incentive for compliance, the Agreement creates the rebuttable presumption that technical regulations prepared in accordance with relevant international standards will not be considered to create an unnecessary obstacle to trade.[323] Finally, the TBT Agreement

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318. TBT Agreement, *supra* note 8, at arts. 2.4, 4, & Annex 3, ¶ F.

319. *Id.* at arts. 2.4, 3.1 & 4.1 & Annex 3, ¶ F. Central governments are required to ("shall") use relevant international standards except as provided in the TBT Agreement, whereas for local government and non-governmental bodies within their territories, WTO members "shall take such *reasonable measures as may be available to them* to ensure compliance" with the duty to use international standards. *Id.* at art. 3.1 (emphasis added).

320. *Id.* at art. 2.4 (emphasis added).

321. Cromer, *supra* note 13, at ¶ 12 (emphasis added).

322. TBT Agreement, *supra* note 8, at art. 4 & Annex 3, ¶ F. WTO "[m]embers *shall* ensure that their central government standardizing bodies comply with the Code of Good Practice," which provides in paragraph F, similarly, that where relevant international standards exist (or their completion is imminent), standardizing bodies *shall* use them as a basis for the *standards* they develop, subject to terms virtually identical to those in Article 2.4 above. *Id.* (emphasis added). As noted with technical regulations, WTO members are also required to "take reasonable measures as may be available to them to ensure" that their local government and non-governmental bodies comply with these terms, including accepting and complying with the Code of Good Practice. *Id.* at arts. 3.1 & 4.1.

323. *Id.* at art. 2.5. Article 2.5 provides in relevant part that "[w]henever a technical regulation is prepared, adopted or applied for one of the legitimate objectives explicitly mentioned in paragraph 2, *and is in accordance with relevant international standards*, it

creates a duty on WTO members to participate in international standard-setting activities, within the limits of their resources.[324]

In a dispute over non-compliance with the TBT Agreement's obligations to use international standards as a basis for either technical regulations or standards, the burden of proof would fall on the complaining party. That party would bear the burden of proving that (i) the international standard had not been used as a basis for the national technical regulation or standard; and (ii) the international standard is effective and appropriate to fulfill the legitimate objective pursued by the national authorities through the regulation or standard.[325]

Accordingly, to assess whether China complies with its WTO commitments to use relevant international standards, this two-part inquiry can actually be detailed into four elements to be considered. First, as a threshold question, we consider whether the WAPI standard is a "technical regulation" or "standard" under the TBT Agreement. Second, we evaluate whether the 802.11 specification is a relevant "international standard." Third, we then assess whether the Chinese government used the 802.11 standard as a basis for the WAPI standard or technical regulation. Fourth, we consider whether the 802.11 standard is effective and appropriate to fulfill the legitimate objective pursued by the national authorities.

a) Definition of Technical Regulation or Standard

A first step is to consider whether China's WAPI standard falls within the definitions of "technical regulation" or "standard" under the TBT Agreement. Annex 1 defines a "technical regulation" as a "document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory."[326] The Appellate Body interpreted the definition of "technical regulation" in the *EC-Asbestos* case,[327] and then applied it in the *European Communities—Trade Description of Sardines ("EC-Sardines")* case.[328] There are three criteria to be satisfied:

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shall be rebuttably presumed not to create an unnecessary obstacle to international trade." (emphasis added).

324. *Id.* at art. 2.6 & Annex 3, ¶ G.

325. Report of the Appellate Body, *European Communities—Trade Description of Sardines*, ¶¶ 275, 282, WT/DS231/AB/R (Sept. 26, 2001) [hereinafter *EC-Sardines*]; *see also* McDonald, *supra* note 12, at 263.

326. An explanatory note indicates, as noted *supra*, that the essential difference between a technical regulation and a standard is that standards are voluntary while technical regulations are mandatory. TBT Agreement, *supra* note 8, at Annex 1, ¶¶ 1-2.

327. *EC-Asbestos*, *supra* note 266, at ¶¶ 59-75.

328. *EC-Sardines*, *supra* note 325, at ¶ 176.

- The regulation must apply to an identifiable product or group of products;
- The regulation must lay down one or more characteristics of the product; and
- Compliance with the product characteristics must be mandatory.[329]

China's WAPI standard falls within these criteria. It applied to an identifiable group of products: devices using WLAN technologies. The regulation laid down a characteristic of that product group: they must incorporate the WAPI wireless encryption technology. And as initially announced, compliance with WAPI was mandatory (although China later decided to indefinitely delay implementation of its policy).

A similar line of reasoning could be applied to determine that, even if compliance with WAPI is not mandatory (and therefore we are not concerned with a technical regulation), it should nevertheless fall within the definition of a "standard" in Annex 1 of the TBT Agreement.[330] If so, then the requirements of the Code of Good Practice would apply, which like Article 2.4 stipulates that where relevant international *standards* exist, standardizing bodies must use them as a basis for the standards they develop.[331] Either way, whether WAPI is implemented as a technical regulation or developed as a voluntary standard, a duty to follow international standards may arise.

b) Is the 802.11 Standard a "Relevant International Standard"?

We next consider whether the 802.11 standard is an "international standard" within the meaning of Art 2.4 of the TBT Agreement and, if so, whether it is "relevant." As noted *supra*, the TBT Agreement and its annexes do not define the term "international standard." However, "to help clarify the concept of international standards for purposes of the TBT Agreement," the CTBT established the CTBT Principles as part of its second triennial review.[332] The CTBT provided in its Decision adopting the Principles that they "should be observed" when international standards, guides, and recommendations are developed "to ensure transparency, openness, impartiality and consensus, effectiveness and relevance, coher-

329. *Id.*
330. TBT Agreement, *supra* note 8, at Annex 1, ¶ 2.
331. *Id.* at Annex 3, ¶ F.
332. WORLD TRADE ORGANIZATION, *supra* note 28, at 155.

ence, and to address the concerns of developing countries."[333] The are intended "to improve the quality of international standards and to ensure effective application of the Agreement."[334] Jan McDonald has put it another way: the CTBT has "formulated criteria by which to determine whether an international standard can be used for [TBT Agreement] compliance."[335] The logical end of his stance would appear to be that if a standard does not comply with the CTBT Principles, it should not be considered an international standard for purposes of Article 2.4 or Annex 3.

The Appellate Body in the *EC-Sardines* case was not willing to go that far in its analysis. There, the EU argued that the standard in issue, Codex Stan 94,[336] should not be considered a "relevant international standard" because it was not adopted by consensus.[337] The CTBT Principles include "consensus" as one of the principles to be observed in international standard setting.[338] However, the Appellate Body, without reference to the CTBT Principles, found that "in our view, the European Communities' contention is essentially related to whether Codex Stan 94 meets the definition of a 'standard' in Annex 1.2 of the *TBT Agreement*."[339] As noted *supra*, the TBT Agreement defines "standard" as a "[d]ocument approved by a recognized body, that provides . . . rules, guidelines or characteristics for products or related processes and production methods."[340] Reviewing this definition, the Appellate Body concluded that "[t]he issue before us . . . is one of approval,"[341] determining that the definition does not require approval by consensus, but rather a standard must only be approved by a "recognized body."[342] Under the Appellate Body's reasoning, the 802.11

333. Committee on Technical Barriers to Trade, *Decision of the Committee on Principles for the Development of International Standards, Guides, and Recommendations with Relation to Articles 2, 5 and Annex 3 of the Agreement*, *supra* note 15, at ¶ 1.

334. *Id.*

335. McDonald, *supra* note 12, at 268.

336. In 1978 (and in 1995) the Codex Alimentarius Commission adopted a worldwide standard for canned sardines and sardine-type products: Codex Stan 94-1981, Rev. 1-1995 ("Codex Stan 94"). McDonald, *supra* note 12, at 258.

337. *EC-Sardines*, *supra* note 325, at ¶ 219.

338. Paragraph 8 of the CTBT Principles provides in relevant part that "[c]onsensus procedures should be established that seek to take into account the views of all parties concerned and to reconcile any conflicting arguments." Committee on Technical Barriers to Trade, *supra* note 15, at ¶ 8.

339. *EC-Sardines*, *supra* note 325, at ¶ 220.

340. TBT Agreement, *supra* note 8, at Annex 1, ¶ 2.

341. *EC-Sardines*, *supra* note 325, at ¶ 221.

342. *EC-Sardines*, *supra* note 325, at ¶ 227. The Appellate Body also observed that specific guidance on this issue was provided in the explanatory note for the definition of "standard." The last two sentences of the explanatory note state: "Standards prepared by the international standardization community are based on consensus. The Agreement

standard is an "international standard." Despite China's unwillingness to accept the 802.11i wireless standard, ISO has approved it as an international standard.[343] ISO is a "recognized body" within the international standards community.[344]

The Appellate Body in *EC-Sardines* also discussed what it means to be a "relevant" international standard: to be relevant, the international standard must "bear upon, relate to, or be pertinent to" the national standard in question.[345] Despite their technical incompatibility, the similar uses, technology, and market for the 802.11 international standard and the WAPI standard weigh strongly in favor of finding the international 802.11 standard to be relevant. Thus, in the context of Appellate Body rulings, the 802.11 specification can be considered a relevant international standard.

c) Was the International Standard Used as a Basis for the Technical Regulation or Standard?

This leads to an analysis of the final harmonizing element of Article 2.4: that the international standard (or relevant parts of it) must be used "*as a basis" for* the technical regulation or standard.[346] Under this rule, China should have used the existing 802.11 international standard as a basis for the development of its technical regulation and national standard.

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covers also documents that are not based on consensus." TBT Agreement, *supra* note 8, at Annex 1, ¶ 2.

343. Before ISO the standard is known as ISO IEC 8802-11.

344. This term, "recognized body," is not defined in the TBT Agreement. However, the Agreement does define "international body or system" as a "[b]ody or system whose membership is open to the relevant bodies of at least all [WTO] Members." On a related point, the United States has protested in submissions before the CTBT that China's view of "international standards" is too narrow: "We note that implementation documents associated with China's Law on Standards limit its definition of 'international standards' to standards issued by the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), and International Telecommunication Union (ITU) and other organizations recognized and publicized by ISO." *See* Committee on Technical Barriers to Trade, *Transitional Review Mechanism Pursuant to Section 18 of the Protocol on the Accession of the People's Republic of China: Questions and Comments from the United States to China*, ¶ 6, G/TBT/W/271 (Oct. 16, 2006). The U.S. states that "we remain concerned that China may be unnecessarily restricting itself to the use of standards from certain identified bodies." *Id.*; *see also* ANSI, *supra* note 102, at 3.

345. *EC-Sardines*, *supra* note 325, at ¶¶ 228-32.

346. The meaning of the phrase "as a basis for" was also addressed in *EC-Sardines*. There, the Appellate Body, upon reviewing several dictionary definitions and its prior decision in *EC-Hormones*, reasoned that while "based on" does not mean the same thing as "conform to," nevertheless, "there must be a very strong and very close relationship between two things" such that the international standard is the "principal constituent," "fundamental principle," or "determining principle" of the national measure. *Id.* at ¶¶ 242, 245; *see also* McDonald, *supra* note 12, at 262.

However, neither China nor any other interested party has made a claim that the 802.11 standard was the principal constituent or a determining principle of WAPI, or that they otherwise have a very strong and close relationship. Instead, they are widely viewed as incompatible. Therefore, unless China were to disclose technical information showing that WAPI is, in fact, based on the 802.11 standard, it would appear that this element of Article 2.4 is not satisfied.

d) Was the International Standard an Ineffective or Inappropriate Means for the Fulfillment of the Legitimate Objectives Pursued?

Finally, under Article 2.4 (for technical regulations) and the Code of Good Practice (for standards), a country may depart from the use of an existing international standard when it "would be *an ineffective or inappropriate means for the fulfillment of the legitimate objectives pursued.*"[347] This exception should be read in view of the analysis under Article 2.2 *supra*, which discussed "legitimate objectives" such as human health and safety or national security requirements, and specified that technical regulations must not be more trade-restrictive than necessary to fulfill these objectives. In a dispute, as stated *supra*, the complaining party would initially have the burden of proof. Given that the terms "ineffective" and "inappropriate" have different meanings, and it is conceptually possible that a measure be effective but inappropriate, or appropriate but ineffective, the complaining party would have the burden of showing that the international standard in question is both effective and appropriate.[348] A WTO member contesting China's failure to follow the international 802.11 wireless standard would thus have to make a prima facie showing that this international standard would be both effective and appropriate to meet China's legitimate objectives, such as national information security. Perhaps the complainant would argue that the rest of the world believes the 802.11 standard is sufficiently secure, even in relation to certain sensitive applications such as military use,[349] and there would be a comparative technical investigation into the two technologies accompanied by expert advice.[350]

Practically, however, I agree with Jan McDonald that "[a]lthough the burden of proof falls initially on the complaining party to adduce evidence

347. TBT Agreement, *supra* note 8, at art. 2.4 & Annex 3 (Code of Good Practice), ¶ F (emphasis added).

348. *EC-Sardines*, *supra* note 325, at ¶ 289.

349. *See* Cromer, *supra* note 13, at ¶ 14.

350. *See* TBT Agreement, *supra* note 8, at Annex 2.

of effectiveness and appropriateness, as a practical matter the Member defending its technical regulations will ultimately have to demonstrate the inadequacy of international standards."[351] The Chinese have maintained that the 802.11 security technology is inferior, and therefore does not meet their security objectives. If the 802.11 standard incorporates the 802.11i security protocol preliminarily approved by ISO, this could undercut a claim by China that the 802.11 international standard is an "ineffective or inappropriate means." As noted, the improved security brought about for WLANs using the 802.11i protocol may be sufficient to meet China's national security objectives, or at least be effective and appropriate for use in commercial and other daily applications in China. Moreover, if the Chinese government argues that it has not implemented a "technical regulation" but merely that its standardizing body has developed WAPI as a "standard," still the Code of Good Practice stipulates that the existing international standard should be used "as a basis for the standard it develops." China will need to explain why it did not use the 802.11 standard as the basis for developing its own WAPI standard to address security deficiencies.

4. CTBT Principles

As noted in the Introduction,[352] the CTBT Principles were adopted as a central feature of the second triennial review of the TBT Agreement to address an array of issues underpinning fairness in international standard setting. As such, they provide guidance for the standard-setting process and, in particular, address the process qualities important for international standards development.

> In order to improve the quality of international standards and to ensure the effective application of the Agreement, the Committee agreed that there was a need to develop principles concerning transparency, openness, impartiality and consensus, relevance and effectiveness, coherence and developing countries' interests that would clarify and strengthen the concept of international standards under the Agreement and contribute to the advancement of its objectives.[353]

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351. McDonald, *supra* note 12, at 265.

352. *See supra* text accompanying notes 14-15.

353. Committee on Technical Barriers to Trade, *Second Triennial Review of the Operation and Implementation of the Agreement on Technical Barriers to Trade*, ¶ 20, G/TBT/9 (Nov. 13, 2000). *See also* Committee on Technical Barriers to Trade, *supra* note 15.

In view of the Committee's declared purpose, the CTBT Principles can be viewed as a useful mechanism within the WTO to encourage improved standard setting in areas where changes may be needed to respond to new issues.

Accordingly, it is useful to assess China's development and adoption of the WAPI security standard under the CTBT Principles. With respect to the first principle, transparency, the Principles provide that all essential information regarding work programs, proposals for standards, and final results should be easily accessible "to at least all interested parties in the territories of at least all WTO Members."[354] This contrasts with comments noted *supra* regarding the non-transparent Chinese process for development of the WAPI technology.[355] The CTBT Principles also enunciate on openness and impartiality. For openness, the Principles provide that "[m]embership of an international standardizing body should be open on a non-discriminatory basis to relevant bodies of at least all WTO Members," and this openness should involve participation at the policy development level and every other stage of standards development.[356] China's closed approach for the WAPI technology would not meet this threshold. Regarding impartiality, the emphasis of the Principles is on providing "meaningful opportunities to contribute to the elaboration of an international standard so that the standard development process will not give privilege to, or favour the interests of, a particular supplier/s, country/ies or region/s."[357] While China has maintained that it has confronted unfairness in Western standard-setting bodies, this would not in my view justify its approach taken for WAPI, which does not meet this principle of impartiality.

"Consensus," as used in the Principles, refers to procedures that should be established to take into account the views of all parties concerned and to reconcile any conflicting arguments.[358] An open standards development process is the first element necessary to enable interested parties to voice their views, and then procedures would be needed to resolve any conflicts. The author has no information about the procedures that might have been in place for those who were permitted to participate in the development of the WAPI standard so as to properly assess the consensus issue in the WAPI case. The Principles also refer to "effectiveness and relevance," which are explained as preferred characteristics of international standards: they should "respond to regulatory and market needs, as well as scientific

354. *Id.* at ¶ 3.
355. *See supra* notes 203-04 and accompanying text.
356. Committee on Technical Barriers to Trade, *supra* note 15, at ¶ 6.
357. *Id.* at ¶ 8.
358. *Id.*

and technological developments," but should not "distort the global market, have adverse effects on fair competition, or stifle innovation and technological development."[359] Further, whenever possible, international standards should be performance-based rather than based on design or descriptive characteristics.[360] These statements reflect some of the same concerns that were addressed in Article 2.4 of the TBT Agreement. The Principles recognize the need for effective new standards in response to technological developments as well as emerging regulatory and market requirements, but also recognize that they should be developed and implemented in a manner that avoids unfair competition or distorting the global market. With respect to the WAPI case, a more open and international process for development of the standard, similar to the processes employed by the IEEE, would have provided not only improved understanding for those who did not participate (and possibly valuable contributions to the advancement of the technology), but a legitimizing basis for the standard.

Finally, with respect to "coherence," the CTBT Principles provide that "it is important that international standardizing bodies avoid duplication of, or overlap with, the work of other international standardizing bodies. In this respect, cooperation and coordination with other relevant international bodies is essential."[361] This principle speaks to the need for cooperation, which did not take place, between the Chinese standard-setting authorities and the IEEE. Both were working at approximately the same time to develop improved security for WLAN communications, and despite the IEEE's invitation, the Chinese did not choose to collaborate.[362]

The CTBT Principles do refer to the "development dimension," recognizing that constraints on developing countries to participate effectively should be taken into account in the standards development process.[363] More specifically, "[t]angible ways of facilitating developing countries' participation in international standards development should be sought."[364] While there is debate about whether China should be viewed as a developing or developed country for purposes of its role and responsibilities under WTO disciplines, the focus under this part of the Principles is on improving developing countries' participation in international activities, not granting them grounds for an exception to use discriminatory standards development processes at home. To the extent that the standards develop-

359. *Id.* at ¶ 10.
360. *Id.*
361. *Id.* at ¶ 12.
362. *See supra* note 176 and accompanying text.
363. *Id.* at ¶ 13.
364. *Id.*

ment process for the WAPI technology was closed to foreign parties, or that use of WAPI in the Chinese market would have been mandatory, these measures would not be justified under the development dimension to the CTBT Principles.

In sum, the Chinese approach for the development of WAPI would not satisfy a number of the CTBT Principles. A benign view of these circumstances is that China's emerging standards strategy[365] reflects a sound understanding of the advantages that can accompany a proactive policy, but a less than complete comprehension of the important standards development process characteristics needed to comply with the TBT Agreement and its ancillary instruments, and to achieve international legitimacy and acceptance for its standards. While Chinese authorities may be learning from their experience with the WAPI case in this regard, they are also gaining in their appreciation of the important role that IP can play in international standard setting, which I will discuss in the following Part.

VI. INTELLECTUAL PROPERTY AND INTERNATIONAL STANDARDS: A RECOMMENDATION

The analysis of the WTO obligations for standards and their application to the WAPI case illustrates the complexity of determining whether a country's standard-setting measures cross the line toward protectionism. The analysis *supra* focused on whether the manner in which China implemented its WAPI policy was discriminatory or more trade-restrictive than necessary, and whether China's refusal to use the existing international 802.11 standard as a basis for its national measures was inconsistent with its responsibilities under the TBT Agreement. While China asserted national information security grounds to justify its WAPI policy, there is evidence to suggest that other motivations played an important role in its unilateral approach. China has raised concerns about IP rights in standardization, suggesting that they stand as an obstacle to economic development and international trade. Yet there is no place in the current TBT Agreement framework in which to consider these issues. Chinese authorities have referred to holdups caused by IP rights as a reason behind their approach to developing the WAPI standard; however, although their point concerning IP merits attention, their concern does not justify the standard-setting methods they used to develop and implement WAPI.

In this Part, I return to the question raised in the Introduction: given that IP rights are a source of friction for standardization and trade, how do we balance the legitimate rights of IP owners to receive reasonable com-

365. *See supra* Section IV.B.

pensation against the interests of those seeking (or required) to achieve harmonization by implementing international standards? And how do we do this in an international context with diverse standard-setting systems? My recommendation is that a policy for IP rights should be integrated into the TBT Agreement framework, providing support for the concept of international standards and the corresponding rules in the TBT Agreement, while advancing objectives of harmonization and fairness. These rules will reinforce the legitimacy of international standards and underpin existing TBT Agreement requirements, such as Article 2.4's obligation to use relevant international standards as the basis for national technical regulations and standards.

A. Integrating IP into International Trade Law for Standards

The TBT Agreement is silent on the issue of IP rights in international standard setting. In this sense, there is a "disconnect" between TBT Agreement responsibilities to use international standards and the IP rights that are embedded in those standards, particularly in the ICT sector. When one thinks of trade law and IP, the natural focus is on the WTO's Agreement on Trade-Related Aspects of Intellectual Property (TRIPS Agreement).[366] The TRIPS Agreement codifies Member countries' obligations to protect and enforce IP rights within their territories. The TRIPS Agreement, however, does not address standards issues.[367] While the obligation to use relevant international standards as a basis for standards arises under the TBT Agreement, the Agreement does not consider whether a particular standard is encumbered by IP rights and therefore could be costly to implement. It would cause great concern if China could assert that its obligation to use relevant international standards is subject to considering the IP

366. *See* TRIPS, *supra* note 124.

367. *Id.* Article 40 of the TRIPS Agreement does address licensing practices and therefore could have some relevance for standard setting where IP issues arise. It provides in relevant part as follows:

> 1. Members agree that some licensing practices or conditions pertaining to intellectual property rights which restrain competition may have adverse effects on trade and may impede the transfer and dissemination of technology.
>
> 2. Nothing in this Agreement shall prevent Members from specifying in their legislation licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market. As provided above, a Member may adopt, consistently with other provisions of this Agreement, appropriate measure to prevent or control such practices. . . .

Id. at art. 40, *available at* http://www.wto.org/english/tratop_e/trips_e/t_agm3d_e.htm.

position of the particular international standard in question. The assertion that IP rights per se provide a legal basis for rejecting the use of an international standard has no foundation in the WTO legal regime.[368] Nor is this a position I support, even though access to standards encumbered by IP rights may involve costs.

However, there is another way in which IP can be factored into the analysis. The TBT Agreement has much to say about how standards and technical regulations should be "prepared, adopted and applied."[369] This is at the core of Articles 2 through 4 of the Agreement, the Code of Good Practice, and the CTBT Principles. How the standards development process deals with IP issues could inform the assessment of whether a standard should achieve recognition as an international standard, such that the TBT Agreement disciplines for international standards should apply. If the standards process is carried out properly—that is, in accordance with those relevant principles in the TBT Agreement, Code of Good Practice, and CTBT Principles (amended to include a policy on IP rights)—it becomes much more difficult to challenge the legitimacy of an international standard, on IP rights or other grounds.[370]

This Article has discussed at length three of the fundamental disciplines established in the TBT Agreement and Code of Good Practice: nondiscrimination, avoidance of creating unnecessary obstacles to trade, and duties to follow relevant international standards. The CTBT Principles, also reviewed, contribute to this foundation by elaborating on certain other aspects of the standards development process, including norms of transparency, openness, impartiality and consensus, effectiveness and relevance, coherence, and addressing issues of concern for developing countries. Today, the rationale behind the adoption of the CTBT Principles applies with equal force to the integration of a policy on IP rights, preferably

368. Article 12 provides, as an independent ground, that developing countries should be accorded "differential and more favourable treatment" taking into account "the special development, financial and trade needs of developing country Members." *See* TBT Agreement, *supra* note 8, at arts. 12.1-12.4.

369. Reference to the preparation, adoption, and application of technical regulations and standards is made throughout the TBT Agreement, *supra* note 8.

370. For example, one can ask, what would be the consequences if a standard was not adopted through a transparent, open, and impartial process? The obligation to adopt the international standard becomes more problematic, as in the case of the WAPI standard. A WTO member country could potentially claim exclusion from the standard-setting process as a basis initially for voting against international recognition, or later possibly as a reason for refusing to follow an international standard. Similarly, failure to follow certain rules concerning IP rights, such as timely disclosure of patents, might provide a basis for questioning the legitimacy of a proposed international standard.

as an amendment to the Principles. The Principles were established—in the absence of a definition—to clarify and strengthen the concept of the international standard.[371] According to the CTBT report accompanying the adoption of the Principles, WTO members were concerned that difficulties might be encountered in relation to the use of certain international standards, and related trade problems could arise.[372] In particular, "[a]dverse trade effects might arise from standards emanating from international bodies as defined in the Agreement which had no procedures for soliciting input from a wide range of interests."[373] The Committee was also aware of the diversity of standards bodies and different approaches for standard setting, yet observed that "the obligation under the Agreement for Members to use international standards was the same."[374] In view of these considerations, the CTBT elaborated principles of general application, which underpin methods to achieve fairness in international standards development. Similarly, in view of trade tensions related to IP rights in international standards, in particular, when the adoption of such IP-encumbered standards may be obligatory, there is need for a principled approach concerning the handling of IP rights during the standards development process. If IP rights are dealt with in a proper manner during the development of an international standard, this will aid the standard's eventual legitimacy and acceptance.

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371. There is debate about what constitutes an international standard. While the term is not defined in the TBT Agreement, an international standard is defined by the ISO as "a standard that is adopted by an international standardizing/standards organization," and an "international standards organization" is "one whose membership is open to the relevant national body from every country." *See* ISO Guide 2, ch. 3.2.1.1. The President of the American Society for Testing and Materials (ASTM), an influential American standards body, offered a different definition of international standard, focusing on the importance of the process, as well as global acceptance and use by industry. He considered:

> . . . a true international standard [to be] a standard that . . . [is] developed by a standardisation body . . . that is open to all interested parties regardless of national origin . . . has a demonstrated track record of global acceptance and use by the affected industries or regulatory bodies of various nations . . . is non-discriminatory by providing equal treatment . . . without favouring one company or nation over another.

OECD, *supra* note 6, at 35 (*quoting* ASTM Standardization News (Dec. 1997)). This statement tracks some of the principles in the CTBT Principles. My position, like the OECD, is to avoid adopting a narrow definition, and instead focus on the process for standard setting as an important element.

372. Committee on Technical Barriers to Trade, *supra* note 15, at ¶ 18.

373. *Id.* at ¶ 20.

374. *Id.* at ¶ 19.

With this international standards framework in mind, and taking into consideration the international trade tensions concerning IP rights, particularly in the ICT sector, the gap in dealing with IP rights becomes clear, and the need for action becomes persuasive. My recommendation is that two basic principles—early disclosure of IP rights (e.g., patent rights) and declaration of position concerning willingness to license those rights—should form a part of the CTBT Principles governing the standards development cycle. If China had properly dealt with these issues in the WAPI case, just as it now calls for increased attention to IP rights before the CTBT, this would have been one important dimension to facilitate an improved understanding and acceptance of their WAPI technology.

B. Rules for IP Rights in International Standards

This Article has already discussed how IP rights factor prominently into standard setting.[375] Standard-setting organizations need rules governing IP rights to reduce the risk that a finished standard will encounter IP-related obstacles, and to reduce possible tensions. My challenge here is not to focus on the most progressive IP policies that may have relevance for standards. Instead, I want to concentrate on the recently announced unified IP policy of three prominent international standard-setting bodies, the IEC, ISO, and ITU. These organizations joined together to form the World Standards Cooperation (WSC) in 2001, with aims of promoting "international consensus-based standardization worldwide" and undertaking initiatives to resolve issues regarding cooperation in the technical work of the organizations.[376] In March 2007, they announced the adoption of a harmonized approach to address the inclusion of IP rights (patents) in standards.[377] Their unified policy, the *Common Patent Policy for ITU-T/ITU-R/ISO/IEC* ("Common Patent Policy"),[378] draws on two elements that have been present in their IP policies and the policies of many other standards organizations for many years: (i) obtaining early disclosure of IP

375. *See supra* Section II.B.

376. ISO, *World Standards Cooperation for the Information Society*, ISO BULL., Comment (Oct. 2003).

377. *See* Press Release, Int'l Telecom. Union, IEC, ISO, ITU Agree on Common Patent Policy (Mar. 23, 2007) (on file with author), *available at* http://www.itu.int/ [hereinafter ITU Press Release].

378. *See* Common Patent Policy for ITU-T/ITU-R/ISO/IEC, http://www.itu.int/ITU-T/dbase/patent-policy.html (last visited Dec. 7, 2007) [hereinafter Common Patent Policy]. The IEC, ISO, and ITU also jointly adopted Guidelines for the Implementation of the Common Patent Policy and a Patent Statement and License Declaration Form, http://www.itu.int/dms_pub/itu-t/oth/04/04/T04040000010002PDFE.pdf (last visited Dec. 7, 2007) [hereinafter Guidelines], which are intended to clarify and facilitate implementation of the Common Patent Policy.

(patent) rights, and (ii) obtaining an early declaration of the IP owner's position concerning willingness to license its IP rights.

The IEC, ISO, and ITU developed the Common Patent Policy to further their objective of ensuring the compatibility and accessibility of standards on a worldwide basis without undue constraints.[379] The Policy strongly encourages the disclosure of patented technology necessary for the implementation of a standard before the standardization process is completed. In particular, "any party participating in the work of ITU, ISO, or IEC should, *from the outset,* draw [their] attention . . . to any known patent or any known pending application, either their own or of other organizations."[380] The Guidelines to the Common Patent Policy explain that the words "from the outset" imply that the disclosure should occur as early as possible during the development cycle for the relevant standard, taking into account that early drafts of a particular standard might be too vague to make this possible.[381] When disclosing their own patents, an IP holder should use a special form, the Patent Statement and Licensing Declaration Form. This Form states in part that the "Patent Holder believes that it holds granted and/or pending applications for patents, the use of which would be required to implement [the relevant standard]."[382] As to any doubts about the duty of care involved, the Guidelines provide that the "information should be provided in good faith and on a best efforts basis, but there is no requirement for patent searches."[383] Early disclosure facilitates an informed choice by organization members, based on technical and commercial considerations, of the technologies to be used in the standard.

The second aspect of the Common Patent Policy requires a holder of patents relevant to the standard to make a licensing declaration in relation to its disclosure of patent rights. It can choose from among three basic alternatives. The patent holder can declare that it is:

(i) willing to negotiate licenses free of charge with other parties on a non-discriminatory basis on reasonable terms and conditions;

(ii) willing to negotiate licenses with other parties on a non-discriminatory basis on reasonable terms and conditions; or

379. *Id.*

380. *Id.* at ¶ 1 (emphasis added).

381. Guidelines, *supra* note 378, at 3.

382. *Id.* at 11. A communication drawing attention to a third-party patent will trigger the IEC, ISO, or ITU to send the Declaration Form to that third party.

383. *Id.*

(iii) unwilling to comply with the terms of paragraphs (i) or (ii), and in such case, the standard in question shall not include provisions dependent on the patent.[384]

The patent holder uses the same Declaration Form intended for disclosure to declare its position concerning licensing.[385] The statement of licensing position would thus be made as early as possible in the standards development cycle, and the Form would remain in force as long as it has not been replaced (e.g., in case of obvious errors). The words "free of charge" in paragraph (i) do not mean that the patent holder waives all of its rights with respect to an essential patent, but only that the holder will not seek monetary compensation as part of the licensing arrangement.[386] The declaration of paragraph (ii) to negotiate licenses on "a non-discriminatory basis on reasonable terms and conditions" closely matches the well-established "reasonable and non-discriminatory terms" (RAND) approach for standards licensing. The RAND rule has been considered "the majority rule" among standards bodies that have a patent policy.[387] The Common Patent Policy has no requirement of compulsory licensing: such a stance lacks wide international acceptance, would radically undermine incentives to participate in standard-setting activities, and would likely face significant legal difficulties in the U.S. and EU under antitrust and competition law.[388] The Policy makes it clear that if a patent holder chooses not to make its patent available for licensing, the standard in question must not include specifications dependent on that patent. Finally, the Policy indicates that specific licensing negotiations are left to the concerned parties (as these may differ from case to case) to perform outside ITU, ISO, and IEC.[389]

The ITU's press release for the Common Patent Policy states that the three organizations "have aligned their policies which allow commercial entities to contribute the fruits of their research and development (R&D) activity and at the same time know that that their intellectual property rights are respected."[390] Referring to the balance achieved, a "solid patent policy provides crucial investment protection while also opening up intel-

384. Common Patent Policy, *supra* note 378, at ¶ 2.
385. Common Patent Policy, *supra* note 378, at Annex 2.
386. *Id.*
387. Lemley, *supra* note 11, at 1906.
388. *See id.* at 1944.
389. Common Patent Policy, *supra* note 378, at ¶¶ 2.1, 2.2.
390. ITU Press Release, *supra* note 377.

lectual property resources for broad implementation across the industry."[391]

My recommendation is that the Common Patent Policy's two basic principles—early disclosure of IP rights and declaration of position concerning licensing of those rights—should be integrated into the CTBT Principles as part of their guidelines for the preparation, adoption, and application of international standards. Making these changes will not undermine the interests of those seeking reasonable compensation for their IP rights. Furthermore, early disclosure of IP rights and a declaration concerning licensing position will facilitate informed choices by standard-setting bodies. IP rights will be properly disclosed along with any attached conditions pertinent to licensing. Those involved in standard setting will be able to evaluate all relevant commercial and technical considerations. The relative simplicity of focusing on these two important elements makes this approach suitable in the context of internationally diverse standard setting systems, avoiding concerns of over-constraining regulation. This approach advances the accessibility and harmonization of standards.

China has already recognized the work of the IEC, ISO, and ITU, referring favorably to their efforts to formulate basic principles for patent disclosure and licensing arrangements. China has stated that these principles would constitute a "sound technical basis and a roadmap" for the discussion in WTO.[392] This approach will address concerns that the Chinese government expressed before the CTBT, where they highlighted the trend toward proprietary technology entering into standards and the negative impact that IP rights can have on standardization and international trade. The Chinese suggested that a useful starting point would be to focus on two areas concerning patents: transparency (disclosure of patent information) and elaborating on the RAND principle.[393] Using the Common Patent Policy focuses the discussion on these two factors, addressing a gap in the current WTO standards framework. A policy on IP rights will advance the objectives of harmonization and fairness by dealing with a core issue of the standards development cycle, one that has generated resentment among trading partners.

C. Proposal for Amendment of CTBT Principles

The CTBT Principles should be amended to add a new paragraph G, such as the following draft text:

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391. *Id.*

392. *See supra* note 144 and accompanying text.

393. *See supra* note 145-46 and accompanying text.

"G. Intellectual Property Rights

14. Intellectual property rights can often be implicated in international standardization activity, particularly in the area of high technology. To encourage the accessibility and harmonization of international standards without undue constraints, the incentives for innovation provided by intellectual property rights should work together with making intellectual property resources available for broad implementation. In order to achieve this balance, standardizing bodies of WTO members should adopt policies to address intellectual property rights (in particular, patents) to encourage the early disclosure of any patent that may relate to standard(s) under development and a statement by any concerned patent holder as to its licensing position.

15. Accordingly, the intellectual property policy should, at a minimum, include requirements that:

- any party participating in the work of an international standardizing body should, from the outset, draw attention to any known patent or any known pending application, whether its own or belonging to other organizations, that may relate to the standard(s) under development. This disclosure should occur as early as possible during the development cycle for the relevant standard, taking into account that early drafts for particular standards might be too vague to make this possible.

- A patent holder who has disclosed a patent under the terms above should make a licensing declaration, choosing from among the following three alternatives. The patent holder is:

  (i) willing to negotiate licenses free of charge with other parties on a non-discriminatory basis on reasonable terms and conditions;

  (ii) willing to negotiate licenses with other parties on a non-discriminatory basis on reasonable terms and conditions; or

  (iii) unwilling to comply with the terms of paragraphs (i) or (ii), and in such case, the standard in question shall not include provisions dependent on the patent.

16. Information should be provided in good faith and on a best efforts basis."

This policy approach would strongly encourage the disclosure of patented technology necessary for the implementation of a standard before the standardization process is completed. Early disclosure of IP rights and

a declaration concerning licensing position will facilitate informed choices by standard-setting bodies, so that the impact of any IP rights on technology selection can be evaluated in advance, thereby advancing the accessibility and harmonization of standards. The standards body can make a choice to use a standard that may be encumbered by IP rights, or seek to move the standard in a direction where such IP rights will not be implicated.

The new policy would thus send a strong signal to standard-setting organizations that do not already have such rules in place to address IP rights. At the same time, it would also send a message to countries like China, reinforcing their need to participate more fully in global standard-setting activities, rather than object regarding the burden of IP rights in existing international standards. By providing China with incentive to become involved in the standards-setting process so that it could state potential objections (concerning IP rights or other matters) during the development cycle, the new policy would change the calculus that led China to develop and mandate the WAPI standard unilaterally, in a manner that potentially violated TBT Agreement obligations.

VII. CONCLUSION

China's WAPI standard provides a test case for ICT standards and their relationship to the international trade regime. It serves to highlight that ICT standards are extremely important for competitive advantage and market access, and that both private sector and government entities are well aware of the stakes involved. It illustrates standards' indeterminate nature as trade facilitators and indispensable elements of the ICT industry, on the one hand, and as potential measures of protectionism when applied inappropriately, on the other. With the WTO framework of rules and commitments behind it, the U.S. pressed its concerns upon China, and China decided to forbear from mandating the WAPI standard. Diplomatic efforts brought a truce well before there was any attempt to bring this matter into the more formal WTO dispute settlement system. To this extent, such a high-tech NTB standards case remains to be tested.

The WAPI case also teaches about the integral role that IP rights have played in technology standard setting, and the frictions that can be generated at the international level. ICT technologies are heavily laden with IP rights, particularly patents. Countries such as China build up national resentment for the need to pay royalties to foreign patent owners. However, while China has referred to IP rights as a motivation for the approach it took in the WAPI case, China has not gone so far as to propose abolishing

these payments or the system that gives rise to them. Instead, it has urged the CTBT to consider these issues in relation to the TBT Agreement and international standard setting. To the extent that we can integrate certain rules regarding IP rights into the TBT Agreement framework as a means for supporting the legitimacy of international standards—such as proper disclosure of IP rights and a declaration concerning willingness to license of such rights—I would agree with the Chinese position. This would close a gap in the current WTO architecture. The TBT Agreement, its Code of Good Practice, and the CTBT Principles foster fairness, transparency, and inclusiveness in standard setting, but say nothing about IP rights, which has become an "elephant in the room." This omission should be addressed so that TBT Agreement requirements to use relevant international standards are not questioned on grounds related to IP rights. A system which requires the adoption of relevant international standards rests upon the legitimacy of the international standards themselves. An appropriate policy for dealing with IP rights in the standards development process is an important element to support this legitimacy, particularly for standards in the ICT sector.