

## NOTE

### FROM NICARAGUA TO SNOWDEN: CHINESE DOMESTIC INTERNET ENCRYPTION, NATIONAL SECURITY, AND THE WTO

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#### INTRODUCTION

Trade standards and regulations affect as much as 80% of all global trade.<sup>1</sup> The Agreement on Technical Barriers to Trade (“TBT Agreement”) — one of many treaties concluded by the members of the World Trade Organization (“WTO”) — governs industry standards and technical regulations.<sup>2</sup> Following over fourteen years of negotiations, the People’s Republic of China acceded to the WTO in 2001.<sup>3</sup> Among China’s new obligations to the WTO is that of harmonizing and integrating its standardization and regulatory regimes into the wider world of international trade.<sup>4</sup> However, China’s “top down” system, resting responsibility for standardization with the government itself, conflicts with the more common system of free-market, “bottom up” standardization, which tend to follow and adopt standards already developed by regional or

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<sup>1</sup> Elise Owen, *Standards in China: Behind the Headlines*, 37 CHINA BUS. REV., no. 1, 2010 at 40, 40.

<sup>2</sup> Agreement on Technical Barriers to Trade, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1868 U.N.T.S. 120 [hereinafter TBT Agreement].

<sup>3</sup> World Trade Organization, Accession of the People’s Republic of China, WT/L/432 (2001) [hereinafter China Accession Protocol]. See also Long Yongtu, *Meeting of the Working Party on the Accession of China*, WORLD TRADE ORG. NEWS (Sep. 17, 2001), [http://www.wto.org/english/news\\_e/news01\\_e/wpchina\\_longstat\\_17sept01\\_e.htm](http://www.wto.org/english/news_e/news01_e/wpchina_longstat_17sept01_e.htm) (archived at <http://perma.cc/HQU9-XRAL>).

<sup>4</sup> See Yongtu, *supra* note 3.

international industrial associations.<sup>5</sup> Instead of adopting extant and internationally recognized standards, China's strategy indicates that it might "be seeking to set its own unique standards."<sup>6</sup>

Some foreign firms, particularly in the high-tech industry, are worried that China is using its top down system to "protect domestic industry and curtail imports" through creation of non-tariff barriers to trade.<sup>7</sup> The TBT Agreement provides that standards "shall not be more trade-restrictive than necessary to fulfill a legitimate objective."<sup>8</sup> China claims that its adoption of domestic-produced standards fulfills the country's legitimate interest in national security, and thus China's adoption of these standards does not violate the TBT Agreement.<sup>9</sup> Specifically, China has mandated that wireless internet systems (including wireless routers and cell phones) must comply with WAPI, a new standard that China asserts is more secure than its international counterpart.<sup>10</sup> Chinese state agencies have refused to accredit devices not in compliance as late as 2011.<sup>11</sup> Further, China's Ministry of Industry and Information Technology informally requires all mobile phones sold within China to incorporate another domestic standard, ZUC, instead of an international equivalent.<sup>12</sup> Foreign companies complain that WAPI is a significant barrier to trade due to intellectual property concerns and incompatibility with the established counterpart to WAPI, which would potentially fracture the wireless market into a Chinese camp and an international camp.<sup>13</sup>

This note will discuss the conflict between China's top down standards strategy and its obligations under the TBT Agreement as a member of the WTO, focusing on information technology standards and wireless transmission protocols. Part I will discuss the general development and use of standards in the information technology industry. Part II will trace the WTO as a body and

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<sup>5</sup> Andrew Updegrave, *Top Down or Bottom Up? A Tale of Two Standards Systems*, 4 CONSORTIUM STANDARDS BULL., no. 4, 2005, at 14, 15-18, available at <http://www.consortiuminfo.org/bulletins/pdf/apr05.pdf> (archived at <http://perma.cc/HCR5-JH2A>).

<sup>6</sup> Christopher S. Gibson, *Technology Standards – New Technical Barriers to Trade*, in THE STANDARDS EDGE: THE GOLDEN MEAN 45, 45 (Sherrie Bolin ed., 2007).

<sup>7</sup> Ann Weeks & Dennis Chen, *Navigating China's Standards Regime*, 30:3 CHINA BUS. REV., no. 3, 2003, at 32, 36.

<sup>8</sup> TBT Agreement, *supra* note 2, at art. 2.2.

<sup>9</sup> See Gibson, *supra* note 6, at 48.

<sup>10</sup> *Id.* at 47-48.

<sup>11</sup> U.S. TRADE REPRESENTATIVE, 2013 REPORT ON TECHNICAL BARRIERS TO TRADE 54-55 (2013), available at <http://www.ustr.gov/sites/default/files/2013%20TBT.pdf> (archived at <http://perma.cc/4A6M-S4N6>) [hereinafter USTR TBT REPORT].

<sup>12</sup> STEPHEN J. EZELL & ROBERT D. ATKINSON, INFO. TECH. & INNOVATION FOUND., THE MIDDLE KINGDOM GALAPAGOS ISLAND SYNDROME: THE CUL-DE-SAC OF CHINESE TECHNOLOGY STANDARDS 19 (2014), available at <http://www2.itif.org/2014-galapagos-chinese-ict.pdf> (archived at <http://perma.cc/SEP9-8FKV>).

<sup>13</sup> Gibson, *supra* note 6, at 47.

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China's obligations as a new member of this relatively young international organization. This part will further outline the mechanics through which the WTO adjudicates disputes among its member states. With this foundation, Part III will introduce the standards and policies on which this Note focuses: WLAN Authentication and Privacy Infrastructure ("WAPI"), its successor UHT/EUHT, the mobile data standard ZUC, and their international counterparts. Parts IV through VI will construct an argument both for and against Chinese preference for its domestic standards. First, whether the TBT Agreement applies at all will be analyzed; second, whether China has violated the TBT Agreement; and third, the effect China's invocation of Article XXI of the GATT, the national security exception, has on the dispute. Guided by the GATT Panel's ruling in *US – Nicaragua*, this Note will conclude that, although China is likely acting in violation of the TBT Agreement, the WTO cannot compel China to act contrary to its stated interests in national security, and thus China's behavior is legally justified.

#### I. THE CREATION OF STANDARDS

A standard can be defined broadly as "any set of technical specifications that either provides or is intended to provide a common design for a product or process."<sup>14</sup> For example, the DOC file format, developed by Microsoft for word processing, is a standard – a file complying with the DOC format is accessible not just to a Windows system running Microsoft Word, but to almost any other computer system and word processing software available.<sup>15</sup> Products designed for one standard may not be able to interface with products built under a different standard – as an example, the 2007 release of Microsoft Office, Microsoft's principal word processing program, did not initially support files saved under the competing ODT Open Document format.<sup>16</sup> A standard may include patents or other forms of intellectual property, further complicating interoperability of products.<sup>17</sup>

New standards develop through either a top down or a bottom up process.

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<sup>14</sup> *Id.* at 45-46. Because the formal definitions of standard and technical regulations are themselves an element of WTO jurisprudence in the regulation of standards and other non-tariff barriers, see *infra* Part IV for their formal definitions.

<sup>15</sup> For complete description of MS-DOC format, see generally *[MS-DOC]: Word (.doc) Binary File Format*, MICROSOFT DEVELOPER NETWORK, [http://msdn.microsoft.com/en-us/library/cc313153\(v=office.12\).aspx](http://msdn.microsoft.com/en-us/library/cc313153(v=office.12).aspx) (archived at <http://perma.cc/MB43-9LY3>) (last visited Jan. 16, 2015).

<sup>16</sup> *Microsoft Expands List of Formats Supported in Microsoft Office*, MICROSOFT NEWS CENTER (May 21, 2008), <http://www.microsoft.com/en-us/news/press/2008/may08/05-21expandedformatspr.aspx> (archived at <http://perma.cc/3CJT-TEHF>). Microsoft Word gained compatibility with ODT after its launch by way of a patch released on the internet and applied to the program. *Id.*

<sup>17</sup> Li Wenwen, *Consideration of Patent Rights in Standards*, in *THE STANDARDS EDGE: THE GOLDEN MEAN* 113, 114 (Sherrie Bolin ed., 2007).

The former system tasks government agencies with both creating and imposing standards upon the industries in which those agencies are involved.<sup>18</sup> The existence of a “single national standards organization,” setting a national standards policy, is a signature feature of a top down system.<sup>19</sup> China, the exemplar of a top down system, employed (in 2003) “an astonishing 27,800 government employees in 260 technical committees and 422 subcommittees . . . directed at achieving the goals of the current PRC five year plan.”<sup>20</sup> China’s Administration for Quality Supervision Inspection & Quarantine (“AQSIQ”) is the chief example of a national standards organization. The organization formed from the merger of two predecessor standards organizations, and it serves as a unified source of standards policy for Mainland China’s industries and markets.<sup>21</sup> AQSIQ’s responsibilities extend from managing China’s standards and regulatory structure to entry-exit inspections.<sup>22</sup> During the 2009 swine flu epidemic, AQSIQ even installed thermal imagers to detect feverish airline passengers.<sup>23</sup>

In contrast to the broad and centralized governmental authority in top down systems, bottom up systems “have distributed infrastructures that evolve more organically and dynamically.”<sup>24</sup> The bottom up system as adopted by the United States has neither “central direction of the standard setting process whatsoever . . . [nor] systemic, direct economic support from public sources.”<sup>25</sup> The traditional sources of standards in a bottom up system include formal standards development organizations, industry-specific or sector-specific organizations, and trade organizations.<sup>26</sup>

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<sup>18</sup> Updegrave, *supra* note 5, at 7.

<sup>19</sup> *See id.* at 14.

<sup>20</sup> *Id.*

<sup>21</sup> Weeks & Chen, *supra* note 7, at 33. The formation of AQSIQ in April 2001, prior to China’s formal accession to the WTO, was one of China’s first reforms to meet its (anticipated) obligations under the WTO. *Id.*

<sup>22</sup> *Id.* at 34.

<sup>23</sup> State Counsel Information Office, *AQSIQ’s Efforts on Prevention and Control of Swine Influenza*, CHINA INTERNET INFO. CENTER (Apr. 30, 2009), [http://china.org.cn/government/scio-press-conferences/2009-04/30/content\\_17704485.htm](http://china.org.cn/government/scio-press-conferences/2009-04/30/content_17704485.htm) (archived at <http://perma.cc/DH23-3JKN>).

<sup>24</sup> Updegrave, *supra* note 5, at 14.

<sup>25</sup> *Id.* at 15. Though the United States provides no direct financial support to standards development organizations, the government does provide indirect support through various avenues, including pre-standardization research grants, favorable legislation, and political support against foreign states abusing the standards setting process. *Id.*

<sup>26</sup> Stacy Baird, *The Government at the Standards Bazaar*, 18 STAN. L. & POL’Y REV. 35, 42 (2007). A formal standards development organization relevant to this Note is the Institute of Electrical and Electronics Engineers (IEEE), which controls the international equivalents to WAPI. *See id.* An example of an industry-specific organization would be the Organization for the Advancement of Structured Information Standards, which developed the Open Document format mentioned earlier. *Id.*

In addition to the formal organizational sources of standards above, consortia have become increasingly involved in forming new standards.<sup>27</sup> Companies form consortia to further mutual interests in developing new standards.<sup>28</sup> Consortia are often more efficient than formal organizations because they are “formed to meet the specific standards needs of the interested companies.”<sup>29</sup> As groups of private enterprises, consortia are often less transparent in their processes than traditional standards organizations.<sup>30</sup> However, the former Chairman of the Board of the American National Standards Institute (a formal standards-setting organization itself), Oliver Smoot, testified before Congress that the “information technology industry does have a special challenge because it uses every kind of standardization process imaginable . . . . Because they meet real needs, consortia-developed standards are fully acceptable to, and widely used by, industry and the U.S. Government . . . .”<sup>31</sup>

There are four basic types of standards created through the bottom up system. The two most common are “open standards” developed through formal standards organizations, and closed “proprietary” standards developed through informal bodies.<sup>32</sup> In addition to these, a *de facto* standard rises where a technology is so widely adopted that it serves as a true standard, and both proprietary and *de facto* standards can become open standards following adoption by a formal standards organization.<sup>33</sup> Microsoft’s DOC format is a *de facto* standard, so widely adopted by the technology industry that it is essentially the standard for word processing software.<sup>34</sup> Finally, a proprietary standard could be submitted to a formal standards organization to become an open standard – for example, Adobe’s PDF standard shifted from proprietary format to open standard after publication in 2008.<sup>35</sup>

In practice, the top down system embraced by China differs markedly from

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<sup>27</sup> *Id.* Rockstar Consortium (no relation to Rockstar Games) is an example of a modern consortium, formed by Apple, Microsoft, and numerous other large-scale technology patent holders, with the notable exception of Google. Joe Mullin, *Patent war goes nuclear: Microsoft, Apple-owned “Rockstar” sues Google*, ARS TECHNICA, (Oct. 31, 2013, 11:10 PM), <http://arstechnica.com/tech-policy/2013/10/patent-war-goes-nuclear-microsoft-apple-owned-rockstar-sues-google/> (archived at <http://perma.cc/SL44-4KGN>).

<sup>28</sup> Baird, *supra* note 26, at 42.

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* at 44.

<sup>31</sup> *Id.*

<sup>32</sup> *Id.* at 49.

<sup>33</sup> *Id.*

<sup>34</sup> See *Word Processing Software Review: Reviews & Comparisons*, TopTenReviews, <http://office-software-review.toptenreviews.com/word-processing-software/> (last visited Jan. 17, 2015) (archived at <http://perma.cc/6SPH-BLB5>).

<sup>35</sup> Josh Lowensohn, *Adobe’s PDF becomes ISO standard*, CNET (July 2, 2008, 9:38 AM), <http://www.cnet.com/news/adobes-pdf-becomes-iso-standard/> (archived at <http://perma.cc/U7BF-7UCA>).

the bottom up system embraced by the United States.<sup>36</sup> The differences between top down and bottom up standardization complicate efforts to integrate China's domestic standards with the extant body of international standards. China's system affords the state control over the development and pursuit of a unified national standards strategy, something impossible in the bottom up system.<sup>37</sup> China's standards apparatus is "directed at achieving the goals of the current PRC five year plan, which has a focus on research and development in order to transform China" from the world's workshop to a premier global manufacturer of domestic goods.<sup>38</sup> The State can tailor its national standards strategy to benefit specific industries, or even individual companies.<sup>39</sup> For example, the State may dictate which companies may develop or license a new standard by disclosing necessary security codes to only a select few companies.<sup>40</sup> On the other hand, foreign companies involved in the Chinese market voice concerns over enforcement confusion, lengthy and costly approval processes, and inadequate security of intellectual property.<sup>41</sup>

Standards, particularly proprietary standards, pose intellectual property issues.<sup>42</sup> Inventors and creators may acquire exclusive ownership over their ideas through a patent.<sup>43</sup> Others wishing to make use of patented material must license it from the owner of the patents.<sup>44</sup> A standard is by nature intellectual property, and thus may be owned, copyrighted, or patented.<sup>45</sup> However, because standards and the technologies upon which they rely have many separate components, often multiple companies own necessary but distinct patents for the same product.<sup>46</sup> The result is that independent companies cannot create new technologies without some form of partnership with competitors in the field. Companies may alleviate this paralysis in innovation by promising not to assert their intellectual property rights through patent lawsuits.<sup>47</sup> An

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<sup>36</sup> Updegrove, *supra* note 5, at 14-15.

<sup>37</sup> *Id.* at 15-16.

<sup>38</sup> *Id.* at 14.

<sup>39</sup> *Id.* at 15.

<sup>40</sup> See Gibson, *supra* note 6, at 47.

<sup>41</sup> See Weeks & Chen, *supra* note 7, at 34-36.

<sup>42</sup> See Baird, *supra* note 26, at 50.

<sup>43</sup> *Patents: What is a patent?*, U.S. PATENT AND TRADEMARK OFFICE, <http://www.uspto.gov/patents/index.jsp> (archived at <http://perma.cc/BC5C-B3SP>) (last visited Dec. 9, 2014).

<sup>44</sup> Baird, *supra* note 26, at 51 (noting that "entities that develop standards and own the associated patents typically license the technology").

<sup>45</sup> *Id.* at 50.

<sup>46</sup> *Id.* at 45-46 (discussing the myriad patent owners involved in the developing of radio and television transmission standards, and the DVD-ROM).

<sup>47</sup> See, e.g., *Open Specification Promise*, OPEN SPECIFICATIONS DEV CENTER, <https://msdn.microsoft.com/en-us/openspecifications/dn646765> (archived at <http://perma.cc/WD6F-YVHH>).

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alternative mechanism to address standards patenting is the patent pool. A patent pool is the “sharing, or pooling, of patent ownership interests to benefit the market at large.”<sup>48</sup> Where a patent pool exists, members can take advantage of otherwise unavailable technology without pursuing a licensing agreement for every patent involved. Patent pools thus allow the concentration of related but separately owned patents into a single body to facilitate development within that pool.

## II. CHINA’S OBLIGATIONS AS A MEMBER OF THE WTO

On November 10, 2001, the People’s Republic of China formally acceded to the World Trade Organization.<sup>49</sup> The Protocol of Accession marked the end of a fifteen-year quest to join a trade treaty organization, beginning with China’s attempts to join the WTO’s predecessor, the General Agreement on Tariffs and Trade (“GATT”).<sup>50</sup> With its accession, China undertook the myriad of obligations resulting from WTO member state status.<sup>51</sup> This Note is concerned only with China’s obligations under the GATT, the TBT Agreement, and the Dispute Settlement Understanding (“DSU”) – taken together, this Note will refer to them as the Multilateral Trade Agreements (“MTA”).

The GATT serves as the foundation for all obligations owed to the WTO by its members, and thus is the broadest agreement under the MTA.<sup>52</sup> Member

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<sup>48</sup> Baird, *supra* note 26, at 45.

<sup>49</sup> China Accession Protocol, *supra* note 3.

<sup>50</sup> Andrew Updegrove, *The Yin and Yang of China’s Trade Strategy: Deploying an Aggressive Standards Strategy Under the WTO*, 4 CONSORTIUM STANDARDS BULL., no. 4, 2005, at 1, 6-7, available at <http://www.consortiuminfo.org/bulletins/apr05.php#feature> (archived at <http://perma.cc/5VPQ-KKQP>).

<sup>51</sup> See Thomas H. Au, Note, *Reconciling WTO General Exceptions with China’s Accession Protocol*, 5 TSINGHUA CHINA L. REV. 97, 98, n.8 (2013), for a description of all treaties, agreements, and other obligations falling under the WTO. China’s Accession Protocol is a literally unique document within the WTO legal framework, as it is the first *non-standard* accession protocol. Julia Ya Qin, “WTO-Plus” Obligations and Their Implications for the World Trade Organization Legal System, 37 J. OF WORLD TRADE, no. 3, 2003, at 483, 483. Prior to China’s accession to the WTO, fourteen other governments had joined the WTO through the same process. See China Accession Protocol, *supra* note 3. While the accession protocols executed by these governments are relatively simple documents of only two or three pages’ length, China’s Accession Protocol stretches over a tremendous 103 pages. Compare World Trade Organization, *Accession of Mongolia*, WT/ACC/MNG/11 (July 25, 1996) (three pages) with China Accession Protocol, *supra* note 3 (103 pages). The Accession Protocol contains “a large number of special provisions that elaborate, expand, modify or deviate from” existing WTO obligations, and are thus known as “WTO-Plus” obligations. Qin, *supra*, at 483. China’s express obligation to conform with the TBT Agreement is one of these such obligations. See China Accession Protocol, *supra* note 3.

<sup>52</sup> Qin, *supra* note 51, at 486 (noting that GATT provides for “uniform application” of its terms to all WTO members).



obligations under the GATT's thirty-eight Articles and nine Annexes include the transformation of existing trade quotas into tariffs<sup>53</sup> and the promise not to impose *new* trade quotas.<sup>54</sup> Members must also comply with the "Most Favored Nation" and the "National Treatment" principles. The Most Favored Nation principle requires that a member must treat all foreign traders identically – if Member A provides B a special favor, Members C through Z must all be given that same favor.<sup>55</sup> The National Treatment principle requires that the member must treat foreign products the same as domestic products – once admitted to that member's market, Member B's goods must receive identical market treatment as Member A's own products.<sup>56</sup> The typical measures relating to the former are specially lowered tariffs, while the latter concerns internal labeling regulations.<sup>57</sup> Taken together, these principles are the bedrock of the WTO's system of free trade.<sup>58</sup>

Article XXIII of the GATT provides its members legal standing to sue for injuries, defined as the "nullification or impairment" of GATT-granted rights, or the general impeding of GATT objectives.<sup>59</sup> The Article further provides that nullification or impairment may be caused by a member's a) violation of its GATT responsibilities; b) imposition of a superficially GATT-legal state measure that still nullifies or impairs another member's rights; or c) any other situation that leads to nullification or impairment of such rights.<sup>60</sup> The GATT also provides members with an enumerated list of General Exceptions, including measures concerning human health, conservation of natural resources, or products of prison labor, with which to justify any violation of or noncompliance with the GATT.<sup>61</sup>

Members may also legally violate MTA obligations in the interest of national security.<sup>62</sup> The national security exception is relatively short, and reads in full:

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<sup>53</sup> General Agreement on Tariffs and Trade, art. 2, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194 [hereinafter GATT].

<sup>54</sup> *Id.* at art. 11.

<sup>55</sup> *Id.* at art. 1.

<sup>56</sup> *Id.* at art. 3.

<sup>57</sup> *Principles of the trading system*, WORLD TRADE ORG., [http://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/fact2\\_e.htm](http://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm) (archived at <http://perma.cc/5WX6-EC5U>) (last visited Feb. 25, 2015).

<sup>58</sup> *Id.*

<sup>59</sup> GATT, *supra* note 53, at art. 23. See also *id.* at art. 36 for an enumerated list of GATT objectives. For simplicity's sake, this Note will refer to nullification, impairment, or impeding simply as "nullification or impairment."

<sup>60</sup> *Id.* at art. 23.

<sup>61</sup> *Id.* at art. 20.

<sup>62</sup> *Id.* at art. 21. See World Trade Org., *Article XXI: Security Exceptions*, 1 ANALYTICAL INDEX: GUIDE TO GATT L. AND PRAC., 599, 599-610 (6th ed. 1994) [hereinafter GATT ANALYTICAL INDEX], for an in-depth discussion of the framing and development of Article XXI, broken down on a clause-by-clause basis.



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Nothing in this Agreement shall be construed

- a) to require any contracting party to furnish any information the disclosure of which it considers contrary to its essential security interests; or
- b) to prevent any contracting party from taking any action which it considers necessary for the protection of its essential security interests
  - i. relating to fissionable materials or the materials from which they are derived;
  - ii. relating to the traffic in arms, ammunition and implements of war and to such traffic in other goods and materials as is carried on directly or indirectly for the purpose of supplying a military establishment;
  - iii. taken in time of war or other emergency in international relations;
- or
- c) to prevent any contracting party from taking any action in pursuance of its obligations under the United Nations Charter for the maintenance of international peace and security.<sup>63</sup>

The post-World War II framers of the GATT understood that providing the national security exception was an essential compromise with the sovereignty of the member states, who would not join an organization that tied their hands in protecting themselves.<sup>64</sup> Likewise, the framers understood that an exception too wide would neuter the GATT, allowing members to use national security to render “any trade dispute dead on arrival in Geneva.”<sup>65</sup> WTO complaints invoking Article XXI are extremely rare – only seven disputes have raised the issue.<sup>66</sup> The most famous use of Article XXI is the American invocation of national security in defense of the Nicaraguan embargo.<sup>67</sup>

The Agreement on Technical Barriers to Trade (“TBT Agreement”) codifies how members may apply standards, regulations, certifications, and similar measures to products otherwise covered in GATT.<sup>68</sup> The TBT Agreement expressly recognizes the “important contribution” made by international standards in furthering GATT objectives through “improving efficiency of

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<sup>63</sup> GATT, *supra* note 53, at art. 21.

<sup>64</sup> GATT ANALYTICAL INDEX, *supra* note 64, at 600.

<sup>65</sup> NATHANIEL AHRENS, CTR. FOR STRATEGIC & INT’L STUDIES, NATIONAL SECURITY AND CHINA’S INFORMATION SECURITY STANDARDS OF SHOES, BUTTONS, AND ROUTERS 10 (2012), *available at* [https://csis.org/files/publication/121108\\_Ahrens\\_NationalSecurityChina\\_web.pdf](https://csis.org/files/publication/121108_Ahrens_NationalSecurityChina_web.pdf) (archived at <http://perma.cc/ZB6W-KRKC>).

<sup>66</sup> *Id.* at 11.

<sup>67</sup> See Report of the Panel, *United States – Trade Measures Affecting Nicaragua*, L/6053 (Oct. 13, 1986) [hereinafter US — Nicaragua]. See also *infra* notes 216-29 and accompanying text.

<sup>68</sup> AHRENS, *supra* note 65, at 9.

production” and international trade.<sup>69</sup> To this end, a WTO member applying international standards enjoys a rebuttable presumption of compliance with the TBT Agreement.<sup>70</sup> Current Chinese standards policy reflects a top down system that appears to conflict with the TBT Agreement’s requirements.<sup>71</sup>

A member’s basic obligation under the TBT Agreement is to “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.”<sup>72</sup> This obligation is a restatement of the National Treatment obligation of the General Agreement on Tariffs and Trade.<sup>73</sup> The primary effect of this obligation is the barring of “non-tariff measures that cannot be justified under the provisions of the WTO agreement.”<sup>74</sup> As the elimination of non-tariff measures was and is a principal goal of the WTO, a member state’s obligation under the TBT Agreement goes to its core responsibilities as a member of the WTO.

Article 2.2 further requires that “technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create.”<sup>75</sup> The Article provides several illustrations of legitimate objects that justify trade restrictions, in addition to several illustrations of elements a reviewing body should consider in evaluating regulations at issue. Thus, Article 2.2 of the TBT Agreement provides members arguably wide latitude to tailor technical regulations to their needs, and provides members with the right to instate otherwise impermissible restrictions when they do so in pursuit of a legitimate objective.

The WTO’s dispute settlement methods are codified in the appropriately named Dispute Settlement Agreement.<sup>76</sup> When a party<sup>77</sup> (for example, the United States) believes that another party (for example, China) has instituted a policy or pursued an action that deprives the former party of benefits or rights guaranteed under a WTO agreement, the former party may call for consultation with the latter.<sup>78</sup> If consultation fails to solve the dispute within sixty days, the complainant may request the establishment of a Panel, an ad-hoc group sitting

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<sup>69</sup> TBT Agreement, *supra* note 2.

<sup>70</sup> *Id.* at art. 2.5.

<sup>71</sup> *See* Updegrove, *supra* note 5, at 15.

<sup>72</sup> TBT Agreement, *supra* note 2, at art. 2.2.

<sup>73</sup> Gibson, *supra* note 6, at 50.

<sup>74</sup> *Id.*

<sup>75</sup> TBT Agreement, *supra* note 2, at art. 2.2.

<sup>76</sup> Understanding on Rules and Procedures Governing the Settlement of Disputes, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 2, 1869 U.N.T.S. 401 [hereinafter DSU].

<sup>77</sup> Readers should note that “party” here means a party to the various WTO treaties, and thus a member state of the organization.

<sup>78</sup> DSU, *supra* note 76, at art. 4.

in quasi-judicial status.<sup>79</sup> Disputes that continue to go unresolved may ultimately reach the WTO Appellate Body. Both Panel and Appellate Body decisions are binding on the parties involved, and the DSU mandates that the parties accept the decision unconditionally.<sup>80</sup> Though decisions are not legally binding on parties uninvolved in the original case, as in a court following precedent, WTO Panels often try to “resolve the same legal question in the same way.”<sup>81</sup> Once a Panel or Appellate Body decision is adopted, the parties must comply within a reasonable period, as defined in DSU Article 21 sec. 3.<sup>82</sup>

If a party refuses to comply with the Appellate Body’s decision, the DSU provides for redress through compensation or suspension of concessions otherwise guaranteed by the various WTO agreements.<sup>83</sup> When the WTO imposes suspension of concessions upon the losing party to a dispute, the WTO thus authorizes the prevailing party to take actions otherwise forbidden under the laws and rules of the WTO.<sup>84</sup> An example of such otherwise forbidden measures would be countervailing duties, or tariffs, imposed on goods produced by the losing party.<sup>85</sup> These measures may include countervailing duties on the offending party’s exports.<sup>86</sup> The measures should be imposed in the same sector as the original harm – a country damaged by trade violations in sardine fishing should impose its retaliatory measures within the sardine fishing sector.<sup>87</sup> If that is impossible, the WTO may authorize retaliatory measures in a related sector – in the tuna fishing sector, for example.<sup>88</sup> If the WTO finds that redress through tariff is impossible, measures that are more drastic may be imposed, including allowing the injured party to ignore the intellectual property rights of the noncompliant party.<sup>89</sup>

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<sup>79</sup> *Id.* art. 4.7.

<sup>80</sup> *Id.*

<sup>81</sup> See Appellate Body Report, *United States – Final Anti-Dumping Measures on Stainless Steel from Mexico*, ¶ 160, WT/DS344/AB/R (Apr. 30, 2008) (holding that DSU art. 3.2’s contemplation of “security and predictability” in the dispute settlement system, and the use of past decisions by parties to support arguments in current disputes, implies that “an adjudicatory body will resolve the same legal question in the same way” in later cases).

<sup>82</sup> DSU, *supra* note 76, at art. 21.3.

<sup>83</sup> DSU, *supra* note 76, at art. 22.1.

<sup>84</sup> WORLD TRADE ORG., 6.10 *Countermeasures by the prevailing Member (suspension of obligations)*,

[http://www.wto.org/english/tratop\\_e/dispu\\_e/dispu\\_settlement\\_cbt\\_e/c6s10p1\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/dispu_settlement_cbt_e/c6s10p1_e.htm) (archived at <http://perma.cc/RK5J-EDMT>) (last visited Apr. 11, 2014).

<sup>85</sup> *Id.* Readers interested in WTO dispute settlement should note that there is a debate regarding whether the goal of retaliatory trade measures within the DSU framework is to enforce WTO decisions, or to simply to rebalance trade benefits (correcting a wrong with another wrong, as it were). *Id.*

<sup>86</sup> *Id.*

<sup>87</sup> *Id.*

<sup>88</sup> *Id.*

<sup>89</sup> In 2003, the United States restricted cross-border gambling. See Decision by the

Through the workings of either consultation, mediation, or the lower Panels, many disputes between WTO members will be resolved without having to go before the Appellate Body. This Note will focus on a hypothetical dispute between the United States and the People's Republic of China at the WTO Panel level, one level below the Appellate Body itself.<sup>90</sup> Panel rulings may be appealed to the Appellate Body.<sup>91</sup> However, as the Appellate Body engages in intensive review of an already-existing record created by the Panel,<sup>92</sup> this Note will focus on the Panel dispute.

### III. CHINESE WIRELESS TRANSMISSION STANDARDS AND THEIR COUNTERPARTS

The standards with which this Note is concerned show the truth behind Smoot's claim that the information technology industry "uses every kind of standardization process imaginable."<sup>93</sup> The three relevant Chinese standards are WLAN Authentication and Privacy Infrastructure ("WAPI"), Ultra High-Throughput WLAN & its counterpart Enhanced Ultra High-Throughput WLAN ("UHT/EUHT"), and ZUC – taken together, the Encryption Standards. The table below lays out basic information about the standards, their applications, and their foreign competition.

Application	Domestic Standard	Domestic Encryption	Foreign Competition	Foreign Encryption	Creation of Foreign Standard
Wireless Internet Access	WAPI; UHT/EUHT	Secret; state possesses codes and discloses to select companies	802.11 (WiFi)	WEP (obsolete); WPA (modern)	IEEE, a formal standards development organization
4G Wireless Phones	ZUC	N/A	LTE	Various proposed alternatives to ZUC	3GPP, an industry-specific standards-setting organization

*Betting Services*, WT/DS285/ARB, 47 I.L.M. 375, 376 (Dec. 21, 2007). The small nation of Antigua felt its rights had been nullified or impaired and thus filed suit. *Id.* After the Appellate Body ruled against them, the United States refused to comply. *Id.* Aware that no barrier to the tiny Antiguan market could ever encourage the United States to comply, the WTO instead authorized the suspension of American intellectual property rights under the MTA, essentially giving Antigua legal authority to counterfeit. *Id.*

<sup>90</sup> A dispute between the United States and China is the most likely way this conflict will reach the Appellate Body. A plurality of the formal disputes the United States has been a party to, either as complainant or respondent, have involved China as the opposite party. See WORLD TRADE ORG., *Map of disputes between WTO Members*, [http://www.wto.org/english/tratop\\_e/dispu\\_e/dispu\\_maps\\_e.htm?country\\_selected=USA&sense=e](http://www.wto.org/english/tratop_e/dispu_e/dispu_maps_e.htm?country_selected=USA&sense=e) (archived at <http://perma.cc/U4S6-32Z8>) (last visited Apr. 11, 2014). The same can be said of Chinese disputes involving the United States. See *id.*

<sup>91</sup> DSU, *supra* note 76, at art. 16.4.

<sup>92</sup> *Id.* at art. 11 ("[A] panel should make an objective assessment of the facts of the case and the applicability of and conformity with the relevant covered agreements . . .").

<sup>93</sup> Baird, *supra* note 26, at 44.

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The first row of standards<sup>94</sup> all pertain to WLAN systems, as is evident from the formal names of both WAPI and UHT.<sup>95</sup> At its most basic, WLAN refers to a system of connecting two or more devices<sup>96</sup> without the need for wires between them.<sup>97</sup> As network connectivity has become an integral part of using a computer, wireless networks have grown in number and popularity.<sup>98</sup> A wireless network allows quick and convenient access to a network. A common use of WLAN systems is to connect a laptop to an access point for the World Wide Web.<sup>99</sup> WLAN can also be used to connect a small set of devices (such as a smart phone, laptop, tablet, video game console, and television set) into a home multi-media entertainment system.<sup>100</sup> Instead of wires, WLAN uses radio frequencies to transmit data between connected devices.<sup>101</sup>

802.11 is a set of internationally recognized standards that facilitate WLAN

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<sup>94</sup> See *infra* notes 102-38 and accompanying text for a discussion of WAPI and its counterpart, Wifi. Wifi itself is “a trademarked term meaning IEEE 802.11x.” *Wi-Fi*, WEBOPEDIA, <http://www.webopedia.com/TERM/W/Wi-Fi.html> (archived at <http://perma.cc/B8P7-7P7R>) (last visited Apr. 10, 2014). Because of the common use of “Wifi” to mean wireless internet generally, this note will use the more specific title of 802.11. *See id.*

<sup>95</sup> See *infra* notes 139-50 for a discussion of ZUC and its counterpart, 4G LTE.

<sup>96</sup> Device here means any computerized system, including mobile phones, internet-enabled televisions, laptops, etc.

<sup>97</sup> *Definition of: Wireless LAN*, PC MAG., <http://www.pcmag.com/encyclopedia/term/54773/wireless-lan> (archived at <http://perma.cc/R6DP-4VAC>) (last visited Apr. 10, 2014).

<sup>98</sup> NIKITA BORISOV ET AL., INTERCEPTING MOBILE COMMUNICATIONS: THE INSECURITY OF 802.11, MOBIKOM ‘01: PROC. OF THE SEVENTH ANNUAL INT’L. CONF. MOBILE COMP. AND NET. 180, 180 (2001) *available at* <http://www.isaac.cs.berkeley.edu/isaac/mobicom.pdf> (archived at <http://perma.cc/FDX4-SDV9>).

<sup>99</sup> Connection to the Internet is best viewed as a series of steps. *See* RUS SHULER, HOW DOES THE INTERNET WORK? (2002), *available at* <http://www.stanford.edu/class/msande91si/www-spr04/readings/week1/InternetWhitepaper.htm> (archived at <http://perma.cc/FS6A-DZ98>). A user first connects to a local Internet Service Provider (“ISP”). *Id.* The ISP then connects to a larger ISP, and the larger ISP may then connect with a Network Service Provider (“NSP”). *Id.* The intercommunication between NSPs forms the backbone of much of Internet traffic. *Id.*

<sup>100</sup> An example of such a system is using one’s tablet to interact with a Microsoft Xbox game console through pairing the two over WLAN. *Introducing Xbox SmartGlass*, XBOX, <http://www.xbox.com/en-US/smartglass> (last visited Apr. 10, 2014) (archived at <http://perma.cc/2KRT-CLC3>). A SmartGlass user may use their tablet as an interactive map to supplement gameplay on the television screen. *Id.*

<sup>101</sup> *Definition of: Wireless LAN*, *supra* note 97.

connectivity.<sup>102</sup> The Institute of Electrical and Electronics Engineers (“IEEE”), a formal standards development organization based in New York City,<sup>103</sup> created 802.11.<sup>104</sup> IEEE continually modifies 802.11, incorporating new security and transmission techniques.<sup>105</sup> In 1999, when 802.11a was approved by the International Organization for Standardization as a formal international standard, it had a maximum transfer rate of fifty-four megabits per second.<sup>106</sup> The upcoming revision, 802.11ad, has a maximum transfer rate of seven gigabits per second – almost 130 times as fast.<sup>107</sup> Users and businesses benefit from faster internet connections. Higher speeds make the Internet more economically viable as a business transmission medium, a field once dominated by man-carried or animal-carried letters.<sup>108</sup>

The added convenience of radio-enabled wireless networks raises significant security issues. Interception of or tampering with radio waves is “trivial to anyone with a radio.”<sup>109</sup> By intercepting radio waves, an unauthorized person can effectively eavesdrop on the other parties, and for example, uncover a private password or Social Security Number transmitted over the network. An unauthorized person could also tamper with the signal and trick other devices into thinking his own system has authorization it does not actually have – and here, that person could enter private networks, such as a restricted intranet upon which a company stores its trade secrets or other private and sensitive information.<sup>110</sup> Identity thieves often target unsecured wireless networks to

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<sup>102</sup> Edgar Danielyan, *IEEE 802.11*, 5 INTERNET PROTOCOL J., no. 1, 2002, at 2, 2, available at [http://www.cisco.com/web/about/ac123/ac147/archived\\_issues/ipj\\_5-1/ipj\\_5-1.pdf](http://www.cisco.com/web/about/ac123/ac147/archived_issues/ipj_5-1/ipj_5-1.pdf) (archived at <http://perma.cc/P5PU-5KL5>).

<sup>103</sup> *History of IEEE*, INST. OF ELECTRICAL AND ELECTRONICS ENGINEERS, [http://www.ieee.org/about/ieee\\_history.html](http://www.ieee.org/about/ieee_history.html) (archived at <http://perma.cc/X4EE-Y2EG>) (last visited Jan. 18, 2015).

<sup>104</sup> Danielyan, *supra* note 102, at 2.

<sup>105</sup> *Id.* at 10.

<sup>106</sup> *Id.* at 3.

<sup>107</sup> *IEEE 802.11ad Microwave Wi-Fi / WiGig Tutorial*, RADIO-ELECTRONICS.COM, <http://www.radio-electronics.com/info/wireless/wi-fi/ieee-802-11ad-microwave.php> (archived at <http://perma.cc/KA4U-MZBV>) (last visited Feb. 25, 2015).

<sup>108</sup> In 2009, a South African company showed that Internet speed is critical in the viability of the medium in competing with alternative delivery methods. Niren Tolsi, *Winston the Homing Pigeon Draws Tweets of Support*, MAIL & GUARDIAN (Sept. 10, 2009, 12:48 PM), <http://mg.co.za/article/2009-09-10-winston-the-homing-pigeon-draws-tweets-of-support> (archived at <http://perma.cc/FE2S-V55G>). The company held a “race” for fastest transference of four gigabytes of data between two South African cities. *Id.* The largest ISP in South Africa was challenged by a pigeon carrying a memory stick. *Id.* The pigeon delivered the memory stick in roughly two hours and seven minutes. *Id.* At the time the pigeon completed its delivery, the ISP’s internet connection had transferred only 100 megabytes of the data – only 4% of the pigeon’s throughput. *Id.*

<sup>109</sup> BORISOV, *supra* note 98, at 180.

<sup>110</sup> See, e.g., David E. Sanger & Nicole Perlroth, *N.S.A. Breached Chinese Servers Seen*



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steal identifying information.<sup>111</sup>

Early versions of 802.11 used an encryption scheme known as Wired Equivalent Privacy (“WEP”).<sup>112</sup> WEP was intended to bring to wireless transmissions a level of security which would compete with more secure wired transmissions, and thus prevent eavesdropping on, and tampering with, private signals.<sup>113</sup> Every transmission subject to WEP underwent a two-stage process of encryption at its point of origin, and the receiver would reverse the process to decrypt and access the information.<sup>114</sup> The communicating parties shared a secret key upon which the entire process relied; without the proper key, the information could not be decrypted.<sup>115</sup> However, in 2001, researchers discovered significant security flaws in WEP’s encryption scheme.<sup>116</sup> Thieves and other unauthorized persons could easily exploit these flaws to gain access to encrypted transmissions.<sup>117</sup> After these discoveries, the IEEE 802.11 Task Group on Security “began significant changes to WEP” to plug the holes in security.<sup>118</sup> These changes culminated in the Wi-Fi Protected Access scheme (“WPA”).<sup>119</sup> In 2004, the IEEE integrated WPA into the 802.11 set of standards as 802.11i.<sup>120</sup>

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as *Security Threat*, N.Y. TIMES, (Mar. 22, 2014) <http://www.nytimes.com/2014/03/23/world/asia/nsa-breached-chinese-servers-seen-as-spy-peril.html> (archived at <http://perma.cc/59HM-BS4L>) (breach by N.S.A. of Huawei company servers to install backdoors and exploit Huawei products); *Target Data Theft Affected 70 Million Customers*, BBC NEWS (Jan. 10, 2014, 9:28 AM), <http://www.bbc.com/news/technology-25681013> (archived at <http://perma.cc/UYC5-3JH2>) (breach by thieves of Target payment system to steal customer credit card information).

<sup>111</sup> See Kate Murphy, *New Hacking Tools Pose Bigger Threats to Wi-Fi Users*, N.Y. TIMES (Feb. 16, 2011), [http://www.nytimes.com/2011/02/17/technology/personaltech/17basics.html?\\_r=1&](http://www.nytimes.com/2011/02/17/technology/personaltech/17basics.html?_r=1&) (archived at <http://perma.cc/WW6W-BW7W>) (describing a free program, “Firesheep,” that allows its users to log into a website as another user on the same unsecured wireless network).

<sup>112</sup> BORISOV, *supra* note 98, at 180.

<sup>113</sup> Danielyan, *supra* note 102, at 7.

<sup>114</sup> BORISOV, *supra* note 98, at 180-81.

<sup>115</sup> *Id.* at 180.

<sup>116</sup> See *id.* at 182-83 (describing several practical methods to exploit the flaws to break WEP security).

<sup>117</sup> See William A. Arbaugh et al., *Your 802.11 Wireless Network Has No Clothes*, 9 IEEE WIRELESS COMM., no. 6, Dec. 2002, at 44, 46, available at <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=1160080> (archived at <http://perma.cc/L45N-7MDJ>).

<sup>118</sup> *Id.* at 44, n.1.

<sup>119</sup> Eric Griffith, *802.11i Security Specification Finalized*, WI-FI PLANET (June 25, 2004), <http://www.wi-fiplanet.com/news/article.php/3373441> (archived at <http://perma.cc/JZT3-G9YG>).

<sup>120</sup> *Id.*



The rift between WAPI and 802.11 revolves around the standards' respective handling of security. WAPI is an offshoot of the WEP-encrypted versions of 802.11, born of Chinese dissatisfaction with the security flaws in WEP.<sup>121</sup> The Standardization Administration of China ("SAC") "initially approved WAPI in May 2003 to become effective later in December of that year."<sup>122</sup> The core of WAPI is a redone security scheme. The Chinese claim that WAPI's encryption rectifies the security deficiencies inherent in WEP.<sup>123</sup> A "necessary secret encryption algorithm" controls WAPI's security scheme.<sup>124</sup> The Chinese state provides only a half-dozen Chinese companies with access to the algorithm.<sup>125</sup> Any company seeking to integrate WAPI into its radio designs would thus have to negotiate with one of those six companies. Additionally, 802.11 and WAPI are mutually incompatible.<sup>126</sup>

During 2003 and 2004, the Chinese government planned to instate WAPI as a mandatory standard.<sup>127</sup> By June 2004, all WLAN devices would be required to support WAPI.<sup>128</sup> The United States government formally protested the mandatory standard.<sup>129</sup> Perhaps more importantly, information technology giants Intel, Texas Instruments, and Broadcom promised to cease sales of any product affected by WAPI.<sup>130</sup> Craig Barret, Intel CEO, personally visited Beijing in an attempt to resolve the crisis.<sup>131</sup> Amid the tension, China agreed to "indefinitely postpone" government enforcement of *mandatory* compliance with WAPI during bilateral trade negotiations with the United States.<sup>132</sup>

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<sup>121</sup> *China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy*, U.S. Int'l. Trade Comm'n, 5-15 (Nov. 2010) [hereinafter *China: Intellectual Property*], available at <http://www.usitc.gov/publications/332/pub4199.pdf> (archived at <http://perma.cc/DJP6-NQH7>).

<sup>122</sup> Gibson, *supra* note 6, at 47.

<sup>123</sup> See *China: Intellectual Property*, *supra* note 121, at 5-15 ("WAPI . . . was originally developed because of Chinese concerns about security in the Wi-Fi encryption protocol" WEP).

<sup>124</sup> Gibson, *supra* note 6, at 47.

<sup>125</sup> *Id.*

<sup>126</sup> JIANFENG MA ET AL., SECURITY ACCESS IN WIRELESS LOCAL AREA NETWORKS: FROM ARCHITECTURE AND PROTOCOLS TO REALIZATION 104 (2009).

<sup>127</sup> *China: Intellectual Property*, *supra* note 121, at 5-16.

<sup>128</sup> Andrew Updegrave, *Breaking Down Trade Barriers: Avoiding the China Syndrome*, 3 CONSORTIUM STANDARDS BULL., no. 5, 2004, at 8, 9, available at <http://www.consortiuminfo.org/bulletins/pdf/may04.pdf> (archived at <http://perma.cc/TB9K-F8C6>).

<sup>129</sup> *Id.* at 8 (describing diplomatic letter co-signed by United States Secretary of State Colin Powell, addressed to Chinese Vice Premiers Wu Yi and Zeng Peiyan, protesting imminent enforcement of WAPI standard).

<sup>130</sup> *Id.* at 9.

<sup>131</sup> *Id.*

<sup>132</sup> *Id.* at 10 (noting that, per the agreement reached, China's standardization bureau

However, the United States Trade Representative's 2013 Report on Technical Barriers to Trade said that, as of 2011, "China's Ministry of Industry and Information Technology ("MIIT") remained unwilling to approve any Internet-enabled mobile handsets or similar hand-held wireless devices unless the devices were WAPI-enabled."<sup>133</sup>

The UHT/EUHT standards follow in much of the same vein as WAPI. UHT/EUHT are Chinese domestic alternatives to the internationally-accepted 802.11n standard.<sup>134</sup> The Chinese claim that UHT/EUHT can coexist with 802.11.<sup>135</sup> However, because UHT/EUHT both operate on the same frequency as their 802.11 counterparts, a device operating on one standard may cause considerable interference with the transmissions of a device operating on the other standard.<sup>136</sup> A European information technology standards organization concluded that "adequate coexistence between UHT/EUHT standards based devices and devices based on standard 802.11 is not possible."<sup>137</sup> The United States Trade Representative has also expressed concerns about incompatibility between UHT/EUHT and 802.11.<sup>138</sup>

4G LTE differs from the above standards in that it is designed for use in mobile smartphones, as opposed to use in laptops or other larger devices.<sup>139</sup> The 4G LTE set of standards is developed by the 3rd Generation Partnership Project ("3GPP").<sup>140</sup> Although 3GPP is an industry-specific standards organization, instead of a general formal standards organization like IEEE, 3GPP controls the 4G LTE standards and promulgates enhancements to the set, similar to the various iterations of 802.11x developed by IEEE.<sup>141</sup> 3GPP developed 4G LTE in part through recommendations from the Next Generation Mobile Networks initiative – of which China Mobile Communications Corporation is a member.<sup>142</sup> With Sprint Corporation's cessation of support for

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would both work with IEEE for international recognition of WAPI and "continue to advance the WAPI standard").

<sup>133</sup> USTR TBT REPORT, *supra* note 11, at 55.

<sup>134</sup> *Id.*

<sup>135</sup> *See id.*

<sup>136</sup> *Comments on China's UHT and EUHT Draft Standard*, DIGITALEUROPE (Sept. 30, 2011), [http://www.digitaleurope.org/DocumentDownload.aspx?Command=Core\\_Download&EntryId=62](http://www.digitaleurope.org/DocumentDownload.aspx?Command=Core_Download&EntryId=62) (archived at <http://perma.cc/BH79-SKKJ>) (describing further European industry concerns about UHT/EUHT's efficiency and utility).

<sup>137</sup> *Id.*

<sup>138</sup> USTR TBT REPORT, *supra* note 11, at 55.

<sup>139</sup> *UTRA-UTRAN Long Term Evolution and 3GPP System Architecture Evolution: Long Term Evolution of the 3GPP radio technology*, THIRD GENERATION PARTNERSHIP PROJECT, [ftp://ftp.3gpp.org/Inbox/2008\\_web\\_files/LTA\\_Paper.pdf](ftp://ftp.3gpp.org/Inbox/2008_web_files/LTA_Paper.pdf) (archived at <http://perma.cc/8D5N-3UDM>) (last visited Apr. 1, 2015).

<sup>140</sup> *Id.*

<sup>141</sup> *Id.*

<sup>142</sup> *Id.* Note that China Mobile is the largest mobile phone carrier in the world, and as of

WiMAX in 2012, all American smartphone carriers now support 4G LTE standards exclusively.<sup>143</sup> The market has thus established 4G LTE as a de facto hegemon.<sup>144</sup>

ZUC is an additional encryption system operating over the top of 4G LTE.<sup>145</sup> The Data Assurance and Communication Security Center (“DCS”) of the Chinese Academy of Sciences is developing the standard, and held the first international workshop on ZUC in December 2010.<sup>146</sup> In 2011, 3GPP approved ZUC as one of several voluntary encryption standards.<sup>147</sup> In early 2012, China’s MIIT informally announced that networks and mobile devices operating on China’s TD-LTE standard must only use domestic-developed encryption algorithms, a set that includes ZUC.<sup>148</sup> At subsequent bilateral negotiations between the US and China, China agreed not to mandate a specific encryption standard.<sup>149</sup> The US Trade Representative is still closely

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October 31, 2014 has over 801,448 customers. *See Operation Data*, CHINA MOBILE, <http://www.chinamobileltd.com/en/ir/operation.php> (archived at <http://perma.cc/5XN8-HCKY>).

<sup>143</sup> Vlad Savov, *Sprint is Done with WiMAX Phones, Seeing Little Enthusiasm for Windows Phone*, THE VERGE (Jan. 14, 2012, 4:09 PM), <http://www.theverge.com/2012/1/14/2707567/sprint-wimax-windows-phone-roadmap> (archived at <http://perma.cc/TK4J-9R33>) (last visited Apr. 1, 2015).

<sup>144</sup> 4G LTE is bifurcated into two variants: Time-Division Long Term Evolution (TD-LTE) and Frequency-Division Long Term Evolution (FD-LTE or LTE FDD). *See* Paul Carsten, *UPDATE 1-China Issues 4G Network Licenses to China Mobile, Unicom, and Telecom*, REUTERS (Dec. 4, 2013, 5:01 AM), <http://www.reuters.com/article/2013/12/04/china-4g-licence-idUSL4N0JJ1VL20131204> (archived at <http://perma.cc/AS9W-4RY3>). Though the specific differences between the two variants are beyond the scope of this Note, FD-LTE has become the globally-accepted general standard for all 4G LTE devices. *Id.* However, Chinese mobile networks – in particular those of China Mobile – predominately use TD-LTE. *Id.* Where devices on WAPI interfere with those on 802.11x, TD-LTE and FD-LTE are not mutually incompatible. As an illustration of this difference, Sprint Corporation’s new “Spark” network combines TD-LTE and FD-LTE radios into one system. *Sprint Adds Six Markets to Initial Spark Launch*, SPRINT NEWSROOM (Jan. 7, 2014), <http://newsroom.sprint.com/news-releases/sprint-adds-six-markets-to-initial-spark-launch-mobile-peak-speeds-up-to-60-mbps-now-available-in-11-markets.htm> (archived at <http://perma.cc/VH6Z-FFPE>).

<sup>145</sup> EZELL & ATKINSON, *supra* note 12, at 19.

<sup>146</sup> *Call for Papers for the First International Workshop on ZUC Algorithm*, DCS CENTER, (Oct. 25, 2010), <http://www.dacas.cn/thread.aspx?ID=2104> (archived at <http://perma.cc/EG9G-25B9>). *See also Cellular Algorithms: Encryption Algorithms*, ETSI (2014), <http://www.etsi.org/services/security-algorithms/3gpp-algorithms> (archived at <http://perma.cc/B76Q-F973>) (noting that DCS “holds essential patents on the [ZUC] Algorithms”).

<sup>147</sup> USTR TBT REPORT, *supra* note 11, at 55-56.

<sup>148</sup> *Id.* at 56.

<sup>149</sup> *Id.*

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monitoring ZUC developments.<sup>150</sup>

#### IV. WHETHER THE TBT AGREEMENT APPLIES

The United States will claim that the People's Republic of China has violated its obligations under the MTA through encouraging the development and mandating the use of the Encryption Standards, and that this violation has nullified or impaired American rights guaranteed under Article 2 of the TBT Agreement and Article III of the GATT, among others.<sup>151</sup> Once consultation fails to resolve the issue for sixty days, the United States will file a complaint with the WTO and seek a hearing before a Panel and, eventually, the Appellate Body.<sup>152</sup>

A complainant's prima facie complaint to the WTO must state: i) the legal basis for the complaint; ii) the infringing member's relevant government measure; iii) whether the complaint is for violation, or for non-violation that still conflicts with MTA obligations; and iv) the benefit that has been nullified or impaired.<sup>153</sup> The above complaint contains all four of these necessary elements, arranged in order.

To this end, the United States will argue that the People's Republic of China has violated its obligation under Article 2 of the TBT Agreement to provide imported products with treatment no less favorable than that accorded domestic products, and that this violation has damaged American trade prospects by treating American products unfavorably.<sup>154</sup> The Chinese government has promulgated mandatory technical regulations that are highly trade-restrictive and do not fulfill a legitimate objective. The infringing technical regulations include: the mandatory use of WAPI in domestic network devices, coupled with the restriction of critical elements of WAPI encryption code to certain Chinese firms; the continued government support for and development of UHT/EUHT, a standard that is directly incompatible with the existing internationally-accepted standard of 802.11x; and the MIIT's informal mandate that Chinese mobile phones utilize ZUC encryption.<sup>155</sup> The regulations unfairly restrict American access to the Chinese information technology market by benefiting Chinese companies and harming the export prospects of American companies, and put American intellectual property in danger. The United States will demand that China rescind its protectionist technical regulations, or face WTO-sanctioned retaliation through either

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<sup>150</sup> *Id.*

<sup>151</sup> See GATT, *supra* note 53, at art. 23. The TBT Agreement specifically incorporates GATT Article XXIII. See TBT Agreement, *supra* note 2, at art. 14.1.

<sup>152</sup> DSU, *supra* note 76, at art. 4.7.

<sup>153</sup> *Id.* at art. 6.

<sup>154</sup> TBT, *supra* note 2, at art. 2.

<sup>155</sup> See *supra*, Part II, for a description of the Chinese government's policies regarding its domestic standards.

compensation paid to, or tariffs instituted by, the United States.<sup>156</sup>

Whether a “measure” exists is a universal preliminary question in MTA disputes.<sup>157</sup> A body that is not a member state, including private corporations, cannot nullify or impair a member state’s rights under the GATT.<sup>158</sup> The WTO has jurisdiction over only its member states – it has no jurisdiction over, and thus no power to compel compliance by, private actors behaving in truly private fashion.<sup>159</sup> The United States must prove that the Chinese Encryption Standards meet the WTO Appellate Body’s requirements for a measure. The Appellate Body does not require a complainant to show a specific law or regulation to establish a measure.<sup>160</sup> In *Japan – Trade in Semi-conductors*, the Japanese government exercised administrative guidance to promote the equivalent of a “Buy American” policy.<sup>161</sup> The Japanese Ministry of International Trade and Industry encouraged companies to buy Japanese, though no apparent statute or regulation mandated them to comply.<sup>162</sup> The Appellate Body held without equivocation that such non-binding administrative guidance by the government can constitute a measure actionable under GATT Article XXIII.<sup>163</sup>

The United States will argue that China’s treatment of the Encryption Standards mirrors or exceeds Japan’s treatment of the semi-conductor industry. The Chinese government has restricted distribution of critical security keys for WAPI, without which the standard cannot function, to a handful of major Chinese corporations.<sup>164</sup> The United States will argue that such restriction implies government encouragement to “Buy Chinese,” as it were, and deal only with that handful of domestic companies. Just as the Japanese government locked out foreign semi-conductors through encouraging the use of domestic products, the Chinese government here is locking out foreign routers and other internet connectivity products by encouraging the use of encryption available only to domestic products. Furthermore, the Chinese market is dominated by

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<sup>156</sup> DSU, *supra* note 76, at art. 21.3.

<sup>157</sup> GATT, *supra* note 53, at art. 23.

<sup>158</sup> *Id.* (requiring nullification or impairment to arise from the action of a contracting party’s breach of GATT or other imposed measure).

<sup>159</sup> *See id.*

<sup>160</sup> *See* Report of the Panel, *Japan – Trade in Semi-conductors*, L/6309 (May 4, 1988), GATT B.I.S.D. (35th Supp.) at 116, 132-35 (1988) (measure existed even without “clear or published denial by the Government of Japan of the existence of preferential market access”).

<sup>161</sup> *Id.* at 132-33 (noting that Japanese administrative guidance unfairly promoted the purchase of domestic goods as opposed to foreign goods of equal quality).

<sup>162</sup> *Id.*

<sup>163</sup> *Id.* at 150. *See also* GATT ANALYTICAL INDEX, *supra* note 62, at 645-48 (discussing when discretionary legislation, including non-binding administrative guidance, constitutes a government measure).

<sup>164</sup> Gibson, *supra* note 6, at 47.

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State-Owned Enterprises (SOEs).<sup>165</sup> An SOE is a corporation or enterprise that is funded entirely by the state, or in which the state is the plurality shareholder.<sup>166</sup> Based on the 2008 National Economic Census, SOEs control 30% of the total assets within the Chinese industrial and service economic sectors.<sup>167</sup> SOE control of the Chinese economy expands to 43.8% when the raw material sector is included.<sup>168</sup> The United States Department of Commerce has designated China as a nonmarket economy.<sup>169</sup> The United States will argue that if administrative guidance in free-market Japan constitutes an actionable government measure, then similar administrative guidance in SOE-dominated, state-regulated-market China is an actionable measure as well.

Though broad, the Appellate Body's treatment of when a measure exists is not without limits. The complainant must produce some evidence that compliance with government influence within the market is likely – entirely private actions cannot be litigated before the WTO, no matter how injurious to other WTO members.<sup>170</sup> In *Japan – Film*, the Japanese government distributed a manual describing the systemization of distribution of film for sale.<sup>171</sup> The manual encouraged the stocking of domestic film only, to keep domestic industry strong.<sup>172</sup> The Japanese claimed the manual was only for internal government use, while the Americans argued that the manual constituted a measure.<sup>173</sup> In a blowout defeat for the United States, the Appellate Body completely rejected the American argument and, as a result, threw out the entire complaint against Japan.<sup>174</sup> China will argue that *Japan – Film*, not *Japan – Semi-conductor*, controls the current claim. They may argue that the Encryption Standards exist for the benefit of internal research and development, and not for actual use within the consumer market. Further, China will contest its nonmarket economy designation by the United States as self-serving and devoid of legal weight, and argue that it is decreasing SOE involvement in the domestic economy as quickly as is reasonable.<sup>175</sup>

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<sup>165</sup> Gao Xu, *State-owned enterprises in China: How big are they?*, WORLD BANK BLOGS (Jan. 19, 2010), <http://blogs.worldbank.org/eastasiapacific/state-owned-enterprises-in-china-how-big-are-they> (archived at <http://perma.cc/L6F4-ADB8>).

<sup>166</sup> *Id.*

<sup>167</sup> *Id.*

<sup>168</sup> *Id.*

<sup>169</sup> *Shanghai Foreign Trade Enters. Co. v. United States*, 318 F. Supp. 2d 1339, 1340 (Ct. Int'l Trade 2004).

<sup>170</sup> See Panel Report, *Japan – Measures Affecting Consumer Photographic Film and Paper*, ¶ 10.4.02 - .04, WT/DS44/R (Mar. 31, 1998) (finding no measure where United States failed to prove likelihood of compliance with government manual).

<sup>171</sup> *Id.* at ¶ 2.23.

<sup>172</sup> See *id.* at ¶¶ 2.22, 2.24-.25.

<sup>173</sup> *Id.* at ¶ 2.23, n.43.

<sup>174</sup> *Id.* at ¶¶ 10.402-04.

<sup>175</sup> See Fayen Wong & Ruby Lian, *China says poor performing SOEs to be 'severely*



The Panel would likely hold that an actionable government measure exists. *Japan – Semi-conductors* serves as a very broad definition for government measure.<sup>176</sup> Where a complainant can show the existence of government encouragement to engage in anti-competitive trade behavior, even if that encouragement is nonbinding, the Panel will hold for the complainant and allow the case to proceed. Although no current policy of mandating the Encrypted Standards is enforced, such policies have existed in the recent past.<sup>177</sup> Further, Chinese government influence in domestic markets is pervasive and powerful, as evidenced by the massive market shares controlled by SOEs.<sup>178</sup> Here, WAPI is particularly problematic, because its critical security key has been distributed to a select few corporations.<sup>179</sup> The Chinese government may control, in part or in whole, the corporations that possess the WAPI key. Even if those corporations operate independently from the government, it is reasonable to assume that the government would retain the ability to revoke the WAPI keys from a corporation that behaved contrary to government expectations. Thus, the Panel is very likely to find the existence of a measure, and allow the United States' case to proceed.

The United States must then establish that the Chinese policies are technical regulations, before the Panel's inquiry can continue.<sup>180</sup> The restrictions of Article 2 of the TBT Agreement apply only to "technical regulations."<sup>181</sup> Annex 1 of the TBT Agreement defines both technical regulations and standards. The key difference between a technical regulation and a standard is that compliance is mandatory with only the former.<sup>182</sup> The definitions of both technical regulation and standard include labeling requirements and several other aspects not directly related to a product's operation or production.<sup>183</sup> To synthesize the specific terms of the TBT Agreement with the prior discussion of "standard" as a general term, the black letter restrictions of Article 2 of the TBT Agreement apply only to *mandatory standards*.

The United States will argue from prior Appellate Body cases and from the

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dealt with', REUTERS (Dec. 29, 2013, 5:36 AM), <http://www.reuters.com/article/2013/12/29/us-china-economy-soe-idUSBRE9BS03L20131229> (archived at <http://perma.cc/Y75Y-SJPX>).

<sup>176</sup> See *supra* note 163 and accompanying text.

<sup>177</sup> See *supra* note 127 and accompanying text.

<sup>178</sup> For a brief discussion of the scale and influence of SOEs in Chinese markets, see *supra* note 165 and accompanying text.

<sup>179</sup> Gibson, *supra* note 6, at 47.

<sup>180</sup> See Appellate Body Report, *European Communities – Trade Description of Sardines*, ¶ 175, WT/DS231/AB/R (July 29, 2003) (holding that whether something is a technical regulation at all is the threshold question of a TBT Agreement Article 2 dispute) [hereinafter *EC – Sardines*].

<sup>181</sup> TBT Agreement, *supra* note 2, at art. 2.1.

<sup>182</sup> Compare *id.* at Annex 1 § 1 (compliance with technical regulations is mandatory) with *id.* at Annex 1 § 2 (compliance with standards is not mandatory).

<sup>183</sup> See *id.*



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TBT Agreement itself that the Chinese policies are mandatory, and thus are technical regulations subject to the restrictions of Article 2 of the TBT Agreement.<sup>184</sup>

The Chinese treatments of WAPI, UHT/EUHT, and ZUC all constitute technical regulations because they i) apply to an identifiable group of products, even if that group is not specified in the document; ii) require or prohibit certain characteristics of the product, either intrinsic or extrinsic; and iii) establish that compliance with their terms is mandatory.<sup>185</sup> The United States will argue that the Appellate Body has interpreted both the TBT Agreement itself and the *EC – Sardines* requirements to favor defining a document as a technical regulation.<sup>186</sup> In *US – Tuna*, the Appellate Body considered whether a United States federal regulation enacting the “dolphin-safe” labeling scheme fell within the definition of a technical regulation. The regulation governed the large-scale fishing of tuna.<sup>187</sup> Specifically, it restricted deceptive advertising by prohibiting the use of “dolphin-safe” labels except where the tuna was actually harvested in a dolphin-safe manner.<sup>188</sup> The regulation did not make dolphin-safe harvesting practices mandatory.<sup>189</sup> The United States maintained that the regulation by definition *could not* be mandatory, because tuna products could be sold in United States markets with or without the “dolphin-safe” label.<sup>190</sup> The Appellate Body held that the regulation was still mandatory, and thus was a technical regulation and subject to TBT Agreement restrictions.<sup>191</sup> That the regulation was not mandatory for selling the product in a certain market was not dispositive of the regulation being a technical regulation. While it was possible to sell tuna with or without the dolphin-safe label, compliance with the dolphin-safe regulation was mandatory in order to make a dolphin-safe claim.<sup>192</sup> The United States will argue that the Appellate Body explicitly rejected a formalist interpretation that would focus on the “binding nature of the document containing the labeling scheme” and disregard “the substance of the product characteristics.”<sup>193</sup> The mandatory quality of the labeling scheme came not from whether manufacturers could choose whether to apply it, but

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<sup>184</sup> *Id.* at art. 2. For likely United States arguments, see USTR TBT REPORT, *supra* note 11, at 54-55, discussing existing United States objections to Chinese treatment of these standards.

<sup>185</sup> *EC – Sardines*, WT/DS231/AB/R at ¶ 176 (holding that whether something is a technical regulation at all is the threshold question of a TBT Agreement art. 2 dispute).

<sup>186</sup> Appellate Body Report, *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, ¶ 303, WT/DS381/AB/R (May 16, 2012).

<sup>187</sup> *Id.* at ¶ 12.

<sup>188</sup> *Id.*

<sup>189</sup> *Id.*

<sup>190</sup> *Id.* at ¶ 16.

<sup>191</sup> *Id.* at ¶ 303.

<sup>192</sup> *Id.* at ¶ 196.

<sup>193</sup> *Id.* at ¶ 154.

from the fact that the regulation mandated a specific behavior before the manufacturer could apply the label.

The United States will argue that Chinese policies regarding WAPI, UHT/EUHT, and ZUC all satisfy the three requirements of *EC – Sardines* and the broad interpretation of *US – Tuna*, and thus constitute technical regulations. At one time, Chinese certification and accreditation agencies would only approve devices with WAPI, such approval being necessary to sell the device in the Chinese market.<sup>194</sup> As recent as 2011, MIIT refused to certify devices that were not WAPI-compatible.<sup>195</sup> WAPI itself is incompatible with 802.11x – even if an American company complied with WAPI, it could not do so with its regular stock and would have to redesign its own product to fit WAPI. Thus, compliance with the WAPI standard is mandatory to access the Chinese market. UHT/EUHT raises substantially the same issues as WAPI – it is an alternate transmission standard developed by the Chinese government, and it is likely incompatible with its internationally-accepted competitor. ZUC received a similar treatment, with the Chinese government briefly declaring ZUC compliance mandatory. MIIT’s informal proclamation that Chinese mobile phones must incorporate the ZUC encryption algorithm conditions entry into the Chinese market on mandatory compliance with a specific domestic-produced standard. China only enforces these standards as mandatory on an on-again-off-again basis. Though the enforcement is inconsistent, because enforcement would effectively bar noncompliant products from the Chinese market, the Panel would likely hold that the measure is a technical regulation, in view of *US – Tuna*’s expansive interpretation of technical regulations.

China will argue that its standards are currently voluntary, and thus by definition outside the restrictions of the TBT Agreement. ZUC in particular has been internationally approved as one of several voluntary encryption algorithms within the larger 4G LTE transmission standard. Likewise, UHT/EUHT is being developed as a competitor against 802.11, not as a mandatory replacement. No Chinese agency has declared UHT/EUHT compliance mandatory as a precursor for accreditation to sell in China. Further, whether UHT/EUHT and 802.11x are incompatible is still an open question. The TBT Agreement bans quotas and other unfair restrictions on trade, such as allowing one kind of cigarette while banning another<sup>196</sup> – not preventing the fair development of competing alternative standards.

In view of the Appellate Body’s broad interpretation of what constitutes a technical regulation, and the special danger of restrictions in the information technology sector,<sup>197</sup> the Panel will likely hold that Chinese support for WAPI

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<sup>194</sup> China: Intellectual Property, *supra* note 121, at 5-16.

<sup>195</sup> USTR TBT REPORT, *supra* note 11, at 54-55.

<sup>196</sup> Appellate Body Report, *US – Measures Affecting the Production and Sale of Clove Cigarettes*, ¶ 292.b.ii, WT/DS406/AB/R (Apr. 4, 2012) (ruling against a US federal ban on predominately foreign-made clove cigarettes) [hereinafter *US – Clove Cigarettes*].

<sup>197</sup> See Kim Bhasin, *ELON MUSK: ‘If We Published Patents, It Would Be Farcical’*,

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and ZUC both constitute mandatory technical regulations – however, its support for UHT/EUHT likely does not. The Appellate Body’s evaluation of the threshold question of whether a document is a technical regulation is very broad. The Chinese domestic standards bear resemblance to the issue addressed in *US – Tuna*, in that they cannot be marketed with a specific title (accreditation by the Chinese government) without first complying with Chinese standards and regulations (utilizing WAPI, UHT/EUHT, or ZUC). Mobile devices sold in China must be accredited by a state agency. The United States has shown that state agencies have refused to grant accreditation to devices that did not comply with WAPI as late as 2011. In addition, MIIT informally requires all mobile phones sold in China to incorporate ZUC. These standards thus likely satisfy the Appellate Body’s relatively broad interpretation of technical regulation. However, in terms of UHT/EUHT, the Panel will likely not reach so far to include the developing standard. Whether the Chinese standard is as incompatible with 802.11x as WAPI is still debated by its developers; further, no Chinese agency has mandated compliance with UHT/EUHT. The United States’ fear that compliance may become mandatory is insufficient on this point.

V. CHINA’S SUPPORT FOR THE ENCRYPTION STANDARDS BREACHES CHINA’S OBLIGATIONS UNDER THE TBT AGREEMENT

With this threshold question answered, the argument now shifts to Article 2.1 of the TBT Agreement. The United States will argue that the Chinese trade policies treat foreign products less favorably than domestic products, in violation of Article 2.1.<sup>198</sup> To analyze whether a trade policy accords foreign products less favorable treatment than domestic products, the judicial body of the GATT held that the complainant must show that i) the imported and domestic products are “like products;” ii) the measure at issue is a “law, regulation, or requirement affecting their internal sale”; and iii) that the imported products are accorded “less favourable” treatment than a like domestic product.<sup>199</sup> Though the GATT court’s test analyzed violations of the earlier GATT National Treatment standard, the Appellate Body adopted the same standard to analyze potential violations of Article 2.1 of the TBT

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BUS. INSIDER (Nov. 9, 2012, 11:58 AM), <http://www.businessinsider.com/elon-musk-patents-2012-11> (archived at <http://perma.cc/2BVS-BTDA>) (discussing Elon Musk, of SpaceX Corp., and his refusal to patent and thereby publicly disclose inventions); Communication from the People’s Republic of China, *Intellectual Property Right (IPR) Issues in Standardization*, WTO Committee on Technical Barriers to Trade, ¶ 7, G/TBT/W/251 (May 25, 2005) (noting that IPR issues are intertwined with the goals of the TBT Agreement).

<sup>198</sup> See TBT Agreement, *supra* note 2, at art. 2.1.

<sup>199</sup> Appellate Body Report, *Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, ¶ 133, WT/DS161/AB/R (Dec. 11, 2000).

Agreement in *US – Clove Cigarettes*.<sup>200</sup>

In *US – Clove Cigarettes*, the same case to adopt the tripartite test above, the Appellate Body also held that the analysis must consider “whether the detrimental impact on imports stems exclusively from a legitimate regulatory distinction rather than reflecting discrimination against the group of imported products.”<sup>201</sup> Treatment is less favorable only where the measure at issue imposes some form of detriment to the imported products in competition against domestic products. The complainant must show that the detriment reflects discrimination. If the measure supports a legitimate regulatory distinction, then it does not infringe upon a member’s obligations under Article 2.1. Article 2 contains a non-exhaustive list of “legitimate objectives,” including “national security requirements [and] the prevention of deceptive practices.”<sup>202</sup> Article 2 also contains a non-exhaustive list of elements to consider, including “available scientific and technical information, related processing technology or intended end-uses of products.”<sup>203</sup>

The United States will argue that China’s policies favor their various domestic standards in a discriminatory fashion. WAPI, UHT/EUHT, and 802.11x are all like products in that they provide identical services – connection to the internet through a wireless local area network. The incompatibility of WAPI and UHT/EUHT with the internationally accepted standard of 802.11x forces American companies to redesign products that are otherwise acceptable throughout the international market to sell within the Chinese market. This mandatory redesign imposes a direct monetary cost on foreign companies seeking to enter the Chinese market. Requiring foreign companies to redesign their products for domestic sales is, in effect, similar to imposing a tariff – entry is conditioned on paying some higher cost than entry into regular markets.

Should an American company choose to redesign their product, that company must first obtain a license to use the domestic technology. This is most problematic in terms of WAPI, because the Chinese government only gave the necessary encryption codes to a handful of Chinese corporations.<sup>204</sup> This government-imposed oligopoly will likely lead to much higher licensing fees for WAPI than a free market would allow for another standard. The licensing process will also likely force American corporations to disclose intellectual property to their Chinese partners.<sup>205</sup> Companies are commonly leery of exposing their IP to Chinese companies, fearing theft and

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<sup>200</sup> *US – Clove Cigarettes*, *supra* note 196, at ¶ 176. The Appellate Body also noted that TBT Agreement art 2.1 is “expressed in the same terms as that of” the GATT’s original National Treatment provision. *Id.*

<sup>201</sup> *Id.* at ¶ 182.

<sup>202</sup> TBT Agreement, *supra* note 2, at art. 2.2.

<sup>203</sup> *Id.*

<sup>204</sup> Gibson, *supra* note 6, at 47.

<sup>205</sup> See USTR TBT REPORT, *supra* note 11, at 54-56.

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replication.<sup>206</sup> To comply with Chinese standards, foreign companies would have to submit their products for review to organizations closely affiliated with the government.<sup>207</sup> The products would also have to undergo testing in labs that are likely affiliated or owned by the Chinese government.<sup>208</sup> Finally, because WAPI's necessary encryption algorithm is restricted to a handful of government-designated Chinese companies, those companies have exclusive control over the standard. They are not under any obligation to trade with American companies, while American companies are under a *de facto* obligation to trade with the companies possessing the secret codes if they wish to enter the massive Chinese market.<sup>209</sup>

China will maintain that the standards are not discriminatory because they do not affect 'like' products, and no foreign products are accorded less favorable treatment than like domestic products. WAPI is a distinct product from 802.11x, developed for the more security-minded in the wake of the discovery of WEP's significant faults. UHT/EUHT builds on WAPI's security focus by providing greater speed. They compete in similar markets as 802.11x, but while the Chinese standards appeal to the discerning customer focused on security in the modern world, 802.11x devices appeal to the regular consumer looking for a device that he could take with him on his international travels.

In the absence of an Article XXI defense, the Panel will likely hold that mandating either WAPI or UHT/EUHT is discriminatory against 802.11 devices. Because the domestic standards are incompatible with 802.11,<sup>210</sup> and because the state has shown interest in mandating WAPI and UHT/EUHT,<sup>211</sup> the Panel will likely find that they are discriminatory against foreign standards. This is reinforced by WAPI's status as a *de facto* mandatory standard, as asserted in the USTR 2013 Report on Technical Barriers to Trade.<sup>212</sup> ZUC, however, is likely not discriminatory because of its status as one of three related internationally-approved, voluntary standards for 4G LTE encryption. Notably, ZUC is the only member of this group of domestic standards that has received full international approval.<sup>213</sup> Having been incorporated into an

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<sup>206</sup> See Bhasin, *supra* note 197 (expressing fear that China will treat patents as a "recipe book").

<sup>207</sup> UNITED STATES TRADE REPRESENTATIVE, 2013 REPORT TO CONGRESS ON CHINA'S WTO COMPLIANCE 59 (2013) [hereinafter USTR WTO REPORT], *available at* <http://www.ustr.gov/sites/default/files/2013-Report-to-Congress-China-WTO-Compliance.pdf> (archived at <http://perma.cc/VZE9-LAVT>). See Updegrove, *supra* note 50, at 13 (noting that products must be certified by the China National Regulatory Commission).

<sup>208</sup> See USTR WTO Report, *supra* note 207, at 65.

<sup>209</sup> *Id.*

<sup>210</sup> JIANFENG MA ET AL., *supra* note 126, at 104.

<sup>211</sup> China: Intellectual Property, *supra* note 121, at 5-16.

<sup>212</sup> USTR TBT REPORT, *supra* note 11, at 55.

<sup>213</sup> See USTR WTO REPORT, *supra* note 207, at 59 (noting that 3GPP, responsible for 3G/4G standards generally, "had approved ZUC as a voluntary standard").

official variant standard under the larger 4G LTE umbrella, the Panel will likely find that ZUC is not discriminatory.

VI. THE GENTLEMAN'S AGREEMENT: NATIONAL SECURITY AND GATT  
ARTICLE XXI

If China becomes involved in a serious WTO dispute regarding its Encryption Standards, China will very likely invoke Article XXI's national security exception in its defense.<sup>214</sup> China's stated reasons for supporting the Encryption Standards highlight the country's security concerns inherent in cryptographic standards – specifically, the choice of allegedly-secure domestic standards over allegedly-unsecure international standards. If China invokes Article XXI, they will likely argue that the Encryption Standards are intended to supplement or replace existing international standards within the domestic Chinese market, in light of the weaknesses in international standards of encryption documented in materials leaked by Edward Snowden.<sup>215</sup>

The only Article XXI case that has ever reached a GATT or WTO Panel is *US – Nicaragua*.<sup>216</sup> On May 7, 1985, the United States formally notified the WTO of its total embargo of the Nicaraguan market.<sup>217</sup> President Reagan's Executive Order enacting the embargo expressly described Nicaraguan policies as posing "an unusual and extraordinary threat to the national security" of the United States.<sup>218</sup> Nicaragua protested that the embargo violated several Articles of the GATT, including the key obligations of Most Favored Nation and National Treatment.<sup>219</sup> Nicaragua further protested that the United States instituted the embargo based on coercive intent, not national security.<sup>220</sup> It argued that the United States' national security concerns were "arbitrary;" that the measures adopted for national security concerns must correspond in some way to the situation producing those concerns; and that WTO members should judge whether a state of "war or other international relations emergency" exists.<sup>221</sup> The United States responded that its embargo of Nicaragua was covered under Article XXI:(b)(iii) and that the national security exception

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<sup>214</sup> AHRENS, *supra* note 65, at 10.

<sup>215</sup> Beginning June 2013, Edward Snowden, a private contractor for the United States government, leaked a series of classified government documents, many concerning government digital surveillance, leading to massive press coverage by both American and foreign news agencies. For a summary of leaks with links to press reports, see Paul Szoldra, *SNOWDEN: Here's Everything We've Learned In One Year Of Unprecedented Top-Secret Leaks*, BUS. INSIDER (June 7, 2014, 1:21 AM), <http://www.businessinsider.com/snowden-leaks-timeline-2014-6> (archived at <http://perma.cc/Z4AS-FH62>).

<sup>216</sup> See *US – Nicaragua*, *supra* note 67, at ¶¶ 1.1-1.2.

<sup>217</sup> See *id.* at ¶ 1.1.

<sup>218</sup> Exec. Order. No. 12,513, 50 Fed. Reg. 18,629 (May 1, 1985).

<sup>219</sup> GATT ANALYTICAL INDEX, *supra* note 62, at 603.

<sup>220</sup> *Id.*

<sup>221</sup> *Id.*



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leaves determination of what measures are necessary to protect essential security interests up to the invoking member.<sup>222</sup>

The GATT Panel reviewing *US – Nicaragua* stated, in accordance with its terms of reference, that Article XXI “left it to each [member state] to judge what actions it considered necessary for the protection of its essential security interests.”<sup>223</sup> Because only the invoking member is competent to judge the invocation of an Article XXI defense, the Panel itself was precluded from considering either the validity of or the motivation for the American invocation of Article XXI.<sup>224</sup>

The above framework established, the Panel then noted that the embargo had severely injured the Nicaraguan economy and damaged free trade in the eyes of the world.<sup>225</sup> On these facts, it first held that the American embargo of Nicaragua, regardless of Article XXI, contravened certain basic goals of the GATT, including the fostering of free trade, the development of less-developed members’ economies, and the reduction of trade uncertainties.<sup>226</sup> However, the Panel also held that Article XXI of the GATT clearly protected the security interests of GATT members. The GATT did not contemplate the surrender of essential security interests for the sake of its other aims.<sup>227</sup> Instead, the GATT required each member to weigh “its security needs against the need to maintain stable trade relations.”<sup>228</sup> The Panel thus envisioned every invocation of Article XXI as a high-stakes balancing act. The United States viewed the Panel’s ruling favorably and continued the embargo until 1990.<sup>229</sup>

The United States will argue that the *US – Nicaragua* dispute is irrelevant to the current complaint against China. The Report of the Panel in *US – Nicaragua* was not adopted by the GATT. Commentators on the application of Article XXI often read the non-adoption of the Report to mean the Report’s contents are non-binding – colloquially, that the Report is bad law.<sup>230</sup> Criticism also extends to the terms of reference under which the GATT Panel

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<sup>222</sup> See *US – Nicaragua*, *supra* note 67, at ¶ 4.4.

<sup>223</sup> *Id.* at ¶ 1.2.

<sup>224</sup> *Id.* at ¶ 5.2.

<sup>225</sup> *Id.* at ¶ 5.16.

<sup>226</sup> *Id.*

<sup>227</sup> *Id.*

<sup>228</sup> *Id.*

<sup>229</sup> John A. Spanogle, Jr., *Can Helms-Burton Be Challenged Under WTO?*, 27 STETSON L. REV. 1313, 1329-30 (1998). On March 13, 1990, President George H.W. Bush issued an executive order declaring that Nicaragua’s recent election “ended the unusual and extraordinary threat to the national security and foreign policy of the United States previously posed by the policies and actions of the [prior] government,” officially terminating the embargo. Exec. Order No. 12,707, 55 Fed. Reg. 9,707 (Mar. 13, 1990).

<sup>230</sup> See, e.g., AHRENS, *supra* note 65, at 10; Spanogle, Jr., *supra* note 229, at 1331 (arguing that the Report has little power as legal precedent).



deliberated.<sup>231</sup> These terms of reference precluded the Panel from considering the validity of, nor motivation for, a member's invocation of Article XXI.<sup>232</sup> Instead, the United States will argue that the Chinese invocation of national security resembles the Swedish invocation of national security to block all imported footwear.<sup>233</sup> In 1975, as its domestic footwear industry failed due to foreign competition, the government of Sweden instituted a complete ban on the import of footwear.<sup>234</sup> The ban clearly stated that its purpose was to protect Sweden's national security interest – one cannot fight a war without shoes.<sup>235</sup> Immediately after the Swedish representative notified the GATT council of this policy, he fell under intense criticism from many GATT members.<sup>236</sup> Sweden later withdrew the policy of its own volition.<sup>237</sup>

In terms of precedential value, China will argue that the United States' criticism of *US – Nicaragua* overstates the effect of the non-adoption of a GATT Panel Report. The GATT legal system required unanimous assent in several successive stages, including the setting of a Panel's terms of reference, the selection and number of panelists to hear a complaint, and the final adoption of a Panel.<sup>238</sup> All parties to the *US – Nicaragua* dispute thus assented to the terms of reference the Panel used to decide the case.<sup>239</sup> The GATT members did not adopt the report because Nicaragua refused to assent to it after the Panel rejected their complaint.<sup>240</sup> China does not need the case to carry full precedence. With the same terms of reference, which the GATT members already unanimously agreed to for the *US – Nicaragua* dispute, China will necessarily prevail with an Article XXI defense.<sup>241</sup> Lastly, the members of the GATT unanimously assented to a later measure endorsing *US – Nicaragua* Panel's conclusion that Article XXI was an "important element for safeguarding the rights" of the GATT's members.<sup>242</sup>

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<sup>231</sup> AHRENS, *supra* note 65, at 11.

<sup>232</sup> *US – Nicaragua*, *supra* note 67, at ¶ 5.2.

<sup>233</sup> See Notification of Global Import Quota, *Sweden – Import Restrictions on Certain Footwear*, ¶¶ 4-8, L/4250 (Nov. 17, 1975).

<sup>234</sup> *Id.* at ¶¶ 7-9.

<sup>235</sup> *Id.* at ¶ 4.

<sup>236</sup> GATT Council, Minutes of Meeting held October 31, 1975, GATT Doc. C/M/109, at 8-9 (Nov. 10, 1975).

<sup>237</sup> GATT ANALYTICAL INDEX, *supra* note 62, at 603.

<sup>238</sup> Erwin P. Eichmann, *Procedural Aspects of GATT Dispute Settlement: Moving Towards Legalism*, 8 INT'L TAX & BUS. LAW. 38, 70 (1990).

<sup>239</sup> *US – Nicaragua*, *supra* note 67, at ¶ 1.

<sup>240</sup> GATT ANALYTICAL INDEX, *supra* note 62, at 604.

<sup>241</sup> The terms of reference preclude a Panel from considering the validity of or motivation for an Article XXI invocation. *US – Nicaragua*, *supra* note 67, at ¶ 5.16. An Article XXI defense cannot be rejected without considering its validity or motivation. *Id.* Thus, the terms of reference require the Panel to accept the Article XXI defense. *Id.*

<sup>242</sup> *Decision concerning Article XXI of the General Agreement* (Dec. 2, 1982), L/5426 GATT BISD (29th Supp.) at 23-24 (1983).

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Further, the facts of *US – Nicaragua* are directly analogous to the Chinese case. Both cases involve one country's national security interests being threatened by another country's actions. The United States was threatened by the Nicaraguan government then in power; China is currently threatened by the extensive security weaknesses in international encryption standards exposed by Edward Snowden's leaks. On March 22, 2014, Huawei, one of the largest Chinese electronics manufacturers, discovered that its internal networks had been breached by the NSA.<sup>243</sup> The NSA has also programmed backdoors, or deliberate security weaknesses to exploit for later ease of access, in at least one other major encryption standard, RSA.<sup>244</sup> The full extent of the NSA's infiltration of RSA is likely deeper than publicly known, and more backdoors may exist.<sup>245</sup> By their nature, anyone who knows of a backdoor's existence may be able to use it to breach a system.<sup>246</sup> As American companies develop and maintain the 802.11x standard, it is possible that the NSA or other American intelligence agencies have infiltrated those standards. Continued Chinese use of these standards presents a serious threat to the security of Chinese networks and could undermine public trust in online transactions of any sort. Modern life relies extensively on wireless networks, and such networks are critical in activities ranging from commerce to military communications.

Cryptography is tied deeply to national security.<sup>247</sup> All combatants in World War II employed vast resources in both creating their own codes and breaking their opponents' codes.<sup>248</sup> The Allied capture of codebooks and other elements

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<sup>243</sup> See Sanger & Perlroth, *supra* note 110.

<sup>244</sup> Russel Brandom, *NSA paid \$10 Million to put its backdoor in RSA encryption, according to Reuters report*, THE VERGE (Dec. 20, 2013, 4:54 PM), <http://www.theverge.com/2013/12/20/5231006/nsa-paid-10-million-for-a-back-door-into-rsa-encryption-according-to> (archived at <http://perma.cc/5NVG-V9N8>).

<sup>245</sup> Joseph Menn, *Exclusive: NSA infiltrated RSA security more deeply than thought – study*, REUTERS (Mar. 31, 2014, 4:27 PM), <http://www.reuters.com/article/2014/03/31/us-usa-security-nsa-rsa-idUSBREA2U0TY20140331> (archived at <http://perma.cc/J8J5-DLHM>).

<sup>246</sup> Kim Zetter, *How a Crypto 'Backdoor' Pitted the Tech World Against the NSA*, WIRED MAG. (Sept. 24, 2013, 6:30 AM), available at <http://www.wired.com/2013/09/nsa-backdoor/all/> (archived at <http://perma.cc/RVQ5-7UVW>).

<sup>247</sup> Winston Churchill informed King George VI that it “was thanks to ULTRA that [the Allies] won the war.” *History of World War Two: Code Breaking*, HIST. CHANNEL, <http://www.history.co.uk/study-topics/history-of-ww2/code-breaking> (last visited Jan. 19, 2015) (archived at <http://perma.cc/UVK3-TBM3>).

<sup>248</sup> See, e.g., Andrew Lycett, *Breaking Germany's Enigma Code*, BBC (Feb. 17, 2011), [http://www.bbc.co.uk/history/worldwars/wwtwo/enigma\\_01.shtml](http://www.bbc.co.uk/history/worldwars/wwtwo/enigma_01.shtml) (archived at <http://perma.cc/A7QQ-DHPY>) (detailing British efforts); *War of Secrets: Cryptology in WWII*, NAT'L MUSEUM OF THE U.S. AIR FORCE (Oct. 17, 2014), <http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=9722> (archived at <http://perma.cc/93A7-SVLA>) (detailing American efforts).

of the German Enigma machine were decisive in the Allied war effort in the Atlantic.<sup>249</sup> Likewise, American submarines accounted for over half of all Japanese merchant shipping losses, and helped to cripple the island nation's economy.<sup>250</sup> In 1942, the Chicago Tribune published a story all-but-declaring that the United States had breached Japanese naval codes.<sup>251</sup> The United States Department of Justice believed the story severely damaged American national security, and moved to prosecute the reporters responsible.<sup>252</sup>

If the national security of the United States can be endangered by the internal politics of Nicaragua, then the existence of genuine backdoors and security weaknesses in wireless transmissions standards used in civil and military fields can certainly endanger Chinese national security. Further, whether the TBT Agreement's application to cryptography makes sense in the first place is a significant question. The TBT Agreement's goals of harmonization and transparency are arguably inconsistent with the fundamental goal of cryptography – secrecy and control.

Regardless of whether comparison to Sweden's total import ban is appropriate, the Swedish ban remained in place for two years without legal challenge. If interpretation of international trade law "is determined by what sovereigns do,"<sup>253</sup> then what they *did* was allow Sweden to keep its total ban in place and active until Sweden – and Sweden alone – decided to repeal it.<sup>254</sup> It is entirely possible that Sweden revoked the ban only after it was satisfied that its national security concerns had lapsed. In *US – Nicaragua*, the United States

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<sup>249</sup> See *War of Secrets: Cryptology in WWII*, *supra* note 248 (noting that "capturing secret code books was a key to breaking Axis codes," and describing several incidents of such capture).

<sup>250</sup> U.S. STRATEGIC BOMBING SURVEY, THE WAR AGAINST JAPANESE TRANSPORTATION 47 (1947).

<sup>251</sup> Jess Bravin, *Echoes From a Past Leak Probe*, WALL. ST. J. (Aug. 7, 2013, 11:55 AM), <http://online.wsj.com/news/articles/SB10001424127887323420604578651951028990338> (archived at <http://perma.cc/YWV7-GLVP>).

<sup>252</sup> *Id.* The Department of Justice chose not to prosecute in the end, likely to avoid drawing further attention to the story. *Id.* It appears the gamble worked and the Japanese did not discover the breach. *Id.*

<sup>253</sup> Spanogle, Jr., *supra* note 229, at 1331.

<sup>254</sup> Contrast the repeated attempts by the United States to use safeguards to protect its own industries. Very quickly after the US establishes a safeguard, injured GATT members will file complaints. Without fail, the complainants will prevail against the US, and the US will quickly revoke its safeguards. See, e.g., Appellate Body Report, *United States – Definitive Safeguard Measures on Imports of Certain Steel Products*, ¶ 513, WT/DS248/AB/R – WT/DS/259/AB/R (Nov. 10, 2003); Appellate Body Report, *US – Definitive Safeguard Measures on Imports of Circular Welded Carbon Quality Line Pipe from Korea*, ¶ 264, WT/DS202/AB/R (Feb. 15, 2002); Appellate Body Report, *US – Safeguard Measures on Imports of Fresh, Chilled, or Frozen Lamb Meat from New Zealand and Australia*, ¶ 197, WT/DS177/AB/R & WT/DS178/AB/R (May 1, 2001).

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revoked its embargo of Nicaragua only after it officially declared the national security concerns to be resolved. On this basis, China would be justified in going as far as totally banning foreign encryption standards. The narrower measure of encouraging domestic use of the Encryption Standards, then, is certainly permissible under WTO law.

#### VII. CONCLUSION

A WTO Panel, in a dispute over the Encryption Standards invoking Article XXI's national security exception, is very likely to produce a dual ruling akin to the GATT Panel Report in *US – Nicaragua*: that China has breached its obligations, yet that breach is justified under Article XXI's national security exception. Any ruling to the contrary would require the Panel to ignore the terms of reference set in *US — Nicaragua* and rule on the validity or motivation of China's invocation of Article XXI. As national security goes to the core of a sovereign's responsibility, the consequences of a new formal interpretation of Article XXI would be severe – and beyond the scope of this Note.