Stanford Technology Law Review

# The ITU and the Internet's *Titanic* Moment

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CITE AS: 2012 STAN. TECH. L. REV. 8
http://stlr.stanford.edu/pdf/ryan-theituandtheinternetstitanicmoment.pdf

## I. INTRODUCTION

¶1 Try this: Mention the International Telecommunication Union (ITU) to a few casual Internet users, Netizens, or even the most senior-level computer programmers and technology experts and gauge their reaction. Few are likely to know what you're talking about. Most will likely think you're referring to either a telecommunications *labor* union or some kind of international working group. Only the most informed will know that the ITU is one of the most influential (and in fact the oldest) technology-based standard-setting and treaty-making institutions in the world. While it's now a subsidiary of the United Nations (UN), the ITU predated the UN by more than 75 years, having been founded in 1865 to help coordinate the international standardization of telegraph signals.[1] One of the most memorable forays that the ITU made into the international legal system happened 100 years ago when the seeds were planted for the ITU to take on the role of intergovernmental coordination on spectrum matters in the wake of the *Titanic* disaster. Today, the ITU's primary mandate is for all intents and purposes limited to telecommunications; however, the ITU is currently working to gain relevancy in the areas of Internet security, privacy, and it is setting up a shop to compete with the open standardization bodies that built the Internet.

¶2 While the ITU isn't exactly a household name, it nonetheless may end up making critical—and potentially harmful—decisions that have a profound effect on Internet users around the globe. The ITU is hosting a treaty conference in 2012, and together with policy consultations in 2013, these events may significantly change how the Internet is governed. Among other things, the ITU is persuing a mandate "to increase the role of ITU in Internet governance so as to ensure maximum benefits to the global community."[2] While this may sound innocuous, in the words of a colleague, current regulatory proposals from the ITU make the Stop Online Piracy Act (SOPA)—which

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[1] *See ITU Overview - History*, ITU (May 9, 2012), http://www.itu.int/aboutitu/overview/history.html [hereinafter "ITU History"].

[2] Plenipotentiary Conference of the International Telecommunication Union Resolution 180 (Guadalajara, 2010), at 2, *available at* http://www.itu.int/osg/csd/intgov/resoultions_2010/PP-10/RESOLUTION_180.pdf (last visited July 13, 2012).

threatened to grant new censorship and blocking powers to the U.S. government—"look like the equivalent of a bad hair day."[3] More to the point, Federal Communications Commissioner Robert McDowell recently described the dangers of ITU involvement in Internet regulation, noting that a "top-down, centralized, international regulatory overlay is antithetical to the architecture of the Net."[4] Netizens may—and perhaps should—be concerned about the increased role the ITU may play in the international regulation of the Internet, and the influence of the Internet community as a whole may even slow the speed with which the ITU assumes such a role. Regardless, if history is any predictor, it's virtually inevitable that the ITU will be a lead player in the regulatory infrastructure of the Internet of the future.

¶3 With these thoughts in mind, it may make sense to examine the roots of the ITU more closely. In addition, it may be prudent to examine the challenges inherent in the manner in which the organization is structured and in the regulatory analysis and implementation procedures it follows. As we will see, the ITU's role in the regulatory discussion going forward might best serve Internet users worldwide if that role is narrowly defined and limited to discrete areas of international standardization. Even then, we will argue that transparency and participation must be drastically improved, and that a system of checks-and-balances must be put in place to keep the ITU from flexing its muscles and bullying non-state actors into compliance—or worse, creating a splintered, balkanized Internet where some nations opt in to the ITU infrastructure while others opt out.

¶4 This article will first look at the events that took place 100 years ago at the time of the sinking of the *Titanic* as an illustration of how the ITU became relevant in the area of spectrum management. We will then turn to other areas of engagement of the ITU as it seeks entrée into the world of security, privacy, and standardization. Finally, in spite of its recent overtures to openness and participation, we'll conclude that the ITU is not fit to enter into the world of Internet governance and regulation, because the Internet's open, freely developed market. The ITU's experience, on the other hand, is steeped in 150 years of closed, non-transparent state-run systems.

## II. DISASTER AT SEA: THE NEED FOR WIRELESS REGULATION

### *A. The Collision of the* Republic *and the* Florida

¶5 During the flurry of early twentieth-century technological developments, an event occurred that simultaneously engendered great enthusiasm and immense panic. Until 1909, laws regarding wireless devices and uses were generally *laissez-faire* in nature; in fact, regulation of these devices and their uses was, for the most part, nonexistent. In January 1909, however, the world quickly came to understand the importance of wireless communications to ship safety when the *Republic* and the *Florida* collided. The *Republic*, a first-class ship, had marketed its wireless safety measures to its privileged and wealthy passengers. The *Florida,* on the other hand, catered to immigrants and steerage passengers. Not surprisingly, the *Florida* did not have wireless equipment aboard. When the ships crashed into each other, the distress call that came from the wireless outfit aboard the *Republic* helped to save the lives of more than 1,200 passengers on both ships.[5]

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[3] The Stop Online Piracy Act was a legislative proposal in the House and its companion in the Senate was called the Protect Intellectual Property Act (PIPA). Both proposals were withdrawn after the Internet community came out in a broad Internet protest. *See Stopping SOPA*, ECONOMIST, Jan. 21, 2012, *available at* http://www.economist.com/node/21543173 (last visited May 18, 2012); *see also* Dominic Rushe & Ryan Deveraux, *Sopa blackout and day of action -- as it happened,* GUARDIAN TECH. BLOG, Jan. 18, 2012, *available at* http://www.guardian.co.uk/technology/2012/jan/18/sopa-blackout-day-of-action-live (last visited May 18, 2012). The aforementioned quote came from a colleague. *See* Patrick Ryan, *Favorite quote of the week,* GOOGLE PLUS (Jan. 25, 2012), https://plus.google.com/101796592759188137838/posts/QsNpvLkSVLV (last visited Mar. 27, 2012).

[4] Robert M. McDowell, *The U.N. Threat to Internet Freedom*, WALL ST. J., Feb. 21, 2012, *available at* http://online.wsj.com/article/SB10001424052970204792404577229074023195322.html (last visited Mar. 27, 2012).

[5] Susan J. Douglas, INVENTING AMERICAN BROADCASTING 219 (Johns Hopkins Press 1987) (describing the two ships, the differences in wireless equipment, and the collision).

¶6 The collision of the *Republic* and the *Florida* led Congress to recognize the value of wireless as a powerful tool for maritime safety and to conclude that this technology should be made available to all persons traveling upon the seas, not just the privileged classes. Thus, in June 1910 Congress passed the Wireless Ship Act,[6] which required passenger ships above a certain size to carry wireless equipment.[7] However, the laws were imprecise, and they contained many loopholes. For example, the wireless equipment aboard ships did not necessarily need to be staffed or even operational.[8] In short, governments assumed that shipping companies would work out the details involved in implementing wireless in sea vessels through the free market. This might have happened, over time; however, two years later (almost exactly a century ago from today), a disaster of epic proportions would set off a chain of regulatory events that would take on international importance and help to permanently entrench the ITU in the centralized administration of wireless frequencies worldwide.

*B. The* Titanic *Disaster*

¶7 Communication technology took center stage when the *Titanic*, then the world's largest passenger steamship, collided with an iceberg during its maiden voyage in 1912.[9] The *Californian*, a large ship located only five to ten miles away from the *Titanic*, could have easily rescued many of the ship's passengers, and an entirely avoidable and extremely unfortunate lack of communication between the *Californian* and the *Titanic* highlights the misuse of available technology (and paints a rather grim picture of human goodwill). Some believe that the captain or a crewmember of the *Californian* purposely turned off the ship's radio as a retributive measure following the rude behavior of the radio operators of the *Titanic* during an exchange earlier in the day.[10] Others assert that the *Californian* had merely turned off its radios because it was late at night (at that time, many ships did not maintain a twenty-four-hour radio watch).[11] Regardless of the circumstances, the radios did not communicate, and the *Californian* did not come to the aid of the *Titanic*.[12] [13]

¶8 What is almost certain is that many more passengers on the *Titanic* could have been saved had there been an established radio protocol.[14] If the radio operators on the *Californian* had known of the impending disaster, one of them undoubtedly would have responded to the distress signals sent by the *Titanic*, regardless of any ill will that might have existed between the *Californian* and the *Titanic*. The *Titanic* may have sunk after hitting an iceberg, but it was arguably the lack of radio regulations that ensured the deaths of approximately 1,500 people that night. And in the end, it was the *Carpathia*, not the *Californian,* that responded to the wireless distress calls sent by the *Titanic*. After

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[6] Wireless Ship Act of June 14, 1910, Pub. L. No. 61-262, 36 Stat. 629 (1910) (codified at 46 U.S.C. §§ 484-87) (repealed 1934).

[7] *Id.*

[8] Douglas, AMERICAN BROADCASTING, *supra* note 5, at 220.

[9] Walter Lord, A NIGHT TO REMEMBER 60 (Bantam 1955).

[10] There was indeed a considerable amount of arrogance and muscle-flexing among ships that contained new-fangled wireless facilities in the early days, and this problem was cited by the passage in the United States of the first regulations to control such behavior. Such arrogance was not limited to the *Titanic*. For example, H.R. REP. NO. 892 (1910), cited the log of the *USS McCulloch* for Nov. 4, 1909, at 6, to wit:

> 3.20 P.M. called TI, sent him an official message; when I listened in for acknowledgement or OK for our message, CH (United Wireless) operator CX, maliciously broke in on us and said "we will show RCH (McCulloch) that our spark is stronger than his and drown him out." 3.35 P.M. told CH to please keep out, as our message was a rush government message. He said "you needn't think you are so damned much; wait until 4 P.M." His station being stronger TI received our message at 4.10 P.M.

[11] *See* 48 CONG. REC. S7282 (daily ed. May 28, 1912) (statement of Sen. Smith).

[12] Testimony of the crew of the *Californian* revealed that the captain of the *Californian* had even seen distress flares (which some of the crew thought to be celebratory fireworks) from the *Titanic*, although he gave no command to summon the ship's wireless operator. *Id.*

[13] Although the captain of the *Californian* was not criminally prosecuted, he was subsequently fired by his employer, and he spent the rest of his life trying to clear his name. Charles Pellegrino, HER NAME, TITANIC 237 (Avon 1988).

[14] A British investigation concluded that the captain of the *Californian* was negligent for not attempting to communicate using the wireless equipment that he had, indicating that the *Californian* could have "saved many if not all of the lives that were lost." Brit. Bd. of Trade Report on the Loss of the *Titanic,* 1912, Cd. 6352, at 46.

receiving the wireless SOS signals, the captain of the *Carpathian* navigated fifty-eight miles at top speed through dangerous ice fields in search of survivors. His actions earned him a Congressional Medal of Honor.[15]

¶9 One troubling account paints an even grimmer picture of the role radio may have played in the *Titanic* disaster. As it turns out, the *Titanic* was outfitted with Marconi radios and had a subscription for Marconi personnel services, whereas the *Californian* used the radios and personnel services of Telefunken, one of Marconi's competitors. In spite of a non-enforceable gentlemen's agreement to work together,[16] it is possible that the two companies' rivalry took an ominous turn on that fateful night.[17] This version of the controversy has been described by journalist and technology historian Keith Dawson as follows:

> In [1912], the radiomen were not ships crew, but employees of the radio company they hired and subscribed to. There were two major companies that provided the equipment and operators: The Marconi Company in New York City and Telefunken in Germany. The *Titanic* was subscribed to Marconi. Shortly before the *Titanic* set to sea, there was a big flap about exchanging weather and iceberg information between ships, that is, between these two different companies. So Marconi Company issued an edict that any operator who "talked" to a Telefunken ship would be immediately relieved of duty upon his return. Telefunken, in turn, issued the same order to their operators. Therefore, at the time of the *Titanic,* Marconi operators did not talk to Telefunken operators and vice versa for fear of losing their jobs. This is why the *Titanic* SOS's went unanswered by the *Californian,* a Telefunken ship, which we know now was adrift for the night only miles away. The *Carpathia* was a Marconi ship, and at midnight when the operator checked his gear following some repairs, heard the SOS and was able to respond, even though they were some distance away.[18]

¶10 Unfortunately, since the *Titanic* sank, so did much of the evidence describing what actually happened that night. Before the electricity went out and until they bravely went down with the ship, the radio operators on the *Titanic* continued to send wireless distress calls. So, while we may never fully understand how the dynamics between the Marconi company and Telefunken may have played out that night, it is comforting to recognize that some people were saved because of wireless radio calls made to the *Carpathia,* even if it is disheartening to know that the *Californian* did not receive or may have outright ignored similar wireless calls.

### *C. Spectrum Regulation Over the Past 100 Years*

¶11 The landmark event that initiated a transfer in authority from the free market to the ITU (via national ministries) in spectrum policy happened with the 1912 sinking of the *Titanic*. It's no coincidence, then, that in 1912 the first Table of Frequency Allocations was introduced at the International Radiotelegraph Union (IRU).[19] Although the IRU and the ITU did not formally merge until 1932, the regulation of radio communications at this time was only "informally" called the IRU, as there was very little actual separation of responsibilities and the groups were run by many of the

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[15] Wyn Craig Wade, THE TITANIC, END OF A DREAM 273 (Penguin 1979).

[16] Transcript of an interview with Joe Danko, CALIFORNIA HISTORICAL RADIO SOCIETY NEWS, Volume 10, No. 3, 1965. Quoting from the transcript: "It was normal practice for Marconi equipped vessels to transact traffic with Marconi land stations; the Telefunken DD ships with TWT the Telefunken German controlled station, and so forth. Never-the-less there was a gentlemanly agreement among our group of stations around New York to assist one another in times of difficulty."

[17] *See generally Titanic Collides with the Iceberg*, THINKQUEST (1998), http://library.thinkquest.org/18626/NIceberg.html (last visited May 18, 2012). ThinkQuest is an international competition where student teams engage in collaborative, project-based learning to create educational websites. This popular website recounts the *Titanic* disaster, and this winning entry is part of the ThinkQuest online library.

[18] Keith Dawson, *Browser Wars of the Wireless Telegraphy Age*, TBTF.COM (Jan. 3, 1999), http://tbtf.com/resource/telegraph-browser-wars.html (last visited Mar. 27, 2012).

[19] Wladyslaw Moron, *Radio Regulations Board (RRB): It's place, role and functioning in the ITU, Document RRB10-1/4-E* (Mar. 1, 2010), *available at* http://www.itu.int/ITU-R/information/promotion/e-flash/4/article7.html (last visited Mar. 27, 2012).

same people. One of the IRU's main missions was to collect information on the use of frequencies, and, as telecommunications and spectrum policy expert Audrey Allison notes, the member nations "were required to give notice of their radio operations to the [ITU's] Berne Bureau and to ensure that such operations not interfere with other frequency uses."[20] Allison further notes that the IRU always "relied on the [ITU] to attend to its routine administrative functions."[21] As George Codding also explains, "telegraph, telephone, and radio were all regulated by the same ministry in most countries, it was not long before pressure built up to merge these organizations."[22] So the ITU was, essentially, the natural home for the international coordination of spectrum matters, as it was also the meeting place for governments that owned and regulated all things related to postal, telephone, telegraph, and radio.

¶12 After this tragedy of the *Titanic*, the vital importance of wireless maritime communications to public safety became apparent, and governments began to heavily regulate spectrum usage—before it was even known how much spectrum was available. Some of these regulations were developed initially in the United Kingdom,[23] whereas others emerged later in the form of international conventions.[24] Also around this time, military organizations worldwide came to recognize the strategic value of wireless communications (especially as countries around the globe prepared for the first of two world wars). Moreover, the media grew to appreciate the value of broadcasting news and entertainment to the public in the form of AM radio, FM radio, and television. Based on an early (and incomplete) understanding of radio waves—and long before the existence of computers—the spectrum "lockdown" that began with the *Titanic* tragedy 1912 continued through World War II, whereby governments worldwide assumed a centralized "command-and-control" role with regard to the allocation, allotment, and assignment of the spectrum. In effect, the spectrum was sliced up like a pie, and contingencies were allocated different pieces of it.

¶13 Although in recent decades governments worldwide have repealed some allocations of the lockdown to allow new technologies (*e.g.,* mobile telephony) to use the spectrum, for the most part the world's regulatory systems continue to be based on an old paradigm that is heavily steeped in the primitive analog technologies that existed in 1912 and that mirrors an outmoded economic planning philosophy of a bygone era. Indeed, the past couple years have seen entrenched, politicized debate about how to allocate spectrum in a way that maximizes public safety while at the same time providing money to the treasury.[25] Spectrum reallocations and adjustments for technology are measured in years—or even decades—and in the case of wireless spectrum, the evidence is out. (As Federal Communications Commissioner Robert McDowell insightfully noted regarding pointed government control of the Internet, "no government . . . can make engineering and economic decisions in lightning-fast Internet time.")[26]

¶14 Since 1912, governments may have moved slowly, but technology has developed quickly. We have learned a great deal about how the radio spectrum works, and, perhaps more astonishingly, we

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[20] Audrey L. Allison, *Meeting the Challenges of Change: The Reform of the International Telecommunication Union*, 45 FED. COMM. L.J. 491, 498 (1993).

[21] *Id.*

[22] George A. Codding, Jr., *The International Telecommunications Union: 130 Years of Telecommunications Regulation*, 23 DENV. J. INT'L L. & POL'Y 501, 503 (1995).

[23] Many of the rules stemmed not from the United States, but from an official British inquiry into the *Titanic* disaster. There were a total of twenty-four recommendations, each "with a view to promoting the safety of vessels and persons at sea." The recommendations were published in Report of a Formal Investigation into the circumstances attending the foundering on the 15th April, 1912, of the British Steamship *Titanic,* 1912, Cd. 6352.

[24] The most significant international convention came about as a result of a 1914 conference in London called the Convention for the Safety of Life at Sea (SOLAS). This convention dealt with various matters involving navigation, vessel construction, radio-telegraphy, life-saving equipment, and inspections. This convention was the forerunner of the modern SOLAS. *See* International Maritime Organization (IMO), *Int'l Convention for the Safety of Life at Sea* (Nov. 1, 1974), 1184 UNTS 3, *and* Protocol of 1978 Relating to the International Convention for the Safety of Life at Sea, Feb. 17, 1978, 32 U.S.T. 5577, T.I.A.S., No. 1009.

[25] *See* Matthew Laser, *911 broadband network: brought to you by TV spectrum selloff,* ARS TECHNICA (Feb. 20, 2012), *available at* http://goo.gl/dXAGv (last visited Mar. 27, 2012).

[26] McDowell, *U.N. Threat*, *supra* note 4.

have developed computing technologies (particularly microcomputing technologies) that can be combined with the use of spectrum in exciting new ways.[27] For example, in 1990 Europe launched its first mass-market product that integrated computing and radio: the Global System for Mobile Communications (GSM) network, which was based on a computer-aided frequency-splitting technology called time division multiple access (TDMA). Since that time, computer scientists and electronics engineers have worked together to develop many other new applications such as software-defined radio (SDR), and the use of "white spaces" that use the spectrum much more efficiently.[28] The capabilities that have resulted from these developments already outpace the government's ability to regulate the spectrum in accordance with a centralized planning methodology. Revolutionary—not evolutionary—change is required within our regulatory frameworks in order to ensure that these technologies continue to be expanded and enhanced and to allow the world to reap the benefits of open wireless spectrum.

¶15 And yet regulations are mired in the world of evolution, not revolution. The continuing (though mistaken) rationale for spectrum management today is the *doctrine of spectrum scarcity*, which holds that frequencies are finite and must be apportioned and allocated in order to *eliminate* interference. This concept of spectrum scarcity, however, is administrative in nature. In other words, it's the ITU's entrenched system of administration through spectrum allocation, allotment, and (through national regulatory agencies) assignment that greatly exacerbates the problem of spectrum management. To be fair, we do not indict the ITU alone for the entrenched, troubled state of global spectrum policy today. However, the ITU has been an imporant enabler of the regulatory *status quo* where key principles that should have been revisited long ago are locked in by treaty. As we will argue here, spectrum management should not involve the *elimination* of interference—which the ITU has set as an objective.[29] Instead, spectrum management principles should anchor firmly in the *optimization* of interference because as an economic matter the costs of eliminating interference can be unreasonably high and lead to inefficient results.[30]

¶16 One way to optimize interference is by shifting at least part of our regulatory control over the spectrum resource and then improving the qualities and technical capabilities of *devices* that access the spectrum (*e.g.,* by computerizing these devices, thus making them "intelligent," rather than "dumb"). Wi-Fi is perhaps the simplest example of this concept because it uses the unlicensed "garbage bands" traditionally allocated for baby monitors, garage-door openers, microwave ovens, and other low-power devices.[31] A study commissioned by Microsoft in 2009 estimated that residential Wi-Fi generates $16-36 billion to the U.S. economy per year.[32] Economists Paul Milgrom, Jonathan Levin, and Assaf Eliat have built on this study and suggest that "these numbers are probably far too conservative."[33] The authors point out that "[w]orldwide, about 200 million households use Wi-Fi

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[27] *See* Patrick S. Ryan, *Wireless Communications and Computing at a Crossroads: New Paradigms and Their Impact on Theories Governing the Public's Right to Spectrum Access*, 3 J. ON TELECOMM. & HIGH TECH. L. 239 (2005).

[28] *See* Kevin Werbach, *The Wasteland: Anticommons, White Spaces, and the Fallacy of Spectrum*, 53 ARIZ. L. REV. 213 (2011) (an extensive discussion on the white spaces proposal and its challenges in the regulatory context).

[29] Article 45 of ITU Constitution specifies "All stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference to the radio services or communications of other Members or of recognized operating agencies, or of other duly authorized operating agencies which carry on a radio service, and which operate in accordance with the provisions of the Radio Regulations. "*See also* Article 15 of ITU Radio Regulations, which clarifies that "(1) All stations are forbidden to carry out unnecessary transmissions, or the transmission of superfluous signals, or the transmission of false or misleading signals, or the transmission of signals without identification (except as provided for in Article 19). (2) Transmitting stations shall radiate only as much power as is necessary to ensure a satisfactory service."

[30] *See generally* R.G. Lipsey & Kelvin Lancaster, *The General Theory of Second Best*, 24 REV. OF ECON. STUD. 11, (1956).

[31] For description of the "garbage bands," *see generally* Philip J. Weiser & Dale N. Hatfield, *Policing the Spectrum Commons*, 74 FORDHAM L. REV. 663 (2005); *see also* Kenneth R. Carter et al., *Unlicensed and Unshackled: A Joint OSP-OET White Paper on Unlicensed Devices and Their Regulatory Issues* (FCC, OSP Working Paper No. 39, 2003), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-234741A1.pdf (last visited May 18, 2012).

[32] RICHARD THANKI, THE ECONOMIC VALUE GENERATED BY CURRENT AND FUTURE ALLOCATIONS OF UNLICENSED SPECTRUM (2009).

[33] Paul Milgrom, Jonathan Levin, & Assaf Eilat, *The Case for Unlicensed Spectrum* (Working Paper, Oct. 12,

networks and there are about 750,000 hotspots."[34] There is, therefore, ample evidence that Wi-Fi no longer belongs in a "garbage band," given the magnitude of its economic contribution to society.

¶17 As technology has developed, it is fair to say that the ITU has not shown itself to be flexible to the needs of modern technology. Neither have many national regulatory authorities for that matter. However, the ITU's structure foments a cycle of regulatory lock-in: national regulatory authorities are culturally—if not legally—bound by the treaty-making nature of the ITU, further limiting their flexibility. In an era where companies like Google are creating self-driving cars,[35] it's perhaps not out of line to think that the national regulatory regimes could be replaced by computerized systems and associated cooperative algorithms. This is what James Johnston proposed almost a decade ago in a 2003 article titled "The Federal Communications Commission in a Box," pointing out that Wi-Fi devices are based on a simple "listen before talking" principle.[36] For this reason, he notes that the sixteen million Wi-Fi devices that existed at the time operated simultaneously in the United States, while there were only 1,714 television stations.[37] If as many television stations were operational as Wi-Fi devices, interference would abound, and the "cacophony of competing voices" would prevent anyone from using their televisions.[38]

¶18 However, because of the technological design of Wi-Fi, this cacophony does not occur. Johnston correctly points out that "Wi-Fi transmitters don't talk if they hear another device transmitting. It takes children about four years to learn such good manners. It has taken radio 109 years."[39] Thus, perhaps the ITU doesn't need to use its treaty powers to micromanage the allocation of frequencies as it currently does; computer-controlled transmitters will soon be able do that. In conclusion, as the title of his article suggests, Johnston contends that the Federal Communications Commission (FCC) could be replaced by "a box of electronics," and he maintains that the application of computing technology to the wireless spectrum could "empower the individual, giving him the right to use the ether however he wants."[40]

¶19 In the end, slowly evolving regulatory developments won't stand in the way of swift-moving technological changes. But a stiff regulatory scheme can significantly stifle growth. At the time of the *Titanic,* when the ITU became really interested in spectrum, we didn't even know how much spectrum was really available for use. The doctrine of spectrum scarcity, in effect, was born of a severely limited practical understanding of the radio medium. This scenario is similar to the situation with the Internet today—we are only beginning to unleash the true opportunities in Internet addressing as we move from IPv4, enabling the creation of less than one Internet address per person on the planet, to IPv6, which will create the equivalent of three billion Internet addresses per person on the planet.[41]

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2011), *available at* http://www.stanford.edu/~jdlevin/Papers/UnlicensedSpectrum.pdf (last visited May 18, 2012).

[34] *Id.*

[35] Sarah Jacobsson Purewal, *Nevada Approves Self-Driving Cars after Google Lobbying Push*, PC WORLD (Feb. 17, 2012), *available at* http://www.pcworld.com/article/250179/nevada_approves_selfdriving_cars_after_google_lobbying_push.html (last visited May 18, 2012).

[36] James H. Johnston, *The Federal Communications Commission in a Box*, LEGAL TIMES, Dec. 8, 2003, at 16.

[37] *Id.*

[38] In *Red Lion v. FCC*, Justice Byron White explained the government's fiduciary role this way: "It quickly became apparent that broadcast frequencies constituted a scarce resource whose use could be regulated and rationalized only by the government. Without government control, the medium would be of little use because of the cacophony of competing voices, none of which could be clearly and predictably heard." In other words, without FCC intervention and licensing, it would be impossible to avoid the tragedy—or cacophony—that would arise when the masses use the spectrum in an attempt to secure scarce spectrum for themselves. Red Lion Broad. Co. v. FCC*,* 395 U.S. 367 (1969).

[39] *Id.*

[40] *Id.* To be fair, Johnston's assertions are wrapped in an overarching explanation of the "open spectrum movement," so he ascribes these assertions to the "movement" more so than to himself. However, since Johnston himself is part of the open spectrum movement, we shall assume here that he is a proponent of the statements he makes.

[41] Lorenzo Colitti & Erik Kline, *Looking towards IPv6*, OFFICIAL GOOGLE BLOG (May 13, 2008), http://googleblog.blogspot.com/2008/05/looking-towards-ipv6.html (last visited Mar. 27, 2012).

¶20 The expansion of Internet addresses may seem like mathematical wizardry, but in many ways it mirrors the growth in spectrum. In the early 1900s, scientists thought that the usable radio frequency range (measured in Hertz)[42] was limited to 1,500 kHz (*i.e.,* 1,500,000 Hertz). Accordingly, regulators exerted government control only up to that range, making any radio frequency outside that range available to amateurs and scientists for purposes of experimentation.[43] By 1930, advancements in science prompted the U.S. government [through the Federal Radio Commission (FRC), the forerunner of the FCC][44] to redefine its jurisdiction by several multiples to cover 60 MHz (*i.e.,* 60,000,000 Hertz). The government consequently withdrew many of the rights of amateurs and experimental scientists to use the spectrum.[45] Furthermore, the government's jurisdiction expanded *again* a few years later as scientists developed a more in-depth understanding of the capabilities of radio. In 1936, the FCC exerted control of radio waves up to 300 MHz (*i.e.,* 300,000,000 Hertz). Eight years later, in 1944, the perceived usable (and thus regulatable) spectrum grew exponentially to 30 GHz (*i.e.,* 30,000,000,000 Hertz).[46] Today, the regulated band stretches by another factor of ten to 300 GHz (*i.e.,* 300,000,000,000 Hertz).[47] Overall, from 1912 to the present day the amount of spectrum recognized as available (and the FCC's corresponding regulation of that spectrum) grew by an astonishing factor of 19,999,900 percent. The table below depicts the "growth" of this "scarce" natural resource over the past century.

| Year | Hertz | Percentage Increase |
|---|---|---|
| 1912 | 1,500,000 | -- |
| 1930 | 60,000,000 | 3,900% |
| 1936 | 300,000,000 | 400% |
| 1944 | 30,000,000,000 | 9,900% |
| Today | 300,000,000,000 | 900% |
| **Overall Increase** | | 19,999,900% |

¶21 Over the past 100 years, the availability of spectrum increased a staggering 19,999,900 percent. Of course, spectrum hasn't really increased at all—but our understanding of it has, and given the regulatory system that seized spectrum in 1912, the regulatory control has grown with the spectrum. Moving, then, to the Internet—which has only been in full swing for a couple decades—it's fair to speculate that the use of the Internet may experience similar expansion in the next 100 years, with a concomitant expansion in regulation. That's why it is worth exploring the history of the ITU's roots

[42] *See* Clinton B. Desoto, 200 METERS AND DOWN 10 (Amer Radio Relay League 1936). Desoto notes that "frequency" is defined as the number of cycles a radio wave can complete in one second and is measured by an international unit of frequency known as a hertz [Hz]. This international unit for frequency measurement was named in honor of Heinrich Hertz, who discovered that a spark could be induced to jump across an air gap between two wires when another spark was created in a circuit using a spark gap and an induction coil.

[43] John O. Robinson, *Spectrum Management Policy in the United States: An Historical Account* 10 (FCC, OPP Working Paper No. 15, 1985), *available at* http://www.fcc.gov/working-papers/spectrum-management-policy-united-states-historical-account. Robinson notes that at the time of the passage of the 1912 Radio Act, "frequencies above 1500 kHz . . . were considered to be of little value for Government or commercial use." For this reason, the government left these frequencies for "amateur" use, something for common citizens to enjoy.

[44] The FCC subsumed the FRC upon the passage of the Telecommunications Act of 1934.

[45] *See* Robinson, *supra* note 43, at 10*; see also* Thomas W. Hazlett, *The Wireless Craze, the Unlimited Bandwidth Myth, the Spectrum Auction Faux Pas, and the Punchline to Ronald Coase's "Big Joke": An Essay on Airwave Allocation Policy*, 14 HARV. J.L. & TECH. 335, 370 (2001) (describing the growth of the usable spectrum during this time).

[46] ITHIEL DE SOLA POOL, TECHNOLOGIES WITHOUT BOUNDARIES 29 (Eli Noam ed., 1990).

[47] *See U.S. Frequency Allocations* (2011), *available at* http://www.ntia.doc.gov/files/ntia/publications/spectrum_wall_chart_aug2011.pdf (last visited May 9, 2012). Also note that the very high "milliwave" frequencies, 18 GHz to 100 GHz, are not heavily used yet, but they are being developed in laboratories and products are arriving on the marketplace. These frequencies, however, are limited to line-of-sight applications.

and its involvement in international technology policy to see if it is the proper home for Internet policy in the next 100 years.

## III. THE ITU'S ROOTS

¶22 Since the sinking of the *Titanic,* the ITU has provided an international framework for the usage and management of radio frequency resources, out of its offices in Geneva, Switzerland.[48] Since its founding in 1865 by twenty charter members, the ITU has continued to reveal its roots in the coordination of postal, telephone and telegraph ("PTT") matters. Though it is now part of the UN, it actually predates the UN by 80 years.[49] The founding agreement for the ITU, signed in Paris, originated solely from a Europe-wide conference.[50] In fact, during its first fifty years of existence, the ITU was controlled by European powers where PTT coordination was particularly relevant, and its voting system favored the largest European countries.[51] Until 1925, although other countries had votes, the ITU was largely controlled by France, Great Britain, Italy, and Portugal, each of which had a greater number of votes than other European countries—not only because of their actual size but also because of the fact that they held colonies in Africa and elsewhere.[52]

¶23 While events like the *Titanic* disaster served as catalysts, radio regulation was searching for an international home before 1912. One of the first radio regulations was passed in 1903 in Germany, and in 1906 the International Wireless Telegraph Convention was passed in Berlin.[53] This convention established the framework for the allocation of radio frequencies into bands as a means of avoiding interference. As with the ITU, this convention was largely a continental European effort (although the United States was a signatory). Over time, the number of radio conferences grew, and this joint effort played a very important role in Europe, where there are many international borders and where tensions between world powers often ran high in the first half of the twentieth century.[54] However, in spite of this strong European start, World War I brought these collaborative arrangements to a halt.[55]

### *A. The Parallel U.S. Response to European Spectrum Management Initiatives*

¶24 In spite of several stark political differences between the United States government and UN agencies, history shows that the United States has moved in lockstep with the ITU in its spectrum-management responsibilities. The parallels between European and U.S. regulatory efforts aren't a matter of coincidence. For example, the year 1912 saw not only the international lockdown of spectrum described above but also the passage of the Radio Act of 1912, where almost all operation

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[48] The UN's principal headquarters is in New York, although a second headquarters is based in Geneva, Switzerland . Other UN agencies are based elsewhere, and the ITU is associated with the second UN Headquarters in Geneva.

[49] The United Nations was officially formed on October 24, 1945. *See History of the United Nations*, http://www.un.org/en/aboutun/history/ (last visited May 24, 2012).

[50] *See International Telegraph Conference (Paris, 1865)*, ITU HISTORY PORTAL, http://www.itu.int/en/history/plenipotentiaryconferences/Pages/1865Paris.aspx (last visited May 24, 2012).

[51] *See* Eli Noam, TELECOMMUNICATIONS IN EUROPE, at 294 (Oxford Press, 1992). Noam discusses the history of the ITU and its European origins.[not clear or necessary]. *Id.*

[52] *Id.*

[53] International Wireless Telegraph Convention (Washington: Government Printing Office, 1907), *available at* UNITED STATES EARLY RADIO HISTORY, http://earlyradiohistory.us/1906conv.htm (last visited May 24, 2012).

[54] Coordination between the United States and its Canadian neighbor to the North and its Mexican neighbor to the South does not appear to have been a problem. During this time (1900s to 1940s), however, Europe would see the disintegration of its colonial system, which had extended its power into the Middle East and Africa.

[55] Between 1906 and 1927, three major treaties were concluded. For the 1906 treaty, *see* Telecommunication (Wireless Telegraph), November 3, 1906, 37 Stat. 1565, Treaty Series 568, at 556. For the 1912 treaty, *see* Telecommunication (Radiotelegraph), July 5, 1912, 38 Stat. 1672, Treaty Series 581, at 883, 1 L.T.S. 135. For the 1927 treaty, *see* Telecommunications: Radiotelegraph, November 25, 1927, 45 Stat. 2760, Treaty Series 767, at 683, 84 L.T.S. 97.

in any licensed spectrum in the United States required a license issued by the Department of Commerce.[56] In 1932, the ITU merged with the remnants of the radio conferences from earlier in the century. In 1934, the United States passed the Communications Act that formed the FCC, and it is unlikely a coincidene that same year the International *Telegraph* Union changed its name to the International *Telecommunication* Union (retaining the same ITU acronym) and sought to further shift its competence from telegraph coordination to more robust and broader efforts in frequency coordination.[57] This task proved to be difficult, however, because of the massive political upheaval taking place in Europe at the time. Consequently, international telecommunications and frequency planning efforts took a backseat to other political agendas.[58]

¶25 From the outset, and continuing through today, it's clear that the United States has showed extreme reluctance to become involved in international telecommunications organizations. The question is why. Though complicated, the answer is partially because the United States has long been hesitant to relinquish power to the UN.[59] There are also relatively simple, if selfish, economic reasons: The United States did not need the ITU to facilitate communication between its own cities, states, and territories, which was considerably different than the state of affairs in Europe. For example, the ITU's interstate coordination and assistance were required in order to send a telegraph from Paris to Berlin. Likewise, the United States had established its own policies with regard to telecommunications and frequency allotment. Europe has also traditionally viewed telecommunications management as a state responsibility, administered through the various countries' PTTs, while the United States has customarily allowed a great deal more private involvement in the telecommunications arena.[60]

¶26 In many ways, the ITU arises out of an old-school European set of philosophical values. Assuming that generalizations about European values are possible (it's addmitedly difficult to do so with a 27-country system), it's nonetheless clear that the U.S. and European approaches have been irresolvable for more than a century. Moreover, the United States has previously taken the position that organizations like the ITU could eventually lead to the formation of a dangerous, excessively powerful international telecommunications cartel, or monopoly.[61] For instance, as many European countries were taking over private industries after the world wars, the United States was dismantling Rockefeller's Standard Oil Corporation on antitrust grounds.[62] By contrast, throughout most of the 1900s Europe did not disband large, state-run cartels in industries that ranged from petroleum to telecommunications to aerospace. In fact, it is only since the 1990s (only about 30 years, a relatively short time in telecommunication's 150 year history) that European countries have begun to seriously embrace the relatively basic economic principle underlying antitrust laws and regulations—though these economies now embrace the principle with great zeal.[63]

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[56] Radio Act of 1912, ch. 287, 37 Stat. 302 (1912); *see also* Kenneth C. Creech, ELECTRONIC MEDIA LAW AND REGULATION, 52 (4th ed. 2003).

[57] *See* ITU HISTORY PORTAL, cited *supra* at note 50 ("[T]he new name, which came into effect on 1 January 1934, was chosen to properly reflect the full scope of the Union's responsibilities, which by this time covered all forms of wireline and wireless communication").

[58] Noam, *supra* note 51, at 295-6.

[59] See Kenneth W. Abbott and Duncan Snidal, *Why States Act through Formal International Organizations*, J. OF CONFLICT RESOL., Vol. 42, No. 1, (February 1998) at 5 (describing the historical resistance that the United States has had to get involved with the UN and other international organizations (IOs): "Many states, notably the United States, now resist the creation of IOs and hesitate to support those already in operation, citing the shortcomings of international bureaucracy, the costs of formal organization, and the irritations of IO autonomy.")

[60] Noam, *supra* note 51.

[61] Anthony Rutowski, *The U.S.A. and the ITU: Many Attitudes, Few Policies*, INTERMEDIA 10, at 33 (1982).

[62] *See* Standard Oil Co. v. United States, 221 U.S. 1 (1911) (applying the United States' "Sherman Act" to Standard Oil and breaking up the monopoly).

[63] One of the most prominent examples of Europe's embrace of antitrust measures is its blockage of the merger of two U.S.-based companies, Honeywell and General Electric. This history and the growth of antitrust law in Europe was covered in detail in a speech by William J. Kolasky, Deputy Assistant Attorney General, Antitrust Division, U.S. Department of Justice, North Atlantic Competition Policy: Converging Toward What? (May 17, 2002), http://www.justice.gov/atr/public/speeches/224128.htm (last visited Mar. 30, 2012).

*B. The ITU's Sluggish but Sure Entrance into the Wireless Arena*

¶27 Recall that the ITU's inception was based in the world of telegraphs, long before a wireless signal had been sent.[64] After the United States' involvement in World War II, Americans took a more active interest in participating in international telecommunications management efforts through the UN. The ITU leveraged this interest, and initially the United States supported the creation of a comprehensive frequency allocation recordkeeping system (intended to log past and present allocations worldwide, not to designate where frequencies should be allocated). Likewise, the ITU created the International Frequency Registration Board (IFRB) in 1952. So, while the ITU seemed to be the most logical candidate to lead spectrum coordination efforts after the *Titanic* disaster, it responded to an urgent need for some sort of leadership and guidance in this arena by moving at a snail's pace, waiting a full *forty years* to launch its formal frequency registration system.

¶28 For the most part, the United States has steered clear of the sluggish inner workings of the ITU. The United States does, however, appoint official representatives to the ITU, so-called "issue ambassadors," though even this process is fraught with political complication. In some cases, the U.S. government appoints representatives only for a few months at a time.[65] Intuitively, frequent personnel changes complicate U.S. attempts to make lasting advancements or contributions. On the other hand, perhaps the appointment of long-term representatives could signal U.S. endorsement and legitimization of the ITU. Nonetheless, back in 2003, commentators Robert Galvin and James Schlesinger recommended that the United States appoint a full-time special international communications advisor in order to enhance its political clout in international spectrum negotiations. Their report summarizes the problem well:

> The State Department, which leads spectrum negotiations, is often blamed for a lack of interest and reluctance to act in a timely manner. It is more accurate to say that problems with the way the United States conducts international spectrum negotiations reflect the fragmented management structure and the historically low priority of spectrum negotiations. . . . The State Department's Communications and Information Policy (CIP) Group, located in the Bureau of Economic and Business Affairs, is led by the U.S. coordinator for international communication and information policy. The incumbent holds the rank of deputy assistant secretary and is often made an ambassador. . . . Our recommendation is to merge the two positions into a single, political-appointee position. The ambassadorship should not be a career position. The president should appoint the ambassador at least one year before the start of the [World Administrative Radio Conference], and the ambassador should serve, at the president's pleasure, for the duration of an administration. The early appointment of a long-term ambassador by the president would give the U.S. an effective international presence to achieve its spectrum goals.[66]

¶29 Although this proposal is couched in the context of wireless spectrum, it applies to the functioning of the ITU generally. Although the State Department has provided leadership on the topic, and even though the revision of the International Telecommunication Regulations (ITRs) have been underway for the past 18 months, no formal U.S. Ambassador was appointed for the critical treaty conference this year until very recently (in June 2012).[67] Although the State Department has

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[64] *See* Sungook Hong, WIRELESS: FROM MARCONI'S BLACK BOX TO THE AUDION (2001) (providing an historical perspective on wireless and discussing Guglielmo Marconi's first transmission in 1897).

[65] A U.S. General Accounting Office (GAO) report in 2002 criticized the short tenure of the U.S. World Administrative Radio Conference ambassador (six months) and noted the many problems involved in coordinating U.S. proposals between the FCC and the National Telecommunications and Information Administration (NTIA) for ITU conferences. *See* GENERAL ACCOUNTING OFFICE, TELECOMMUNICATIONS: BETTER COORDINATION AND ENHANCED ACCOUNTABILITY NEEDED TO IMPROVE SPECTRUM MANAGEMENT, GAO-02-906 at 4 (2002).

[66] CSIS COMMISSION ON SPECTRUM MANAGEMENT, SPECTRUM MANAGEMENT FOR THE 21ST CENTURY, (Robert Galvin & James Schlesinger eds., 2003), at 20-1.

[67] Amy Schatz, *U.S. Firms Challenge Web-Oversight Proposals,* WALL ST. J., May 30, 2012 *available at* http://goo.gl/o65hR (last visited July 12, 2012) (discussing the appointment of Mr. Terry D. Kramer as Ambassador for the treaty conference)..

been active for some time on the matter, the new Ambassador will only have six months to prepare and execute on his mandate through the treaty conference in Dubai in December 2012. Compare this to the approch of other countries—Russia in particular—who see the upcoming treaty revisions as so critical that the head of state is personally involved. For example, Russian President (previously, Prime Minister) Vladimir Putin famously declared the importance of "establishing international control over the Internet using the monitoring and supervisory capabilities of the International Telecommunication Union."[68] Mr. Putin's call for "international control" are at the heart of the Internet community's concern, and as we will see below, the themes of control pervade several proposals from autocratic regimes.

## IV. THE ITU AND PROPOSALS FOR THE INTERNET

¶30 Fast-forward from 1912 to 2012, and the ITU frustrates many, even while prescriptions for alternatives may appear to be scarce. While an intellectual leap of 100 years may seem dramatic, the truth is that the ITU's focus on state-to-state discussions have not significantly changed over that time, even though technology bears no resemblance today to the lanscape of last century. The ITU's Secretary General, Dr. Hamadoun Touré, has demonstrated the patience of his organization by leveraging the ITU's long-standing efforts in mobile telephony to make a general case for further growth in—and many believe regulation of—broadband. In an opinion piece leading up to the 2012 Mobile World Conference (MWC), Dr. Touré pointed out that "[i]n the next five years, there are likely to be as many mobile cellular subscriptions as there are people on this planet. By 2020, pundits predict more than 50 billion connected devices."[69] Building on this idea, Dr. Touré next described the need in developing countries for increased broadband and stated that creating partnerships for broadband development "is a basic element of our work at ITU."[70] Through the development arm of the ITU, known as ITU-D, there are many excellent policy proposals for work in developing countries. However, it's unprecedented for the ITU to exercise any direct control over how networks are built in any country.

¶31 It's this centralized form of control that concerns many commentators. There has never been a central authority for Internet matters and the Internet has flourised in spite of (or perhaps because of) its decentralized governance model. In an op-ed published in *The Wall Street Journal*, Federal Communications Commissioner Robert McDowell condemns the ITU, noting that

> [a] top-down, centralized, international regulatory overlay is antithetical to the architecture of the Net, which is a global network of networks without borders. No government, let alone an intergovernmental body, can make engineering and economic decisions in lightning-fast Internet time. Productivity, rising living standards and the spread of freedom everywhere, but especially in the developing world, would grind to a halt as engineering and business decisions become politically paralyzed within a global regulatory body.[71]

McDowell articulates frustrations that may be common among American representatives to the UN, including at least one Ambassador who represented the United States at prior ITU conferences.[72]

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[68] Transcript, *Prime Minister Vladimir Putin meets with Secretary General of the International Telecommunication Union Hamadoun Toure*, Website of the Government of the Russian Federation (June 15, 2011), *available at* http://premier.gov.ru/eng/events/news/15601 (last visited July 12, 2012).

[69] Hamadoun Touré, *How Mobile Broadband Can Transform Africa*, CNN (February 27, 2012, 7:10AM), http://goo.gl/c3FEk (last visited May 18, 2012).

[70] *Id.*

[71] Robert M. McDowell, *The U.N. Threat to Internet Freedom*, WALL STREET JOURNAL, (February 21, 2012), *available at* http://goo.gl/61AGM (last visited May 18, 2012).

[72] David A. Gross & M. Ethan Lucarelli, *The 2012 World Conference on International Telecommunications: Another Brewing Storm Over Potential UN Regulation of the Internet*, WHO'S WHO LEGAL (WILEY REIN, LLP), (November 2011), http://www.wileyrein.com/publications.cfm?sp=articles&id=7630 (last visited May 18, 2012). The authors note that

> The WCIT could lead to new regulations governing how these businesses are run and how such businesses may interact with their customers, partners, and vendors, as well as how they can innovate and provide new and improved services. Moreover, because of the

There is good reason for McDowell to state that "engineering and business decisions become politically paralyzed within a global regulatory body." The economic value of the Internet alone is astonishing: the Internet currently represents 3.4 percent of the GDP in a number of developed countries, which is larger than the agriculture or energy sector in those nations—if the Internet were a sector, its contribution to global GDP would be greater than the total GDP of Canada or Spain.[73] Additionally, the Internet is responsible for 21 percent of GDP growth in the last five years.[74] Based on this data alone, one might hope for a regulatory status quo.

¶32 But that's not how a resilient, ever-evolving organization like the ITU sees things. An article in *Vanity Fair*, Michael Gross concluded that one of the top three areas of interest for the ITU will be privacy and cybersecurity, because "Authoritarian governments want to tie people's real names and identities to online activity, and they want international law to permit national encryption standards to allow government surveillance."[75] In a paper entitled "Overview of Convergence," the ITU claims that "the inadequacies of the current version of the ITRs have the consequence of causing well-known problems particularly for developing countries but also security problems for these countries."[76] Here, the ITU is drawing on themes of "development" and "security" in the context of the Internet, which is right from the playbook of the ITU's movement from wired telephony into wireless. To be sure, there are nontrivial differences in the administration of wireless spectrum;[77] however, the rationale based on "security" and "convergence" as an international agency's basis for asserting control is a theme that we've heard before. It worked for wireless, and it just might work for the Internet.

¶33 There are four treaties at the ITU: The Constitution, the Convention, the Radio Regulations and the International Telecommunication Regulations.[78] This year, the International Telecommunication Regulations that are being revisited. At this point, the proposals for the revisions that stand before the ITU are more than 100 pages long. Although the ITU has promised to release the proposals to the public, currently, they are confidential and can only be viewed when leaked through sites like WCITLeaks.org. It's not possible to summarize all proposals in this essay, and they are likely to change over time. One of the more useful summaries of the leaked proposals is provided by the Information Society, and below is a sampling of some of the most significant themes:[79]

- *Internet Charges (peering, transit).* Some governments would like the ITU to play a greater role in regulating peering, termination charges for data traffic, and other Internet-related rate issues. These matters have previously flourished with little or no government intervention. The rationale that these countries advance is that mandating these matters would lower certain Internet backbone costs and to capture for domestic coffers some of the value of international VoIP services entering their countries.[80]
- *Developing Country Issues.* Some developing countries suggest that the ITRs be modified to allow the countries to charge developed-country carriers higher rates. In addition, some

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> implicit attacks on established mechanisms of internet governance, the WCIT has the potential to destabilise and politicise standardisation processes and the management of the internet architecture in a way that could also hinder innovation and efficiency.

[73] Pélissié du Rausas, et al., *Internet Matters: The Net's Sweeping Impact on Growth, Jobs, and Prosperity*, MCKINSEY GLOBAL INST. (May 2011).

[74] *Id.*

[75] Michael J. Gross, *World War 3.0*, VANITY FAIR, (May 2012), *available at* http://goo.gl/MldR8 (last vistited May 26, 2012).

[76] CWG-WCIT12 Draft Information Document 6, *Overview of Convergence*, CWG-WCIT12/INF-6 (27-29 February 2012), citing Côte D'Ivoire, CWG-WCIT12/TD 36 Rev.6-E (on file with author).

[77] *See* Patrick S. Ryan, *Treating the Wireless Spectrum as a Natural Resource*, 35 ENVTL. L. REP. 10620 (2005).

[78] *See* ITU Legal Framework, *available at* http://www.itu.int/net/about/legal.aspx (last accessed July 13, 2012) (all treaty documents can be downloaded from this location).

[79] Internet Society, WCIT Issues Matrix, *available at* https://fileshare.tools.isoc.org/wentworth/public/WCITMATRIX-15-June2012.pdf (June 15, 2012) (last accessed July 14, 2012).

[80] *Id.* at 7-10. (see proposals regarding transit and termination that come from the Russian Federation, Arab States, Egypt and ETNO).

countries also would like to modify the ITRs to lower the costs for developing countries when they bargain with commercial carriers for international telecoms and Internet services, as well as to ensure "transparency" for retail and wholesale prices and quality of service.[81]

- *Mandated Application of ITU Recommendations (standards)*. The ITU has issued non-binding standards and technology recommendations on many topics and while these recommendations are only advisory at the moment, some proposals could transform some or all of these recommendations into mandatory treaty provisions with the force of law.[82]
- *Cybersecurity*. Some countries are seeking to include cybersecurity and cybercrime provisions into this treaty so that the ITU can impose new regulations and establish itself as the organizational home for international cybersecurity policymaking. Included within this could be broad new data privacy, spam, and child protection regulations and could be leveraged to quell free speech.[83]
- *Internet Management*. Several countries have proposed to move oversight or "control" of aspects of the Internet and Internet development from the non-governmental, multi-stakeholder mechanisms such as ICANN so that the ITU can become a global Internet registry.[84]

¶34 As can be seen in the above examples the revisions are significant and would bring centralized control to Internet governance in ways that have never before been centralized. Additionally, the majority of the proposals come from countries that do not have long democratic traditions.

*A. The ITU and Standards Setting*

¶35 At this point, it might make sense to review ITU and non-ITU standard-setting procedures in greater depth in order to better understand potential regulatory developments going forward. To begin, it's important to note that the standard-setting functions that make the Internet work are so impressive in part because there's very little legal framework involved. There's also very little formality—it just works. When users access the Internet, they use the informal yet widely adopted TCP/IP protocol promoted by Vint Cerf and Bob Kahn back in 1973.[85] Similarly, emails are sent and received across multiple platforms and operators thanks to the widespread adoption of an open standard called the Simple Mail Transfer Protocol (SMTP).[86] Multiple standards form the foundation of the Internet—many are open, and all depend on some kind of interoperability.

¶36 The use of the Internet as a platform for global information exchange depends on interoperability—such a platform isn't owned by any one individual or entity but is instead shared by all mankind for the common good. At this point, many Internet users take for granted that Internet standards will remain interoperable. Yet there is evidence that certain open standards are starting to fracture and give way to tensions that exist between the loosely organized groups of engineers that have promoted the standards and more formal, government-sponsored groups like the ITU. While we won't be able to describe all of the challenges to interoperability in this article, we will describe one important fissure in the open-style standard-setting functions of the Internet and the ways in

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[81] *Id.* at 17-20 (see proposals from Russia, Egypt, Africa, Arab States, Belarus, Moldova and others for changes to transit rate regulation rules, interconnection, and other issues).

[82] *Id.* at 4 (see proposal from Russia, Arab States, RCC and Egypt to mandate ITU standards by giving ITU standards "the same legal status as the Regulations.")

[83] *Id.* (see proposals from numerous countries for enhanced security proposals from China, Cuba, Russia, Cote d'Ivoire, Egypt, and several others).

[84] *Id.* at 13 (see proposal from Russia and Cote d'Ivoire to oblige the ITU to allocate and distribute part of IPv6 addresses).

[85] *See* Vinton G. Cerf, et al., *Brief History of the Internet*, INTERNET SOCIETY http://www.internetsociety.org/internet/internet-51/history-internet/brief-history-internet (last visited Mar. 27, 2012).

[86] *See Simple Mail Transfer Protocol*, WIKIPEDIA http://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol (last visited Mar. 27, 2012).

which the ITU is central to this concern. This division is playing out in one case between the Internet Engineering Task Force (IETF) and the standard-setting part of the ITU, known as ITU-T.

*B. The IETF vs. the ITU*

¶37 Many open Internet standards are set at the IETF, a volunteer-based organization where engineers have developed the core functionality that enables the transfer of data packets throughout the Internet. All of the IETF designs are open and accessible to all, and the design processes are published, in their entirety, on the Internet.[87] If anything, reading the IETF website can be a bit onerous if for no other reason than the sheer amount of information available. Notably, the publications are all available and readable in any format, and anyone, anywhere, is welcome to participate in the IETF process. As Harald Alvestrand describes, the IETF depends on an entirely open process, which means that

> [A]ny interested person can participate in the work, know what is being decided, and make his or her voice heard on the issue. Part of this principle is our commitment to making our documents, our WG mailing lists, our attendance lists, and our meeting minutes publicly available on the Internet.[88]

¶38 Drawing from analogies throughout the open-standards space, the IETF strives to be a true meritocracy: If members of the IETF community determine that an engineer's ideas have value, those ideas are adopted and incorporated into the Internet's suite of standards. Ideas that are dated or counterproductive, on the other hand, fester and fail. As famously stated by David Clark of the Massachusetts Institute of Technology: "We reject kings, presidents and voting. We believe in rough consensus and running code."[89]

¶39 Whereas the IETF "reject[s] kings, presidents, and voting," the ITU relies entirely on appointments by governments, formal committees, and archane bureaucratic processes. The standard-setting processes at the IETF versus the ITU are like oil and water. The ITU benefits from the power of nations and by comparison is quite undemocratic—so much so that one might even call it totalitarian. In order to illustrate the difference between the two organizations, we will briefly review some of the characteristics of ITU participation. To recap, the IETF encourages participation by anyone, at little or no cost, in processes that are all freely open and accessible on the public Internet. However, in order to participate in an ITU process, one must:

- Demonstrate formal membership in the ITU, either as a company representative (a "Sector Member") or through a country delegation.[90] Primarily member states can participate in formal "conferences, assemblies and meetings" of the ITU.[91]
- Demonstrate accreditation either by a company or country. For example, the IETF cannot participate directly and has no formal standing—it's representation is through proxy of the Internet Society.
- Pay appropriate dues to the ITU sector and keep up on payments through any standard-setting process.[92]

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[87] Harald Alvestrand, *A Mission Statement for the IETF*, THE INTERNET ENGINEERING TASK FORCE (Oct. 2004) *available at* http://www.ietf.org/rfc/rfc3935.txt (last visited May 24, 2012).

[88] *Id.*

[89] The Tao of IETF: A Novice's Guide to the Internet Engineering Task Force, draft-hoffman-tao4677bis-13, IETF.com, *available at* http://www.ietf.org/tao.html (last visited May 24, 2012).

[90] *Membership*, INTERNATIONAL TELECOMMUNICATION UNION, http://www.itu.int/ITU-T/membership/join-itut.html (last visited May 24, 2012).

[91] *General Rules of Conferences, Assemblies and Meetings of the Union*, INTERNATIONAL TELECOMMUNICATION UNION. http://www.itu.int/net/about/basic-texts/rules.aspx (last visited Mar. 27, 2012).

[92] Sector members pay CHF 63,600 per year (about USD $70,129). *See Financial Contribution for Membership*, INTERNATIONAL TELECOMMUNICATION UNION, http://www.itu.int/en/ITU-T/membership/Pages/cost.aspx (last visited May 24, 2012).

- Participate in regular meetings that deal with particular issues. The meetings are often held at the ITU's headquarters in Geneva.
- Give access to the database only to certain individuals[93] and agree to be bound by the terms and conditions of the online document exchange through the ITU, called TIES, which has strict prohibitions on information sharing with anyone who isn't a Sector Member. [94]

¶40 As can be seen above, in many ways, the IETF's philosophy of access and transparency could not be more different than that of the ITU. Whereas the IETF is an extremely open, democratic organization, the ITU has a long history as a top-down, opaque, limited-access organization.

¶41 Even for academics, researching the ITU can be an extremely challenging. An anecdotal story illustrates this point. When the author of this piece was working on his PhD dissertation, he traveled to Geneva to spend some time performing research on the organization and interviewing experts. The ITU opened its doors and granted access to its building, people, and library—however, the ITU's work is stored in the TIES online document exchange system. Unlike the IETF where documents can be freely posted, viewed, and critiqued, TIES denies almost all outside access to the contents of the database. While some exceptions are granted to academic institutions, there is a complex process for application and approval on a case-by-case basis. Further, the list of non-Sector Members that have access to the TIES database is extremely limited.[95] The ITU isn't subject to public-records requests like the Freedom of Information Act, or for that matter, any principles of open government. While significant progress has recently been made, for the most part, the entire ITU organization, like its TIES database, is largely closed to outsiders—if you're not in the club, you're out of luck.[96]

¶42 As a result, a concerned Netizen has no way of logging in to TIES to monitor standards proposals or other developments. Moreover, Sector Members who forward relevant information from the TIES account must break their promise of confidentiality under the terms of service. It probably comes as no surprise, then, that outside research on the ITU is informal, incomplete, and unreliable because it is largely derived from word of mouth.

### *C. The MPLS Dispute*

¶43 A specific standards dispute between the IETF and the ITU may help to shed some light on the dangers of the closed ITU system and its potential impact on Internet standards, in contrast to the IETF model. While competition is often a good thing, two standards are not necessarily better than one—particularly if there are divergent philosophies on how those standards are adopted and how they interoperate.[97] More than three decades ago, the IETF created Multiprotocol Label Switching (MPLS), a data-exchange standard that allows data packets to be "labeled" in a standardized way and routed through the Internet backbone in the most efficient way possible. In short, MPLS is an open

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[93] TIES accounts are highly controlled. ITU members are "invited to designate a Focal Point ... through whom all the requests for an individual TIES user account will be channeled ..." *Guidelines for TIES access,* INTERNATIONAL TELECOMMUNICATION UNION, (Jan. 27, 2000) http://www.itu.int/TIES/registration/DM1013.pdf (last visited Mar 24, 2012).

[94] TIES accounts are highly controlled. ITU members are "invited to designate a Focal Point ... through whom all the requests for an individual TIES user account will be channeled ..." *Guidelines for TIES access,* INTERNATIONAL TELECOMMUNICATION UNION, (Jan. 27, 2000) http://www.itu.int/TIES/registration/DM1013.pdf (last visited Mar. 27, 2012).

[95] The universities that have access to TIES are listed at: *ITU Global Directory*, INTERNATIONAL TELECOMMUNICATION UNION, http://www.itu.int/cgi-bin/htsh/mm/scripts/mm.list?_search=UNIV&_languageid=1 (last visited May 24, 2012).

[96] Patrick S. Ryan and Jacob Glick, *The ITU Treaty Negotiations: A Call for Openness and Participation*, NORTH AMERICAN NETWORK OPERATORS' GROUP 55TH (NANOG 55) MEETING (June 2012), http://ssrn.com/abstract=2077095 (last visited July 13, 2012).

[97] One of the consequences of standards that don't interoperate is lock-in, which occurs when a customer is uniquely dependent on a vendor for products and services, unable to use another vendor without substantial switching costs. Examples of lock-in include the difficulty in switching from one office-based provider to another; or to switch telephone providers in areas where the market is limited or where barriers to entry are high. *See* CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY, 130-34 (1999).

protocol that helps people exchange information across the Internet's backbone, regardless of their service provider. According to one widely used summary:

> MPLS consists of a packet-forwarding paradigm, data encapsulation rules, and control/management protocols. All of these were initially developed for use in IP-based networks (i.e., the Internet) with a "best-effort" packet delivery service. However, the rapid take-up of MPLS led to the development within the IETF of additional services, including traffic engineering (TE), enhanced management and diagnostic tools, and pseudowire (PW) connectivity by which transport connectivity could be provided over MPLS networks.[98]

Since MPLS was initially developed by the IETF—with roots that trace back to 1981—one might expect that the process to modify and update MPLS would be found at the IETF.[99] As it turns out, in 2002, a little more than twenty years after MPLS was first proposed, the ITU didn't ask, it *informed* the IETF that the ITU would be taking on its own standards development for further development of the MPLS standard. In a short statement, the ITU indicated that it wished to "inform [the IETF] that [the ITU] is undertaking detailed studies on MPLS inter-networking."[100] After some fits and starts, this missive led to announcements from 2006 through 2009 of various conflicts between the ITU and IETF in MPLS standardization efforts.[101] Ultimately, the ITU justified its development of a new standard because of what it declared to be a "lack of progress" in standards evolution at the IETF.[102]

¶44 As indicated above, the ITU seems to feel the IETF has made insufficient progress in developing a data exchange standard but has not explained why—at least not in a public way. The ITU now openly states its frustration with the IETF's "lack of progress" and since the ITU was unable to reconcile the work with the IETF, the ITU declared an impasse and its intention to move on: "[I]t is unlikely that these views will be reconciled by further discussion." The ITU continues to state that "[a]fter waiting three years for the IETF to deliver a solution that will meet the needs of its membership . . . the ITU has now voted in favour of a solution which conforms to the MPLS architecture and meets the needs of its membership."[103] Unfortunately, because of the obscurity of the ITU's process, the inability to access TIES accounts, and the secrecy behind the authors—it's not clear who or what is truly driving the ITU's intervention.

¶45 However, for something as fundamental as MPLS—which handles packet labeling on the Internet's backbone—multiple systems might create multiple Internets that may not interoperate. To be sure, no fundamental interoperability has happened yet, but the concern certainly exists, particularly if there are future conflicts of this kind. In discussing the competing proposals by the IETF and the ITU, the IETF explained the conundrum as follows:

> If both [MPLS] technologies are deployed, it is likely that there will be confusion; if only one is deployed, the existence of the alternative is irrelevant. In this instance, there are believed to be commercial products in development for both proposals, so confusion appears inevitable.

As with all information about the inner workings of the ITU, there's very little transparency regarding the genesis of the proposal. Indeed, the ITU has talked about the work of its "experts" in

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[98] *Milestone Achieved in Internet Carrier Standards -- Multiprotocol Label Switching Transportation Profile (MPLS-TP) Specifications Published*, INTERNET SOCIETY, http://www.isoc.org/standards/mpls.shtml (last visited May 24, 2012).

[99] An IETF overview document tracks the history of MPLS all the way back to September 1981 with IETF FRC 791 on IPv4. *See* Timeline of MPLS-TP History in Briefing on MPLS-TP to the Internet Society Organizational Members Advisory Counsel, April 1, 2011 (on file with author).

[100] *See* ITU Telecommunication Standardization Sector, *SG13 work on interworking with MPLS*, Q.5/13, (July 8, 2002), https://datatracker.ietf.org/documents/LIAISON/file901.txt.

[101] Stuart Corner, *ITU Refutes ISOC Claims That Split Over MPLS OAM Will Harm the Net*, ITWIRE.COM, (March 3, 2011) http://www.itwire.com/business-it-news/technology/45564-itu-refutes-isoc-claims-that-split-over-mpls-oam-will-harm-the-net (last visited May 24, 2012).

[102] *Id.*

[103] *ITU-T Newslog MPLS-TP: The Facts,* (Mar. 14, 2011), http://www.itu.int/ITU-T/newslog/MPLSTP+The+Facts.aspx (last visited May 24, 2012).

MPLS, but as Stuart Corner notes, the "ITU does not identify these 'experts' and acknowledges that interoperability may be compromised."[104] Indeed, there's a very real possibility that these divergent standards may well compromise the interoperability of the Internet.

¶46 The story on the IETF/ITU dispute over MPLS has not yet been finalized. To some extent, bread has been broken between the ITU and the IETF, and in spite of this dispute the IETF and the ITU have a relatively good history of collaboration. For example, the IETF's Request for Comments (RFC) 3356 outlines a fundamental engagement plan for the organizations and methods of collaboration.[105] Yet in spite of this arrangement, evolution of standards for MPLS has been an area of extreme international concern, and the IETF and the ITU have been involved in a battle to develop divergent standards in this space. As this article goes to press, it's not yet clear if the ITU and the IETF will converge or diverge on this standard. Unfortunately, all indications point to two concurrent MPLS standards emerging. If such is the case, an Internet *a deux vitesses* could develop, one with data flows based on the IETF's open system and another based on the ITU's closed model.

## V. THE STRUCTURE OF THE ITU

¶47 In examining this closed model a little further, we may benefit from a more thorough analysis of the structure and practices underlying the ITU's regulatory infrastructure. The ITU is divided into three broad areas with distinct (albeit somewhat overlapping) mandates. As we've seen above, the *first* is the telecommunication standardization division dubbed "ITU-T," which deals with standardization efforts on a wide variety of fronts. The *second* is the radio communications and wireless division, dubbed "ITU-R," which handles the international allocation, allotment, and recommendations for national assignment of wireless spectrum. The *third* is the international development section, dubbed "ITU-D," which deals with ways to bring telecommunication technology to developing economies. Each is described in turn below and discussed in the context of the challenges and successes involved in merging the telecommunications world with that of the Internet.

### *A. Standardization in Spectrum and in Telephony*

¶48 When we pick up a phone and dial +1 for the United States or +32 for Belgium, it's the ITU-T that makes sure there's no chaos. Imagine if Russia and the United States each laid claim to +1 on the international sector—in the early days of telephone technology, there would have been no ability to make interoperable calls from either country to the other. One could argue, then, that the ITU's experience in telephony might make it qualified to bring this expertise to the Internet. However, the Internet is not the telephone system—unlike telephony, the Internet was never owned and operated by large monopolistic state actors.

¶49 Turning to ITU-R, World Administrative Radio Conferences (WARCs, or sometimes abbreviated WRC) are one example of a legislative organ of the ITU in action. Since the spectrum lockdown that arose from the *Titanic* disaster, the WARCs have become *the* legislative organ for radio communications and spectrum matters. At these conferences, frequencies are first allocated to services (referred to as *allocations*), after which time countries allot frequencies to specific areas or regions within those countries (referred to as *allotments*) and national regulatory authorities use this to assign them through licenses to stations (in a process called *assignment*).[106] The central legal mechanism for this process can be found in the ITU Constitution and the ITU Radio Regulations.

¶50 Unlike the UN Security Council where five "superpowers" have veto rights, the general principles of the UN apply to WARCs. In other words, every country, regardless of its size, has one

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[104] *See* Corner, *supra* note 101.

[105] G. Fishman & S. Bradner, *Internet Engineering Task Force and International Telecommunication Union - Telecommunications Standardization Sector Collaboration Guidelines*, INTERNET ENGINEERING TASKFORCE, (Aug. 2001), http://www.ietf.org/rfc/rfc3356.txt (last visited May 24, 2012).

[106] These terms are defined in the ITU Radio Regulations, Nos. 1.16-1.18.

vote (*e.g.,* the United States and India have no more votes than Liechtenstein and Andorra). The ITU Constitution holds that member countries shall

> [e]ffect *allocation*[107] of bands of the radio-frequency spectrum, the *allotment*[108] of radio frequencies and registration of radio frequency *assignments*[109] [and] any associated orbital positions in the geostationary-satellite orbit in order to *avoid harmful interference* between radio stations of different countries and co-ordinate efforts to *eliminate harmful interference* between radio stations of different countries and to improve the use made of the radio-frequency spectrum and of the geostationary-satellite orbit for Radiocommunications services.[110]

The process works, and we know it, but as seen in the excerpt above, the ITU Constitution uses the words *avoid* and *eliminate* rather than the word *optimize*, which we believe would be more useful because *elimination* of interference leads to inefficient results.[111] Thus, in the context of radio spectrum, the emphasis at the ITU on the *avoidance* and *elimination* of harmful interference leads to a very conservative approach to spectrum management. What if these principles were applied to the Internet? This could be a problem, if only because of the significant bureaucratic overhead and complexity involved.

*B. The ITU-R Decision Tree*

¶51 We might assume that if the ITU expands into the regulation of the Internet it will look at its current systems and practices and apply what they know to Internet regulation. As such, the Radio Regulations are a good proxy for understanding the rigidity with which the ITU may regulate the Internet, since the ITU's radiocommunications system has been in place to varying degrees for a century. In the context of radio, the ITU's reigning principle is based on avoiding harmful interference through central planning and coordination.[112] According to the Radio Regulations, wireless radio stations that receive frequency assignments must respect prescribed allocations and adhere to designated technical requirements (*e.g.,* power emission levels) and operational procedures (*e.g.,* etiquettes and protocols). The benefit of this structure is that it maintains order within the spectrum.

¶52 The allocation procedure alone is divided into no less than six decision levels.[113] These decision levels, in turn, influence the national spectrum management paradigms of the member countries. The

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[107] The ITU Radio Regulations define *allocation* as an entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial (*i.e.,* one ground antenna to another ground antenna) or space (*i.e.,* satellite) radiocommunication services under specified conditions. *See* Economic, organizational and regulatory aspects of national spectrum management, ITU-D Study Groups Handbook, Report on Question 2/2 at 1 (1999), *available at* http://www.itu.int/pub/D-STG-SG02.02.1-1998 (last visited May 24, 2012).

[108] The term *allotment* is defined in the Radio Regulations as entry of a designated frequency channel in an agreed plan, adopted through a competent (*i.e.*, authorized) conference, for use by one or more administrations for a terrestrial or space radiocommunication service in one or more identified countries or geographical areas and under specified conditions. *Id.* at 1.

[109] The term *assignment* is defined in the Radio Regulations as the authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under certain specified conditions. These conditions vary from state to state. *Id.* at 1.

[110] ITU CONST. art. I, §2(a) (emphasis added).

[111] Economist Thomas Hazlett has pointed out that governments should aim to optimize interference. By eliminating interference, governments create disincentives for manufacturers to create technologically superior devices that are able to filter out that interference. *See generally* Thomas W. Hazlett, *Physical Scarcity, Rent Seeking, and the First Amendment*, 97 COLUM. L. REV. 905 (1997).

[112] ITU Radio Reg. § S1.166 defines the term "interference" as follows: "[t]he effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy." (emphasis omitted). ITU Radio Reg. § S1.169 provides additional information about "harmful interference": "Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with these Radio Regulations (CS)." (emphasis omitted). This definition also appears in the Annex to the Constitution under provision 1003.

[113] *See ITU Report on Spectrum Management*, *supra* note 107 (describing the six-level decision hierarchy).

levels are listed below in rough order of importance (although it is important to note that they often interconnect):

> (i) *International Restrictions on the Type of Use*. Types of use can include fixed, mobile, broadcasting, one-way, or two-way communications. Minor differences aside, frequencies used by AM and FM radio, broadcast television, cellular telephony, and Wi-Fi are generally the same in every country in the world.[114]
>
> (ii) *National Restrictions on the Classes of Users*. These restrictions designate who may use a given frequency. The largest two classifications in this regard are frequencies for government use and frequencies for non-governmental use.
>
> (iii) *National Restrictions on the Type of Use*. In some cases, national policies may differ from international policies. For example, lower frequencies that propagate long distances may have more international restrictions than higher frequencies since these higher frequencies tend to remain within national borders.
>
> (iv) *National Sub-restrictions on the Subclasses of Users*. These restrictions designate specific subclasses that can use a given frequency. For example, the ITU strives to coordinate similar frequencies for governmental uses (*e.g.,* the police, the military, railroads, and utilities) and non-governmental uses (*e.g.,* cellular phones and dispatch and taxi services).
>
> (v) *National Restrictions on System Design Within Specific Frequency Bands*. For example, the ITU has attempted to harmonize modulation schemes, protocols, power, antennae, analog and digital standards, and other system characteristics.
>
> (vi) *Specific Technical Details Related to Spectrum Management*. These details tend to vary much more at the national level, although certain flexible guidelines are set at the ITU. For example, these details might include the number of mobile phones that can use a given channel, the number of channels allocated to a particular frequency range, the "guard bands" (*i.e.,* distance) between channels, and the type of technology [*e.g.,* analog, time division multiple access (TDMA), or code division multiple access (CDMA)].

This decision-level hierarchy clearly involves the complex interplay of multiple parties, including the ITU, national regulatory authorities (like the FCC), manufacturers, operators, and users. Changes are not allowed by the market. Treaty-like conferences—WARCs—require state actors, ambassadors, and governmental action for evolution.[115]

The latest version of the Radio Regulations is the 2008 edition,[116] which is contained in a multivolume book (often referred to as the "Red Book" because of its bright red color). The body of the text is divided into chapters, articles and provisions, and footnotes, and the book also contains

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[114] For the allocation of GSM bands, there are, of course, two important differences between bands, such as 900 MHz and 1800 MHz. Both are "GSM," but the former represents the initial build-out of networks in the early 1990s and the latter (1800) was used for the second deployment of GSM networks. Later, "tri band" and "quad band" phones are able to swap between these 900 and 1800 MHz bands. These multi-band phones work in Europe and also in the United States (for systems that have voluntarily adopted the GSM standard).

[115] *See* European Radiocommunications Office (ERO) Report on WRC-03, July 29, 2003. The ERO report highlights both the scope of the WRC and the important levels of European cooperation in its preparation:

> The ITU 2003 World Radiocommunication Conference (WRC-03) was held in Geneva from 9 June to 4 July 2003. It gathered 2278 delegates from 138 ITU Member States and addressed over 45 Agenda Items, an unprecedented number in ITU history. CEPT preparation for WRC-03 spanned over nearly three years, with seven meetings of the Conference Preparatory Groups (CPG) and many more meetings of CPG and ECC project teams and working groups assisting in this preparation. During the conference itself, eleven coordination meetings were convened between CEPT administrations at plenary level (and many more on practically all issues). This enabled virtually flawless cooperation between European administrations throughout the conference.

[116] *See* ITU RADIO REG. (2008). The Radio Regulations do not yet contain the amendments from the 2003 WARC (WARC-2003, held in Geneva); however, they do contain the complete text of the Radio Regulations as adopted by WARC-95 (Geneva) and subsequently revised and adopted by WARC-97 (Geneva) and by WARC-2000 (Istanbul).

various appendices, resolutions, and recommendations. Reading the regulations along with all of the appendices, resolutions, and recommendations is not an easy task, and the regulations themselves are rather unwieldy and difficult to apply. Recognizing this fact, the Plenipotentiary Conference (Nice, 1989) resolved that a Voluntary Group of Experts (VGE) should be set up to study ways to simplify the regulations. The results of the VGE's work are set out in a three-volume "VGE Report," and the VGE's recommendations are discussed with the goal of revising the Radio Regulations accordingly.[117] The Radio Regulations have been somewhat revised although they are—like all frequency allocation documents—still difficult to understand without specialized counsel.

*C. Applying the Model to the Internet*

¶53 The truth is, we don't yet know how the ITU would engage in the operation and management of the Internet. With that thought in mind, it probably makes sense to look back to previous examples in radiocommunications and standard setting. The ITU is a closed bureaucracy that works by setting up processes and procedures—sometimes very formal ones—and it's a somewhat fearful proposition to think that similar complicated, closed, bureaucratic processes would be applied to its management of the Internet. It is perhaps telling that the ITU Secretary General, Dr. Hamadoun Touré, declared the need for ITU's involvement in the by declaring the Internet's demise. As he noted, if the ITU's member nations do not change the ITR provisions, "we risk the *collapse* of ICT networks which underpin all communications technologies."[118]

¶54 Collapse? To be sure, predictions of the Internet's collapse are not new. Bob Metcalfe, the inventor of Ethernet and the founder of 3Com Corporation, boldly declared that the public Internet could not scale, contending that it would ultimately implode in an immense cyber-collapse.[119] Happily, Metcalfe was wrong. That said, the ITU overstates various fundamental Internet issues. For example, in their document entitled "Security in the Use of ICTs," which is used as a basis for the ITR revisions, the ITU describes various "global challenges" related to security of the Internet, and provides a "cyberattacks timeline" that states that on June 1, 2011, "Google email system hacked, attack suspected to originate from China."[120] However, the security breach that the ITU refers to was not, in fact, a hacking case, as no Google systems were hacked; instead, it was a hijacking case.[121] There are other examples of missing the point: for example, the ITU considers spam to be one of the largest threats, a "global problem that requires international cooperation in order to find solutions" and that "addressing the issue of spam is a matter of urgency."[122]

¶55 Is the ITU the right place to discuss these issues? When discussing Internet security, it's crucial that the right experts be involved. As we've seen in other contexts in this paper, the ITU is an organization that has deep history in handling telecommunications matters, but its track record on cybersecurity has not been established at all. If it's recent reports are any indicator, there is reason for concern. The difference between hacking and hijacking, for example, is crucial: whereas hacking is

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[117] *See* Remarks of FCC Commissioner Susan Ness, Report on the 1995 World Radiocommunication Conference (November 28, 1995), *available at* http://www.fcc.gov/Speeches/Ness/spsn510.txt (last visited Mar. 28, 2012) (describing the outcome of WARC-95 and the appointment of the Voluntary Group of Experts).

[118] Hamadoun Touré, Welcome Remarks to the Telecommunications Standardization Advisory Group (January 10, 2012), *available at* http://www.itu.int/en/osg/speeches/Pages/2012-01-10.aspx (last visited Mar. 27, 2012) (emphasis supplied).

[119] Metcalfe thought that the Internet could not scale to the point that it has. He instead predicted its total collapse, noting that "Private TCP/IP networks are avoiding the public Internet in droves. . . . Now the nation's great research universities, the builders and first use of the Internet -- Harvard among them -- are preparing to join the desertion of the sinking ship." Bob Metcalfe, *You Really Think That the Internet Isn't Collapsing? Universities Are Bailing Out*, INFOWORLD, Nov. 11, 1996, at 48.

[120] CWG-WCIT12 Draft Information Document 7, Security in the use of ICTs, CWG-WCIT12/INF-7 (February 21, 2012) at 3 [hereinafter "ITU Security Report"].

[121] *See* Eric Grosse, *Ensuring your information is safe online*, OFFICIAL GOOGLE BLOG (Jun. 1, 2011), http://goo.gl/RrG3Q (describing Google's position on the Chinese phishing matter); *see also* Amir Efrati, *Google Discloses China-Based 'Hijacking' of Gmail Accounts*, WALL ST. J., Jun 2, 2011.

[122] ITU Security Report, *supra* note 120.

the penetration of a *company's* system by outsiders, hijacking (or "phishing") involves tricking a *user* to voluntarily hand over password and login information.[123] While both hacking and hijacking are certainly forms of security breaches, it's misleading to conflate the two. It's also not helpful to security to combine a discussion of hacking and hijacking with general scare-tactic statements about unspecified, uncited claims of "[a]rticles [that] speak of at least 70 million different malwares around the world and smartphones [that] have become the main vehicle for their dissemination."[124]

¶56 After making these broad claims, the ITU provides no prescription, just more fear, stating that "Despite the accelerated development of threats, there is not yet a globally accepted definition of security in the use of ICTs."[125] The ITU does not explain why or how this is relevant, the ITU is clearly making its case for intervention. As noted above, the ITU believes there are security problems, that the Internet system is at risk of collapse, and that the ITU itself must intervene. However, even in the telephone context—ITU's core competency—the prosecution of telephone hacking (previously called "phreaking") is not something that the ITU was heavily involved in. Instead, that has been a national matter to resolve.[126] But how would the ITU intervene, and why can the ITU do a better job at Internet matters than the current multistakeholder system? If the ITU hasn't been active in resolving telephone security matters (*e.g.,* phone hacking from the 1980s), what makes us think that it would be appropriate for the ITU to get involved in Internet security?[127] The ITU does nothing to answer these questions.

## VI. THE BROADER ROLE AND AUTHORITY OF THE ITU

¶57 At this point, we've established that the ITU has been quite involved in the international regulation of telecommunications and spectrum. We've also seen that it is a large, closed, bureaucratic organization that uses scare tactics in an attempt to reinforce the need for its regulatory involvement. Yet, in many ways the ITU's legal authority in the international telecommunications arena has been diluted by regional and sovereign interests. So much so that it now holds mostly a voluntary consensus-seeking function. It is an old institution with well-established roots, and should reform what it currently does in telecommunications before discussion of the Internet should even be on the table. If this isn't confusing enough, we'll look at one more area where the ITU *has* been both influential and useful: the area of space law, where international treaties are more relevant and international coordination is key.[128] As we'll see below, the ITU is already borrowing from its

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[123] For an overview of different types of cybercrimes (from phishing to hacking) *see Fighting the Worms of Mass Destruction*, ECONOMIST, Nov. 29, 2003, at 65 (describing "phishing" as the tricks that some use to get recipients to give out sensitive information, such as credit-card numbers).

[124] *Id.*

[125] *Id.*.

[126] Patrick S. Ryan, *War, Peace or Stalemate: Wargames, Wardialing, Wardriving and the Emerging Market for Hacker Ethics*, 9 VA. J.L. & TECH. 7, 28-9 (2004).

[127] The phone hacking cases happened locally, and may have involved international coordination among law enforcement, but the prosecution of these telephone hacking cases was all regional. *Id.* at 17 (describing the telephone hacking cases):

> Before the telephone system became highly digitized, it was open to attack by certain homemade analog devices used to trick the system and make free phone calls. Courts have convicted people for the following types of phreaking: (1) the use of "red boxes," which enable people to make free phone calls from payphones; (2) the use of "blue boxes," which allow people to make phone calls from any phone by emitting a sound over a frequency that leads the computer to believe the phone call was made by an operator; (3) the use of "black boxes," which send false voltage signals when a caller picks up a call so that the calling party is not charged; and (4) the use of "silver boxes," which create special tones that only operators use (e.g., tones that can be used to take control of certain PBX94 systems and connecting calls). The use of these devices is certainly criminal, since the devices are used to bypass the per-minute charge that the telephone company imposes for making a phone call. In fact, the government has had little trouble prosecuting these activities under the Wire Fraud Act,96 particularly in the 1970s.

[128] *See e.g.,* Convention on Registration of Objects Launched into Outer Space, November 12, 1974, 1023 U.N.T.S. 15; Outer Space Treaty, cited *infra* at note 149. These and other treaties are discussed in further detail *infra* in Section VII.

experience in space law in its proposed move into Internet governance, so understanding this background is useful.

¶58 We have already seen that the Radio Regulations are a matter of international law by virtue of their ratification by the countries of the world. What does the proposition that the ITU's work constitutes international law mean? As an ITU report explains,

> Radio Regulations are annexed to the International Telecommunications Convention that has the status of an international treaty, therefore any country which ratifies or accedes to the Convention must comply with the provisions of the Radio Regulations. This primary obligation of an administration, in the context of international frequency management, cannot be delegated or conceded to a third party.[129]

So, how relevant are the ITU's rules, and how binding are they to countries? The answer is complicated, and although few back out, options are open to countries that want to proceed their own way. Its influence is broad and influential—but it is largely voluntary. Though the aforementioned ITU report indicates "any country which ratifies or accedes to the Convention must comply with the provisions of the Radio Regulations," commentator James Brierly has famously observed that international law arises from the *voluntary consent of nations*.[130] Although the International Court of Justice (ICJ) theoretically provides a remedy for noncompliance with international agreements, it too has a fundamental voluntary character to it.

¶59 In the end, the voluntary, consensus-building element of international treaties seemingly reigns supreme. As Paul Diehl has noted, "the traditional conceptualization [of treaties] is a binary one: the state is either a party to the treaty or it is not."[131] When it comes to the ITU, however, a state's participatory status is less binary than dichotomous. After all, as members of the ITU all states have implied acceptance of the Radio Regulations as a treaty; however, the interpretation and implementation of this particular treaty vary greatly from country to country such that it ultimately does not have the character of a treaty at all. The ITU's work is both binding as a treaty and voluntary in practice.

¶60 It may help to explore this topic a bit further: what if a country is bound by an ITU treaty but violates it? The Vienna Convention on the Law of Treaties provides an answer, because it is the international framework for treaty obligations of all kinds.[132] Surprisingly, treaties are barely enforceable in the international stage. It's all good faith. In the aggregate, the number of states that are party to a treaty is often used as a measurement of the breadth of acceptance of a given agreement or of the norms embedded within. However, though the ITRs and Radio Regulations have the implied consent of all 193 UN members, they include a number of footnotes and other mechanisms (*e.g.,* the "reservations" discussed below) that make it difficult to gauge their relevance on the whole. As no ITU-related cases have been brought before the ICJ, these matters have never been tested in international courts. Absent a legal mechanism for enforcing these treaties, ITU's regulatory authority remains primarily in the control of individual countries.[133]

The absence of standardization cases, spectrum cases, and cases involving ITU's coordination of technology being tried under international law does not mean that the ITU is ineffective or unimportant. However, it does underscore the point that the ITU's effectiveness relies almost exclusively on good faith. Faith matters, in certain respects. As we've seen in the context of Internet

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[129] International Telecommunication Union, ITU-D Study Groups, First Study Period Report on Question 2/2, at §5.4 (1999).

[130] JAMES LESLIE BRIERLY, THE BASIS OF OBLIGATION IN INTERNATIONAL LAW AND OTHER PAPERS 11 (Sir Hersch Lauterpacht & C. H. M. Waldock, eds., Oxford at the Clarendon Press, 1958).

[131] Paul F. Diehl, *Reconceptualizing Treaty Consent*, 6 GONZ. J. INT'L L. (2002-03).

[132] Vienna Convention on the Law of Treaties, May 23, 1969, 115 U.N.T.S. 331, *reprinted in* 8 I.L.M. 679 (1969).

[133] *See* STUART BENJAMIN, DOUGLAS LICHTMAN, & HOWARD SHELANSKI, TELECOMMUNICATIONS LAW AND POLICY (Durham, NC: Carolina Academic Press, 2001). It is instructive that this leading U.S. textbook on telecommunications law contains no specific section on the role of the ITU. All cases, policy, and statutes cited within its 1,056 pages are related to domestic law.

standards these voluntary agreements to cooperate form the fundamental backbone for the Internet's functionality. It's also risky, because the ITU's age does not make it unshakable. Many don't realize that the ITU does not have a permanent charter.[134] It is, of course, extremely rare for any branch of the UN to dissolve.[135] However, the ITU can (at least theoretically) be disassembled at any time if the member countries no longer perceive the value of the consensus-building proposition it offers. This is perhaps why the ITU is seeking so aggressively to expand its scope.

*A. A Multitude of Reservations*

¶61 Many legal appendices, addenda, and reservations to ITU resolutions further dilute any enforceable character that the ITU's treaty character may have. Virtually every ITU treaty is peppered with voluminous "reservations." For example, the European Union regularly inserts clauses stating that Europe will apply ITU agreements "in accordance with the Treaty establishing the European Union."[136] For instance, if it is determined that an ITU accord is subsidiary to the EU Treaty, that accord does not apply. In other words, Europe retains the right to use the European Court of Justice, and possibly even other legal for a, as a mechanism for assessing the applicability of ITU agreements.

¶62 Nearly all countries make similar provisos, although the United States perhaps includes the greatest number of corollaries, which is reflective of its ongoing tenuous relationship with the ITU. In fact, the United States regularly *reiterates* and *incorporates by reference* all previous conditions and declarations that it has made at previous ITU conferences (*reiterates* and *incorporates by reference* are legal terms often seen in U.S. contracts). As one commentator observed, these reservations in the ITU context are much the equivalent of saying "we agree except when we don't."[137] Such iterations are typical in U.S. dealings with other arms of the UN. Furthermore, as seen during the budget crisis of 1999 when the United States refused to pay its UN dues,[138] Americans will not hesitate to flex their financial muscles when they see fit.[139] Thus, in addition to these reservations, there are other practical tools available (like funding).

¶63 In one sense, when it comes to international telecommunications arrangements, organizations become legally weaker as they grow larger and more global. Said another way, sovereign states consistently refuse to surrender their autonomy to larger supranational bodies. This weakness in terms of the application of international law, however, should not be confused with matters of effectiveness and influence. The benefits derived from voluntary compliance and worldwide stakeholders' personal clout are forces to be reckoned with. Thus, various countries and the interests that they represent tend to recognize the value of international cooperation even though that cooperation may not result in binding international law. As scholar Rob Frieden explains,

> The decision to cooperate on telecommunications matters results when nations conclude that they have more to gain by reaching consensus than what may be lost in terms of

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[134] Jannat C. Thompson, *Space for Rent: The International Telecommunication Union, Space Law, and Orbit/Spectrum Leasing*, 62 J. AIR L. & COM. 279, 286 (1996). As Thompson notes, "The ITU … is not a supranational regulatory regime and lacks a permanent charter. The ITU is essentially a technical, rather than legislative, body, yet it has nonetheless become 'a major forum for the development of international space law.'"

[135] The United Nations Compensation Commission was opened in 1991 to process claims from the invasion of Iraq into Kuwait. It was one of the only UN Agencies to have actually been dissolved after its mission was complete. For background information, see UNCC website, at www.uncc.ch.

[136] Gerry Oberst, *Regulatory Review: ITU Rules and Reservations*, VIA SATELLITE, December 1, 2002, *available at* http://www.satellitetoday.com/via/32244.html (last visited May 2, 2012).

[137] *Id.*

[138] In 2011, the budget for the core of the United Nations was $1.9 billion annually. The United states is the largest single contributor, providing $362.7M in annual contributions, comprising 22 per cent of the overall budget. *See* http://www.un.org/geninfo/ir/index.asp?id=150#q2 (last visited May 2, 2012. Overall, the United Nations group costs more than $30B per year. *See generally* the Global Policy Forum on UN Finance, available at http://www.globalpolicy.org/un-finance.html (last visited May 2, 2012).

[139] Many of the UN's budget problems are associated with the heavy financial burden that the United States carries. A comprehensive overview is provided on the Global Policy Forum website. *See* Information & Analysis on UN Finance.

> advantageous market access and earnings potential. … When nations go along with an international consensus, they either support widespread sharing of the financial and logistical benefits from single rules and standards, or lack confidence in a market-driven process.[140]

It is, after all, through this complicated (and voluntary) consensus-building process that some of the most important (though seemingly simple) telephony standards have been established. We previously discussed the relevance and importance of the assignment of international area codes (*e.g.,* +1 for the United States and +32 for Belgium) and the benefits that this voluntary coordination has brought to all users of the telephone network.[141] Yet, if a particular country were so inclined, it could make a unilateral decision to change its area code without the sanction of others.[142] Doing so, of course, would throw the international dialing structure into chaos. Moreover, as Frieden notes above, international consent to the use of these codes points to worldwide recognition that, at least in this case, there is "more to gain by reaching consensus than what may be lost in terms of advantageous market access and earnings potential." For this reason, voluntary compliance and interstate political benefits conspire to give the ITU an unprecedented source of power and the capability to exert a global influence that can be far greater than the rule of law.

¶64 There are practical issues, too. The ITU, as part of the UN, serves an indirect peacekeeping function. Satellite launches could easily be confused with military attacks if those large rocket launches weren't announced through a standardized, international clearinghouse established as a result of voluntary discussions between states. As might be imagined, countries become *very nervous* when hostile neighbors launch rockets in their direction.[143] As a result, standards in communication equipment—and communications protocols—have become increasingly important across the globe.

¶65 The tens of millions of dollars[144] spent to create and launch satellites would be money misspent if those satellites, once permanently in orbit, were rendered useless due to interference from neighbors.[145] And despite the vastness of outer space, on at least one occasion poor coordination and loose standards among parties resulted in a mid-space collision.[146] Organizations like the ITU have been extremely successful in mitigating and even virtually eliminating such problems.

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[140] Rob Frieden, INTERNATIONAL TELECOMMUNICATIONS HANDBOOK (Norwood, MA: Artech Books, 1996), at 60.

[141] The ITU has created a central repository of national numbering plan information, which includes details of changes to national numbering plans, the structure of national numbering plans, and national contact points on numbering plan matters. This official international numbering repository is *available at* http://www.itu.int/ITU-T/inr/nnp/index.html (last visited Mar. 27, 2012). Also, several private databases cover numbering matters, and as a matter of practice, industry generally subscribes to the services of private providers in order to maintain their switches and PBXs. For example, see Spraakmaker Telecom, a company that has and licenses numbering plan databases, *available at* http://www.numberingplans.com/ (last visited May 2, 2012).

[142] There have been some aberrations. For example, some cell phones set up in Baghdad after the 2003 Iraq invasion were based on a +1 United States area code, so calling these phones was no different than making a telephone call from Denver to Dallas. Similarly, mobile phones in the former Yugoslavia were assigned telephone codes from Monaco and Germany. *Source:* Interview with ITU Numbering Coordinator Richard Hill, Geneva, Switzerland, February 3, 2004.

[143] *See* Todd Zaun, *Pyongyang Tests Another Missile, Raising Tensions*, WALL STREET JOURNAL EUROPE, April 2, 2003, at A2. Zaun describes North Korea's 2003 launch of a test-fire missile into the Sea of Japan. Korea did not pre-announce the launch through designated international channels, and worldwide panic ensued.

[144] *See* Fred Guterl, *FOR LEASE: Affordable Private Reusable Rockets*, DISCOVER, April 1, 1999 (discussing the expense of satellites, particularly the launching costs, and noting that the launch of twenty IRIDIUM satellites cost $89 million).

[145] *See generally* Rob Frieden, *Balancing Equity and Efficiency Issues in the Management of Shared Global Radiocommunication Resources*, U. PA. J. INT'L ECON. L. 289 (2003) (discussing the value of satellite "parking places" and other shared resources in space and elsewhere).

[146] *See* Greg Goldfarb, *Orbiting Politics: Crises in Outer Space*, HARVARD INTERNATIONAL REVIEW, June 22, 1997. Goldfarb describes the July 24, 1996, collision of a piece of rocket debris into a French military satellite. The author states that this incident is the only known high-speed collision of tracked objects in outer space, though he makes note of the increased debris and pollution in outer space, as well as the role of the ITU in tracking and monitoring these activities.

*B. International Standardization: The Ultimate Prize*

¶66 All parties will inevitably acknowledge that improved international coordination and worldwide acceptance of a shared standard are critically important. However, while universal standardization is clearly in the public's interest, intense struggles between private and public interests can push some companies and even some countries to develop their own technologies. Such was the case with the establishment of the v.90 protocol for computer modems[147] and the development of the Universal Mobile Telephone Service (UMTS).[148] In both of these scenarios, the ITU played an important *mediation* role in the disputes by proposing non-binding resolutions. In the case of UMTS, the United States and Europe each decided to take different paths. U.S. technology giant Qualcomm lost out to its better-coordinated European competitors in the establishment of a unique 3G standard, which Europe mandated through its legislative process.[149]

¶67 Returning to the discussion of spectrum management, it is worthwhile to note that, as a practical matter, the core frequency allocation decisions still take place at the country level. Nonetheless, industries still organize their lobbies and take their agendas with them to the ITU in order to achieve consensus and advance national agendas. This attempt to garner international support holds particularly true for the majority of consumer devices that are operated through terrestrial wireless technologies. In these cases, sovereign countries attempt to exert influence through larger international organizations. But in the end, national frequency allocation decisions can—and often do—differ from international recommendations and good faith, non-binding attempts at coordination. For example, when the French military claimed a sovereign right to continue to use certain frequencies within the Wi-Fi band (particularly frequencies that allow outdoor use), the launch of Wi-Fi services was delayed in France as a result.[150] Ultimately France altered its stance, but only after many months passed. As another example, Belgium and England launched "last-mile" Local Multipoint Distribution Service (LMDS) networks on 28 GHz frequency bands despite the fact

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[147] For a period of several years, computers did not migrate from 28k modems to 56k modems because there were two competing standards. Thus, consumers were reluctant to purchase 56k modems until the dispute was resolved. The ITU helped resolve the issue with the so-called "v.90" standard. *See* Frederick Rose, *Modem Makers Reach Accord on Standards*, THE WALL STREET JOURNAL, December 8, 1997, at B6. The article describes the long-lasting modem battle between 3Com, X2, and Rockwell:

> Everybody is a net winner in this one,' said Ernest Raper, senior market analyst at VisionQuest 2000 Inc., a modem market tracking concern based in Moorpark, Calif. Mr. Raper estimates that world-wide sales of silicon chipsets that are the core of modems will total between 28 million and 30 million next year-double this year's sales. Emergence of a standard, moreover, likely will slow the descent of modem prices, which have plummeted as modem makers struggled to convince wary consumers to choose between competing, incompatible equipment. With the new standard, it is expected that most 56K modems made this year can be upgraded relatively simply through the insertion of new software.

Ultimately, delays in reaching consensus meant that the new 56k modem standard had to compete with cable modems and DSL. In reality, there were probably more losers than winners: the manufacturers lost out on years' worth of new equipment sales because of the battle.

[148] There are several different 3G CDMA standards. The most advanced were developed by U.S.-based Qualcomm. However, rather than adopt Qualcomm's CDMA technology, European and Japanese equipment makers came up with their own version of CDMA, called W-CDMA, which was theoretically more compatible with Europe's existing GSM network infrastructure. Qualcomm developed another 3G version of CDMA, called CDMA2000, and there are now CDMA2000 networks operating in the United States, South Korea, and Japan. W-CDMA has had problems taking off. It is a new, untested standard, and getting equipment from different vendors to work together has proved more difficult than expected. Nonetheless, W-CDMA networks are gradually being launched across Europe. To complicate the picture further, China has developed its own 3G standard, TD-S CDMA, which is yet another (incompatible) version of CDMA. THE ECONOMIST has some excellent articles covering this standards battle. *See Spread Betting*, THE ECONOMIST, June 19, 2003, and *Time for Plan B*, THE ECONOMIST, September 26, 2002, both *available at* http://www.economist.com (via subscription) (last visited Mar. 27, 2012).

[149] Decision No. 128/1999/EC of the European Parliament and of the Council of 14 December 1998 on the Coordinated Introduction of a Third-Generation Mobile and Wireless Communications (UMTS) in the Community, O.J. L 17.

[150] *See* Eric Pape, *Missed Connections*, NEWSWEEK, December 15, 2002.

that other European countries, including Germany, Spain, and France, had adopted voluntary standards on the 26 GHz band.[151]

## VII. APPLICATION OF THE COMMON HERITAGE PRINCIPLE TO THE INTERNET

¶68 One of the most unusual things that has surfaced as the ITU attempts to move into the Internet space are its articulations of how certain space-law principles might apply to the Internet. In one example, a recent proposal for the International Telecommunication Regulations claims that "[t]he global community would benefit most if the global Internet is regarded as a heritage of humankind, instead of a commodity for competition."[152] As Tony Rutkowski has pointed out, the Internet is not a natural resource or common heritage, "it is simply an abstraction for enabling private computer network resources and information to be shared."[153] If proposals like this are making the rounds at the ITU, then, what is the basis for them?

¶69 International treaties have designated outer space as a *res communes,*[154] or "common heritage," of mankind, a principle that grants management rights of outer space to everyone. The principle holds that individual rights of ownership of space and celestial bodies may not be granted to any single person, nation, or collective.[155] This principle, first voiced by Malta's UN Ambassador Arvid Pardo in 1967, has been set forth again and again in various treaties aiming to protect mankind's common interests.[156] This section will explore how the ITU has dealt with the common heritage of mankind in the regulation of satellites, a unique area where theories related to the management of the wireless spectrum merge—and often conflict—with the *res communes* principles of outer space. This is important to understand in the context of the ITU's proposed move into the Internet, because in many ways, the Internet is—like outer space—a *res communes* because it is a resources owned by no-one and shared by all.

¶70 Three short case studies illustrate the way that the ITU has addressed the *res communes* problem. These cases cover a period of several decades and provide further insight into how the ITU may react to regulation of the Internet. Over time, as we will see, the ITU has participated in the gradual erosion of *res communes* principles in favor of national sovereignty. The first phase of the integration of *res communes* into international treaties involves space law, which emerged towards the end of the 1950s. We will examine the development of space law and the common heritage principle, then review the following short case studies:

- The Bogotá Declaration. The Equatorial countries' failed argument that they owned the space above them.
- The Tonga Effect. An assertion by the small island of Tonga to its sovereign right to claim (and then sell) "parking places" in space for communications satellites.
- The Paper Satellite Problem. The backlash from the Tonga Effect, where many other countries clogged the ITU system with thousands of applications for satellites that they

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[151] *See* COMMNOW, INC., MARKET REPORT ON THE EUROPEAN FIXED - WIRELESS ACCESS: LICENSING, APPLICATIONS & FORECASTS (2001). [not sure commnow still exists…regardless not clear on where this report lives]

[152] Contribution from the Republic of Indonesia, Strengthening Cybersecurity measures, Document C12/61-E (June 19, 2012) at 3 (on file with author).

[153] Tony Rutkowski, Extreme Agendas in the ITU, WCIT/WTSA White Paper ver. 1.2 at 5 (June 2012) (on file with author).

[154] The Latin term *res communes* refers to "common things … [t]hings common to all; things that can not be owned or appropriated, such as light, air, and the sea." BRYAN A GARNER (ED.) BLACK'S LAW DICTIONARY, 7th Edition, at 1308 (St. Paul, 1999).

[155] The license rights granted to governmental organizations are an exception. Previously, *only* countries were involved in space activities, and then inter-governmental organizations such as International Telecommunications Satellite Organization (INTELSAT) and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) also began to become involved. However, these organizations are in the process of receiving more and more private funding and are slowly privatizing.

[156] *See* Arvid Pardo, *The Origins of the 1967 Malta Initiative*, 9 INT'L INSIGHTS 2 (1993) (describing the climate at the U.N when Pardo made the proposition).

never had the intention of launching, creating a false scarcity of "satellite parking places" around the Earth.

*A. The Development of Space Law and the Common Heritage Principle*

¶71 First, let us review the legal basis for *res communes*, the common heritage principle. In 1959, in the midst of the Cold War, the UN General Assembly established a permanent body called the Committee on the Peaceful Uses of Outer Space.[157] This initiative led to the creation of five major international law instruments that now form the premise of space law: (1) the Outer Space Treaty,[158] (2) the Rescue Agreement,[159] (3) the Liability Convention,[160] (4) the Registration Convention,[161] and (5) the Moon Agreement.[162] While the Moon Agreement has never been signed by the United States, the treaty's many signatories have agreed that space itself constitutes a *res communes*—that it belongs to the public at large—a principle that has been memorialized most profoundly in the 1967 Outer Space Treaty.[163] Indeed, these five treaties are all important because they set forth two key principles:

- Outer space itself constitutes a "common heritage" (also sometimes referred to as a "common province" for all mankind) that can be owned by no single individual, nation, or company.
- *Individual objects* (*e.g.,* satellites) that are launched into space *may* be owned by individuals, nations, or companies; however, these individuals, nations, or companies must take responsibility for any objects launched.[164]

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[157] United Nations Resolution 1472 (XIV), International Co-Operation in the Peaceful Uses of Outer Space, *available a*t http://goo.gl/pYDx1(last visited May 18, 2012) *See also* United Nations Committee on the Peaceful Uses of Outer Space, *available at* http://goo.gl/4aiXs (last visited May 18, 2012).

[158] Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 610 U.N.T.S. 205, January 27, 1967, *available at* http://goo.gl/pca98 (last visited May 18, 2012). [hereinafter "Outer Space Treaty"]. (This treaty, entered into force on October 1967, established a framework for international space law. It provides, *inter alia*, that space shall not be subject to national appropriation and that the exploration and use of space shall be for the benefit of all countries, specifically the "province of all mankind." The treaty limits the military use of space and provides that space shall be used for peaceful purposes.)

[159] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, April 22, 1968, *available at* http://www.unoosa.org/oosa/SpaceLaw/rescue.html (last visited May 18, 2012). (Often referred to as the "Rescue Agreement," this treaty, entered into force on December 1968, covers the rescue of the crews of spacecraft in the event of an accident in space or an emergency landing. The treaty also establishes a procedure for returning space objects found beyond the territorial limits of the launching authority.)

[160] Convention on International Liability for Damage Caused by Space Objects, March 29, 1972, *available at* http://www.unoosa.org/oosa/SpaceLaw/liability.html (last visited May 18, 2012) (Often referred to as the "Liability Convention," this agreement sets the liability scope for damages caused by space objects on the Earth's surface or to aircraft in flight. Essentially, the state that launches the object is liable for damage.)

[161] Convention on the Registration of Objects Launched into Outer Space, January 14, 1975, *available at* http://www.oosa.unvienna.org/oosa/SORegister/regist.html (last visited May 18, 2012) (Often referred to as the "Registration Convention," this treaty requires that launching states maintain registries of space objects and furnish specified information on each space object launched to the United Nations for inclusion in a central United Nations register).

[162] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, December 18, 1979. Often referred to as the "Moon Agreement," or "Moon Treaty," this very controversial treaty expands upon the Outer Space Treaty and provides that the Moon and its natural resources are "the common heritage of mankind" and that an international regime should be established to govern the exploitation of such resources when such exploitation is about to become feasible. The Outer Space Treaty included similar words ("the common *province* of all mankind"). However, the difference is that under the Outer Space Treaty no country could claim outer space or other celestial bodies as colonies, though the treaty does permit the use of outer space resources. As applied to the Moon Treaty, the phrase "The common *heritage* of all mankind" means that all of the resources of space belong to all nations and that the use or extraction of these resources by one nation is contrary to the terms of the treaty. An argument over semantics and interpretation fueled an international dispute, and as a result the United States and the Soviet Union (now Russia) never signed the treaty; thus, although its principles are often reiterated, it has little practical effect.

[163] *See* Outer Space Treaty, *supra* note 158.

[164] More specifically, countries themselves are held internationally responsible for their national activities in outer space, regardless whether those activities are conducted by governmental or non-governmental (*i.e.,* private) organizations. A country's government is required to undertake authorization and continued supervision of the activities of these organizations. Today, it is generally understood that these organizations

¶72 Furthermore, each of these treaties (with the exception of the Moon Agreement, since it was never signed by the United States)[165] is enforceable against either the United States or the European Union—at least theoretically—through the ICJ.[166] However, while the ICJ would be a natural place for the resolution of treaty disputes, the idea behind the space treaties is that nations should negotiate and use diplomatic channels to resolve disagreements. There is no case law in this area, and the dispute mechanisms of the treaties have never really been tested. Further, the major space law treaties, including the Liability Convention,[167] do not provide machinery for handing down binding dispute settlements. Uncertainty as to the governing law aside, the ICJ could be used as a forum to settle space law disputes at some time in the future.

¶73 The relationship of these principles to the Internet is fairly straightforward. In many ways, the Internet is an open *res communes* that includes objects (servers, web properties, proprietary systems) that are owned by private entities. Jurisdiction in the Internet is complex and a known complication. Can we look to the law of space for an answer?

¶74 In fact, the most famous space law case and *only* notable international compensation claim for damage from space objects to date is the 1978 Cosmos 954 case, where a Soviet satellite went out of control and landed in Canada, causing great ecological damage.[168] The matter was not even presented to a judicial body; instead, both countries reached a settlement without reference to the Liability Convention. It is interesting to note that, though the USSR invoked Article II of the Rescue Agreement, Canada refused to allow the Soviet authorities to join in the search and rescue. As a result, the USSR used the clause from the Rescue Agreement to support its argument that it should pay less than the requested amount of compensation (arguing that it could have mitigated the damage had Canada let it participate in the cleanup effort).[169]

### *A. The Bogota, Tonga, and Paper Satellites*

¶75 What happens if state actors, private entities—or combinations of both—exert sovereignty over the *res communes*? In the context of the Internet, what would happen if soverigns were to close off access to the rest of the world and make universal declarations of ownership? Believe it or not, some answers to these questions may be found in some famous cases that dealt with sovereignty in outer space.

#### *1. The Bogotá Declaration (1976)*

¶76 One of the most famous assertions of sovereignty over a part of outer space was spurred by the realization in the early 1970s by many Equatorial countries that the space above their lands has a

include private and commercial entities. *See* Outer Space Treaty, Article VI. Furthermore, Article VIII of the Rescue Agreement contains a residual element of the principle of sovereignty banned elsewhere in space law. It proclaims that the state on whose registry a launched object has been entered retains jurisdiction and control over that object and all of its personnel while they are in outer space or on a celestial body. In response to their liability, States enact their own national legislation, which covers private entities, so disputes are resolved before national courts. Internationally, States are only held liable toward other States and not to private individuals or companies.

[165] *Id. See also generally* David E. Marko, *A Kinder, Gentler Moon Treaty: A Critical Review of the Current Moon Treaty and a Proposed Alternative*, 8 J. NAT. RESOURCES & ENVTL. L. 293 (1992-1993) (reviewing the Moon Treaty and proposing alternatives that may meet with acceptance and ratification in the United States).

[166] *See* Statute of the International Court of Justice, Article 38, §1(a), Competence of the Court, *available at* http://www.icj-cij.org/icjwww/ibasicdocuments/ibasictext/ibasicstatute.htm#CHAPTER_II (last visited Mar. 27, 2012) ("The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply … international conventions, whether general or particular, establishing rules expressly recognized by the contesting states").

[167] Convention on International Liability for Damage Caused by Space Objects (1971).

[168] Canada used diplomatic means and reached a settlement of $6,041,174 (CAD) from the USSR for the damage and cleanup costs associated with the satellite's crash onto Canadian soil. *See* David Goren, *Nuclear Accidents in Space and on Earth: An Analysis of International Law Governing the Cosmos 954 and Chernobyl Accidents*, 5 GEO. INT'L ENVTL. L. REV. 855, 865 (1993) (describing the Cosmos matter and noting the concerns that the satellite may have contained a nuclear reactor).

[169] *Id.*

unique value for wireless communications. Satellites that rotate at an arc of approximately 36,000 kilometers above the Earth (and along the Equator) are said to be "geosynchronous" (or "geostationary") because they rotate at the same speed (*i.e.,* they are synchronous or stationary) as the Earth (*i.e.,* geo).[170]

¶77 A geostationary orbit is a special kind of geosynchronous orbit. Geostationary orbits lie in the plane of the Earth's equator and have an orbital period of 24 hours. They rotate around the equator in what is sometimes called a "donut" formation around the Earth. These orbital slots have a high value because satellite owners who use them may configure them to cover vast areas of land. Depending on the configuration of the antennas, this area can be as small as a building or as large as one third of the Earth's surface. Although space is vast, only a relatively small sliver of space may be used for these geostationary orbits. In other words, this donut-shaped area is geographically scarce, making it extremely valuable space.

¶78 In 1976, eight countries through which the geographic equator passes signed the "Bogotá Declaration."[171] These countries unilaterally declared that the space required for geostationary orbit—the donut-shaped space above their countries—is a "scarce natural resource," and they "proclaim[ed] and defend[ed] on behalf of their peoples the existence of their sovereignty over this natural resource."[172] Thus, they claimed the geostationary orbit arc above each of their countries as the sovereign territory of their countries. The declaration also states that such sovereign rights are in the "best interest" of all countries, not just the most developed countries. Finally, it asserts that the geostationary arc above the oceans is part of the common heritage of all mankind; as such, the declaration argues that the arc should be exploited to the benefit of all mankind.

¶79 These claims underscore the "North-South problem,"[173] for the Equatorial countries contended that the geostationary satellites should benefit the "universal community," meaning the whole world. However, the Declaration emphasized that under the "present reality, the orbit is used to the greater benefit of the *most developed countries*."[174] Ironically, the Bogotá Declaration did not propose to remedy this inequity; instead, it claimed the Equatorial countries' sovereignty over this valuable resource through an attempt to distinguish the relatively limited geostationary arc from the rest of outer space. The Declaration therefore labeled the rest of outer space as a "common heritage" area and proposed that this area should remain open to everyone and should be managed by international agencies such as the ITU.[175] However, according to the Declaration, the Equatorial arc belongs to the Equatorial states.

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[170] INTERNATIONAL TELECOMMUNICATION UNION HANDBOOK ON SATELLITE COMMUNICATIONS Third Edition at 46 (ITU Press: 2002) (noting that, though 36,000 kilometers is the "popular" designation for geostationary orbits, the altitude is more precisely 35,786.1 kilometers).

[171] Declaration of the First Meeting of Equatorial Countries, signed December 3, 1976, reprinted in MANUAL ON SPACE LAW, Vol. 2, 383 (Nandasiri Jasentuliyana & Roy S. K. Lee eds., 1979), also *available at* http://goo.gl/Zn05N (last visited Jan., 2004) [hereinafter "Bogotá Declaration"] (the signatories to the Declaration are Brazil, Colombia, Congo, Ecuador, Indonesia, Kenya, Uganda, and Zaire).

[172] *Id.* at §1.

[173] The "North-South problem" was discussed heavily during the Cold War as a way to distinguish different types of geopolitical issues: East-West problems on the one hand (between Democratic western countries and Communist eastern countries) and poverty on the other (between relatively wealthy northern countries and impoverished, non-industrialized southern countries). The equator was viewed as the dividing line between the north and the south. *See* Roger D. Hansen, *North-South Policy -- What's the Problem?* FOREIGN AFF., Summer 1980, at 2. Hanson's famous explanation of the problem is as follows:

> The complete absence of … a reevaluation [of North-South relations] throughout the 1970s helps to account for much of the conflict between the countries of the Organization for Economic Cooperation and Development (OECD) and the developing countries during that decade. Notwithstanding all the talk of a shift in the North from a policy of "confrontation" to one of "negotiation," Northern responses to Southern initiatives in the dialogue of the late 1970s remained fundamentally negative. Led by the United States, the North continued to reject almost all Southern proposals without engaging in serious negotiation, and seldom, if ever, presented alternative proposals on its own initiative.

[174] Bogotá Declaration, cited *supra* note 171, at §3(a) (emphasis added).

[175] *Id.* at §3(b) and 3(c).

¶80 Although the arguments made in the Bogotá Declaration have been discussed on an regular basis for years in the UN Committee on the Peaceful Uses of Outer Space, they have not received any legal standing. The Equatorial countries thus failed in their attempt to claim a commons—to exert a property right. Nevertheless, since the declaration was signed, additional Equatorial countries have made similar claims of ownership to their own overhead geostationary arcs.

*2. The Tonga Effect*

¶81 From 1988 to 1990, Tonga, a small island in the Pacific, submitted filings for sixteen geostationary orbital sites over the Pacific Ocean.[176] This application spawned considerable controversy because this tiny country—only four times the size of Washington, DC—was never viewed as a likely participant in the international telecommunications satellite business. After all, its economy was not (and still is not) strong enough to promote a multibillion-dollar space program. Furthermore, its people at that time were by no means accustomed to involvement in high-technology industries.[177] Tonga is geographically isolated from the rest of the world.

¶82 The loophole that this small nation exploited was an ITU rule that allowed only sovereign nations to apply to launch geostationary satellites within the orbit.[178] In other words, if a private company operating in a given country wanted to file an application for orbital sites, it could not do so of its own volition; instead, it had to channel the application through that country's government. This ITU requirement made it clear to some that the airspace above Tonga had great value because of its "parking places" in the geostationary orbit (recall that these parking places were located throughout the Equatorial donut, not just above Tonga). As a result, the tiny island entered the world of high-tech satellite technology.

¶83 In fact, the idea for Tonga's entry into the global high-tech industry (through a company called Tongasat) came from an American entrepreneur, Dr. Matt Nilson. Dr. Nilson had retired on the island, and he saw an opportunity to exploit this ITU loophole in the late 1980s and early 1990s when satellite communications were a booming business.[179] His attempts succeeded, and Tonga gained full rights to the use of six of its sixteen applications.[180] Tonga thus joined other nations in their efforts to set up satellite networks connecting North America and Europe with the Pacific Rim and Asia—a market previously thought to be reserved only for big players. Recall that all of this activity coincided with the major developments in personal computer technology and with the fall of Communism (which opened new global markets). In short, this was a period during which many people worldwide perceived new opportunities to make profits. The events in Tonga inspired The Mouse That Roared, a novel whose plot centers on the international outcry that results from a tiny country's imaginary invention.[181] The analogy between Tonga and the fictional "mouse that roared"

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[176] Lawrence D. Roberts, *A Lost Connection: Geostationary Satellite Networks and the International Telecommunication Union*, 15 BERKELEY TECH. L. J. 1095, 1120-1 (2000) (providing a brief overview of the Tonga case and noting that Tonga's population was only about 100,000 people at the time of the filings).

[177] Tonga itself admitted that it did not have sufficient financial resources to fund the satellites for which it had applied. *See* Edmund L. Andrews, *Tiny Tonga Seeks Satellite Empire in Space*, NEW YORK TIMES, August 28, 1990, at A1.

[178] Roberts, *supra* note 176, at 1120.

[179] *See* Andrews, *supra* note 177, at 2-3 (noting that Nilson had worked in the international satellite industry since the 1970s and that he approached Tonga as a wealthy retiree seeking to fund the effort to obtain orbital slots).

[180] Edmund L. Andrews, *Tonga's Plan for Satellites Set Back by Global Agency*, NEW YORK TIMES, December 1, 1990, at 1 (describing the letter from the IFRB to Tongasat, which suggested that Tongasat should "pick no more than six slots, announce specific plans for launching satellites to those positions, and cancel the rest of its claims"). *See also* Roberts, *supra* note 177, at 1120 (describing the IFRB outcome and procedure).

[181] The Mouse That Roared is a novel in which a small European country, Grand Fenwick, forces the United States to declare war on it by pretending to have a devastating weapon that in fact does not exist. Grand Fenwick's plan is to surrender immediately and, as the vanquished nation, receive foreign aid from the United States. LEONARD WIBBERLY, THE MOUSE THAT ROARED (1971).

was first made by Edmund Andrews in his New York Times article and has since been employed by many others.[182]

¶84 Indeed, the Tongan mouse's roar could be heard across the world, and the nations that had founded the International Telecommunications Satellite Organization (INTELSAT) quickly took notice of this small island nation. As soon as this growing international satellite cooperative learned of Tonga's plans (and of Tonga's successful acquisition of six applications), five of its member countries registered protests with the ITU's IFRB.[183] INTELSAT claimed that Tonga's satellite parking place acquisition (carried out by Tongasat) was merely a for-profit venture and was not intended to further ITU principles involving proper use of frequencies to maximize international communications access.[184] In short, INTELSAT did not deem it proper for a small island to seek profit from satellite orbits, even though its own members sought a similar profit for themselves. Tongasat responded to this protest, and a compromise was eventually reached by which Tonga retained its six orbital slots and relinquished the additional ten that it had applied for.[185]

¶85 The implications of the settlement were widespread. Since the IFRB had ruled in favor of orbital position allocations for Tonga, this decision forever turned the tide of public opinion regarding geostationary satellites. After Tongasat's favorable ruling, earlier distinctions between the rights of nations and the rights of private industry with regard to satellite orbiting technology all but disappeared. Put another way, the world finally gave in to the idea that communications, profit, sovereignty, and industry were no longer concepts that could be channeled into pre-cold war (and pre-technology boom) paradigms.[186] Thus, a market was created that gave *any* sovereign nation the right to seek a given orbital position and then to (at least theoretically) lease that position to those industries that can pay the most for it. Predictions of Tonga's success at the time suggested that it could increase its national budget over the long run by as much as twenty percent. Though these forecasts would later prove to be false (Tongasat does not have many operational satellites),[187] the Tongan "mouse that roared" provided an early example of untamed market enthusiasm and of the ensuing scramble for property rights in the *res communes*. Fearful of competing against other small Equatorial countries, virtually every country in the world scrambled to submit their own applications in the hopes of winning what they viewed as a the new satellite parking contest.[188]

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[182] Andrews, *supra* note 177, at 1. ("In some ways, the dispute is reminiscent of 'The Mouse that Roared,' … But it highlights the growing clash of interests created by the soaring demand for global telecommunications, in particular between North America and the Pacific Rim nations.") *See also* Sam Kiley, *Loophole Helps Tonga Build a Satellite Empire in Space*, SUNDAY TIMES (London), September 2, 1990 (using the "mouse that roars" analogy); and Jonathan Ira Ezor, *Costs Overhead: Tonga's Claiming of Sixteen Geostationary Orbital Sites and the Implications for U.S. Space Policy*, L. & POL'Y INT'L BUS., 1 (Spring 1993).

[183] The IFRB, the predecessor of the present ITU Radio Regulations board, would hear disputes between countries regarding frequency matters.

[184] Ezor, *supra* note 182, at 916 (describing the INTELSAT dispute).

[185] *Id.*

[186] *See* Karl Lieb, *International Competition and Ideology in U.S. Space Policy*, INT'L STUD. NOTES, Vol. 24, No. 3 (1999). ("An important dimension of American space policy has been the close association of space with foreign policy and national power. The political discourse of space is dominated by a set of images, metaphors, and analogies that define space as a place and as a policy area. Space is described as both a source and a demonstration of national power, making the U.S. space program a national asset.")

[187] *See Tongasat's Services*, TONGASAT.COM, http://www.tongasat.com/services/index.htm (last visited May 18, 2012). The author attempted to reach out to the Managing Director and to the Public Relations Officer of Tongasat to discuss its present operations, but these emails were never answered.

[188] Shortly after the Tongasat case, both Papua, New Guinea, and Gibraltar, for example, entered into agreements with American satellite manufacturers to provide for their nations' communication needs. In the process, these states exchange spare capacity secured from the ITU for a variety of economic returns. The deluge of filings represents more than a simple bureaucratic bottleneck. As the number of applicants and the number of filings increase, coordination of the myriad conflicting applications rises exponentially. Roberts, *supra* note 176, at 1121.

*3. The Paper Satellite Problem*

¶86 Tonga's success in retaining six orbital slots thus paved the way for an onslaught of applications filed by countries that feared that they would lose valuable orbital slots in the Equatorial donut.[189] The ITU could not handle this influx of applications, and the application process was essentially frozen for many years (from roughly 1993 to 2000). In a series of proposals, the ITU tried to remedy the problem, but, it was not successful for several reasons. First, countries have only incentives (with no disincentives) to "stake a claim" on the economically valuable orbital (and associated spectrum) resources, particularly since other countries are increasingly taking advantage of the ITU's "first-come, first served" policies.

¶87 The paper satellite problem and the first-come, first served policy is a problem that is found in any commons and in any shared resource that is open to all. In his famous essay, *The Tragedy of the Commons*, Hardin uses a herdsmen's pasture as an example of a commons.[190] The "tragedy" develops when each herdsman, acting out of individual interest, continuously sends cattle to graze on the pasture; ultimately, too many cattle graze, thereby ruining the pasture for all. The theory is that herdsmen will be greedy and will want to derive as much benefit as they can from the common pasture. The resulting feeding frenzy and overexploitation destroy the pasture, the cattle that feed upon that pasture, and, eventually, the environment.

¶88 By 2001, the ITU had seen a *virtual* tragedy of the commons: although space was not actually cluttered, the ITU's offices were completely overtaken by applications for these limited spaces. The ITU undertook several measures to try to curb the number of filings submitted, though it achieved little success. In a memorandum, Yvon Henri of the ITU Space Services department explained the problem in the following way:

> In spite of all efforts to date, the overall situation as far as satellite network coordination requests are concerned is unsatisfactory. The number of coordination requests in the non-planned services continues to rise faster than the rate of improvement in the BR's processing. Backlog in processing of space notices has been an increasing problem for at least the last 5 years. It has been considered by Plenipotentiary Conferences in 1994 and 1998 and at WRC-99 and WRC-2000, and while some small changes have been made to regulatory provisions, the fundamental problem remains. This situation is unacceptable to administrations and to the satellite operators and service beneficiaries. Further remedial steps of a technical and regulatory nature are essential.[191]

¶89 Signatories of the Bogotá Declaration, including Colombia, saw the Tonga-initiated process as a way to make money and found that their applications were caught in a backlog just the same as everyone else's. In 2002, the matter nearly hit a breaking point. Colombia, along with several other countries, filed proposals to remedy the situation, suggesting that countries that had no satellite networks registered (like Colombia) should have filing priority. These proposals suggested that the ITU should refuse new requests from countries that have allowed national companies to operate in non-conformity with ITU rules, and they further suggested that filings should be "rotated"; in other words, a country that files an application that is subsequently cancelled would no longer be able to file for that same slot.[192]

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[189] *See* Report of the Special Committee to the Director of the Radio Communications Bureau, ITU Document SC97-2/14 (Rev. 1), February 11, 1997 (describing the paper satellite problem and the special challenges that it presented).

[190] Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968). *See also* Garrett Hardin, *The Tragedy of the Unmanaged Commons: Population and the Disguises of Providence*, in COMMONS WITHOUT TRAGEDY: PROTECTING THE ENVIRONMENT FROM OVERPOPULATION—A NEW APPROACH 162, 168 (Robert V. Andelson ed., 1991) (indicating that, after years of his article's having received scholarly attention and critiques, "[t]he title of [the] 1968 paper should have been 'The Tragedy of the Unmanaged Commons'").

[191] Yvon Henri, "Orbit/Spectrum Allocation Procedures Registration Mechanism" ITU Memorandum Presented at Radiocommunication Seminar in Mexico City, September 24, 2001 (on file with the author).

[192] Gerry Oberst, *Regulatory Review: Equitable Access to Space - While Supplies Last*, VIA SATELLITE, April 1, 2002, 1.

¶90 The problem was that it was virtually impossible in many cases to distinguish between *real* applications and *speculative* ones. After all, it was common practice for countries to file more than one application for a given slot in an attempt to increase their chances of obtaining that slot. And, given the equitable principles of the ITU (one country, one vote, regardless of size), it was not possible for the bigger, more developed countries (*e.g.,* the United States and the European states) to quash the applications of smaller countries that aspired to enter the technology and satellite age. Unexpectedly, however, since the 2003-2004 timeframe the paper satellite problem seems to have resolved itself (at least for the time being). For one, the ITU has always stipulated that companies must put their satellites in service within five years of application approval or lose their spot. Given the telecommunications market slump, companies have been reluctant to pay ongoing application fees and renewal fees (even though they are small, just a few thousand dollars); as such, the number of filings has dropped by fifty percent.[193] Plus, since the meltdown of the telecom sector that occurred about a decade ago, telecommunications companies no longer have the staff to sustain extracurricular activities that are unrelated to their core business. Today, the subject garners considerably less press. Although the problem has not gone away, presumably the world has come to grips with the fact that it would be virtually impossible to use all existing orbital slots. Even though the number of slots is theoretically limited (and thus scarce), the booming global market that was thought to exist was nonetheless satisfied by existing market players. In the end, the influx of paper filings held little or no value on the external market. When many of the paper satellites were not launched into orbit (recall that even Tonga has only launched one), it became clear that the scarcity issue was one of appearance, not of reality.

## VIII. CONCLUSION

¶91 There are several areas of concern for the ITU, and there is good reason to be concerned about the ITU's desired encroachment into Internet regulation. Below we've summarized the top five issues and suggest that the ITU is not in a position for any move into the Internet because these problems are entrenched and unsolved in the telecom world (and have been frozen for 150 years).

### *A. Infirmities*

#### *1. The Lack of Transparency Problem*

¶92 Perhaps the greatest problem with the ITU is its lack of transparency. Most democratic governments and processes have some fundamental right to access to public information and to the system for creating it. Yet the ITU is closed, opaque, and obfuscated in terms of its legislative treaty-making processes and in its standard-setting processes. In order for the ITU to make any real advancement and to get traction with Netizens, it will need to open its processes to review, criticism, and comment by the public that it serves. Unless and until this happens, it will be the subject of harsh attack by academics and Netizens worldwide.

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[193] *See* ITU Press Release, "Paper Tigers: The Scramble for Space Spectrum," July 15, 2003, *available at* http://www.itu.int/newsarchive/pp02/media_information/feature_satellite.html (last visited May 18, 2012). The press release ascribes the drop in filings to market conditions:

> In the long run, it may simply be that the economic downturn now afflicting the telecoms industry worldwide ultimately proves the most effective way of resolving the chronic problem of paper satellites. … With the once-vast pool of venture capital for costly new satellite systems virtually dried up within the space of a few short months and many of the customers for satellite services, such as major telecoms carriers and broadcasters, now labouring under crippling mountains of debt, existing satellite operators are batoning down the hatches in anticipation of a rocky ride ahead. ... Meanwhile, ongoing work to resolve the problem through SAT-BAG and the Radiocommunication Bureau's own efforts have already seen increased processing efficiencies through new in-house software development and a doubling of the Bureau's technical examination staff from four to eight space systems engineers. . . . With requests currently down 50% over previous years to around 15 new systems per month and the number of coordination requests processed now reaching around 50 per month, if current conditions prevail today's backlog should be cleared within three-to four years.

*2. The Centralized Planning Problem*

¶93 As we've seen above, *ex ante* assignment of the spectrum for particular uses and to particular users is often a suboptimal economic mechanism. Any such mechanism has a considerable risk of error, even if that mechanism is managed by a centralized agency like the ITU. In reality, technology is rarely used in the manner anticipated; instead, consumers are unpredictable, and technology often develops in ways that expert planners cannot foresee. Thus, the ITU tends to engage in long-range planning efforts based on insufficient information, and it consequently risks choosing allocations for services that later prove less beneficial or less technically feasible than free-market alternatives. In the case of spectrum allocation as well as in the case of the allocation of satellite parking places, the ITU has not proven to be particularly effective in managing the resource in question. Instead, its policies have been exploited to create scarcity where it otherwise would not exist.

*3. The Obsolescence Problem*

¶94 Many of the ITU's planning, assignment, and allocation efforts lock in specific technologies for specific uses. It often takes years to come to these planning, assignment, and allocation decisions, and a given technology is often obsolete by the time it is deployed in accordance with these decisions. This effect is magnified if the initial allocation was suboptimal, which is often the case when a centralized planning methodology underlies allocation policies. As the pace of technological change increases, newer technologies constantly replace their forebears, and investments made based on centralized planning promises are lost. Admittedly, the ITU genuinely tries to adopt a forward-looking approach in an attempt to plan for growth in technologies. However, governments have historically failed at predicting how technology will develop and how consumers will use it. Thus, obsolescence is a problem that can be magnified when the world's largest intergovernmental organization—the UN—attempts to reconcile matters through periodic treaty conferences involving hundreds of governments and thousands of competing interests, attempting to regulate a technology that moves far faster than they do.

*4. The Bureacracy Problem*

¶95 Allocations that have been set and agreed to at an international level are difficult and costly to change. The rulemaking procedures of the ITU require hundreds of countries to form a consensus on topics, and the complicated interplay of state interests, private interests, and incumbent activities makes for a slow and inefficient process. If a state has promulgated a particular technology, spectrum approach, or area that has since been rendered obsolete, the companies responsible for deploying that technology will almost certainly lobby to keep the obsolete products on the market in order to shut out new market entrants that have developed newer products. This has been one of the central problems for decades in the area of spectrum management, which has seen television stations, for example, squat on unused spectrum for years after programming has moved digitally, to cable, or other uses. The same is the case for the Internet, where certain company-promoted technologies could last far longer than their useful life.

*5. The U.S. Hesitation Problem*

¶96 We have seen that the United States has been hesitant to embrace the role of the ITU since the organization was founded. This reluctance is perhaps partially due to the fact that the United States, the largest contributor to the UN and also a major contributor to the ITU, only has one vote at ITU conferences and treaty-making events. The United States cannot gain the benefits derived from "block" votes, such as those sometimes organized by the European Conference of Post and Telecommunications (CEPT).[194] The fight for control of the Internet at the ITU is not a one-time thing—it's a long-term engagement that will continue *for the next several decades*. The only way for the

[194] The CEPT has a special group, Com-ITU, whose primary mission is to coordinate the positions of the member states. *See Committee for ITU Policy,* CEPT.ORG, http://www.cept.org/com-itu (last visited May 18, 2012).

United States to achieve any of the recommendations outlined in the previous sections will be to create a permanent establishment of some kind that engages and represents on a regular basis.

*B. Reforms*

¶97 There is no easy solution for the aforementioned problems or for the infirmities that the ITU suffers. To be sure, the ITU has done a great job of connecting (otherwise closed) national telecommunications networks together—and it's done it for a very long time. The ITU understands how telecommunications networks operates, and the ITU has been an effective power broker among nations for a very long time. However, even if the ITU's move into the Internet appears to be a foregone conclusion, Netizens should not sit idly back and let it happen without a fight.

¶98 There is evidence that the ITU recognizes that it needs to change in order to remain relevant. For example, just as this article goes to press, the ITU announced that it would make treaty documents and proposals accessible to the public. In its press release, ITU Secretary General Hamadoun Touré stated that "the world is changing, in large part thanks to the growth in telecommunications facilitated by the ITU, and we need to adapt to that changing world as we have always done since our foundation in 1865." [195] These statements may sound good, and without question, the ITU does need to adapt—and it probably will. However, such change cannot happen overnight, and it requires much, much more than a press release. The ITU simply does not yet have any history of providing a robust multistakeholder platform and its processes are geared towards state actors, not the open, collaborative, democratic, participatory model that built the Internet. If institutional reform happens, the ITU will need to embark on a process that shows its commitment over a long period of time, measured in years.

¶99 Finally, we should fundamentally question the need for the ITU's involvement. While the telecommunications networks of a century ago may have needed coordination by treaty, the Internet was developed years through open, democratic organizations, and it should continue to do so. Just because the ITU is offering a one-stop-shop to the word's powers doesn't mean that the solution is the right one. We've used the IETF in this paper as an example of one of these organizations, and while it, too, may not be perfect, all objective evidence shows that open, democratic organizations like the IETF (as well as ICANN, the Internet Governance Forum, etc) should be bolstered and we should not allow them to be stepped on by the weight of the United Nations.

[195] *Landmark decision by ITU Council on proposal for public consultation and open access to key conference document,* ITU PRESS RELEASE (July 13, 2012), http://www.itu.int/net/pressoffice/press_releases/2012/46.aspx (last visited July 13, 2012).