International information and telecommunications policy harmonization: A comparative analysis

INCOMPLETE DRAFT – DO NOT CITE

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Presented at

The 37th Research Conference on Communication, Information and Internet Policy (TPRC)
September 25-Sunday, September 27, 2009
George Mason University School of Law, Arlington, VA

1. Introduction

Those who adopt the lens of globalization see the policy and regulatory environment of information and telecommunications becoming increasingly homogenous across the globe. From this perspective, this homogeneity is often explained as the result of various institutions, including regional governments such as the European Union as well as the WTO and even the U.S. government. While complete harmonization has certainly not been achieved, there exist many examples that provide evidence of this trend such as the widespread adoption of auction policies for the licensing of spectrum in the telecommunications realm and the adoption of anti-circumvention clauses to protect copyrights in the realm of information policy.

However, given the very different nature of information and telecommunication policy, can international harmonization in both domains be explained by the same phenomena? To what extent can both harmonization processes be explained by global trends toward market-oriented policies? Whether by forces of globalization or other means, what are the specific mechanisms for policy harmonization? What fundamental similarities and differences exist between telecommunications and information policy and how do they impact harmonization?

These questions are addressed through a comparative analysis of U.S., European and Asian policies and laws in the areas of wireless policy and copyright law. These two policy domains represent areas of telecommunications and information policy, respectively, which face relatively greater pressure for harmonization, based in part on the ability of signals, information and even users to cross international borders. For example, in wireless policy making the need for standard spectrum assignments and international roaming creates pressure for uniform approaches. Similarly, the ease with which digital works, be they music, art or books, can be transmitted effortlessly across the globe has led many nations to update laws and in doing so sought to work collectively.

The analysis of these two policy arenas and the factors shaping harmonization are based on data collected from secondary sources. The broad nature of the investigation allows for integration of published analyses that provide evidence of both convergence and divergence in various aspects of these policies as well as provide broad geographical coverage. In particular, accounts of the institutions engaged in the policymaking processes that can affect harmonization are examined.

In what follows I provide first a brief overview of cellular and copyright policies. This is followed by descriptions of the history of international policymaking as well as the current status of each of these policy arenas. Finally, the two arenas are compared to identify similarities and differences that may explain common drivers of harmonization as well as technological, market and institutional differences that may account for differences.

2. Cellular and copyright policymaking

Studies of policy harmonization must recognize the multidimensional nature of policies and assess harmonization on individual dimensions and also should be dynamic in nature, assessing harmonization over a period of time rather than at a single point in time. Since nations may take several years to debate and enact legislation it is important to choose a window rather than a particular year. Also, given the very different nature of cellular and copyright policies I want to discuss some important similarities and differences that will inform the analysis.

While convergence has brought the areas of telecommunications and information policy closer together, creating overlap in areas such as security, privacy, and internet governance, they have both in their management and as academic disciplines remained somewhat separate[1]. Whereas telecommunications policy is generally concerned with network technologies, their supply and access, information policy and in particular intellectual property policies aim to secure rights to information and knowledge through patent, trademark, trade secret and copyright laws. Also, while both telecommunications and information policies are made initially through legislation, their implementation and subsequent fine tuning are handled differently. Telecommunications policy is typically enacted through a regulatory body and seeks to control the behavior of firms, whereas information policy is typically enacted through the courts and seeks to control the behavior of firms as well as individuals.[2]

Within each of these broader realms of telecommunications and information policy, the particular domains of cellular and copyright policies are affected by these differences. However, two significant commonalities exist. First both cellular policy and copyright policies seek to provide *exclusive access*, to spectrum on the one hand and works of an author on the other. In both areas of policymaking the premise that exclusive rights are required is currently being called into question. The second similarity is that the border-crossing nature of wireless technologies/services and digital content create pressure for international harmonization. This is not to say however that this is the only factor, as general trends toward market openness as represented in the TRIPS agreement, which affected both cellular services and copyright, are likely also an important factor.

To assess the extent of harmonization both cellular and copyright policies need to be disaggregated into their component parts. For cellular policy the significant aspects particularly related to international harmonization are spectrum allocations (services

[1] This notion of convergence between telecommunications and information policy is somewhat different than traditional notions of convergence from the telecommunications discipline. The traditional notion is concerned with the convergence of network infrastructure and digital content, represented by the modern internet. The policy recommendations were largely oriented toward the tradition of communications regulation, which seeks to influence firms rather than individuals (see e.g. (Baldwin, McVoy, & Steinfield, 1996; Blackman, 1998).

[2] New approaches to spectrum policy and indeed decentralization trends in mobile networks (mobile ad-hoc networks - MANETS) may result in wireless policy making having greater implications for individual users.

associated with spectrum bands) and assignments. While international coordination on spectrum allocation is frequently observed, international divergence on the mechanisms for assigning licenses does occur. For modern copyright policy the significant components are the nature of the rights and process for securing them (duration, fair use stipulations, and registration requirements), as well as a priori protections such as restrictions on disabling digital rights management (DRM) technologies. International similarities and differences are found in all or some of these components.

The time period for assessing the extent of harmonization in these policies must take into account international agreements. While doing so may lend a 'pro-harmonization' bias to the analysis, as a country's international commitment may not reflect the true potential of passing domestic legislation, ignoring international agreements may mask an inevitable policy change. Also, international agreements can occur at multiple levels (multilateral, regional, bilateral) and these need to be taken into account.

For cellular policies, particularly those related to the third generation, the window for assessing harmonization should include the period in which international spectrum allocations were agreed upon up until the license assignment process. This window is rather wide, as spectrum assignments can be made as much as a decade before services become available. For copyright policies a similarly large window is required given that they affect individuals and hence have more of a social policy orientation. For the analysis here, the window of assessing harmonization shall be the decade between 1995 and 2005, within which international treaties were signed in both domains. However, while the window for assessing the state of harmonization will be this decade, identification of factors that influence harmonization will require a historical analysis that spans a century. In the following I examine both the historical and current status of both the cellular telecom and copyright policy domains.

3. Cellular telecom policy harmonization

3.1 History

International harmonization or coordination of cellular policymaking has its roots in more general cooperation on telegraphy and telephony, which naturally has followed the technological developments it seeks to regulate. The genesis of international coordination was pragmatic, stemming from the need to translate and physically carry a telegram across international borders in Europe, where telegraph systems varied from country to country. The International Telegraph Union attempted to develop a standard telegraph technology to facilitate international message flows. Its founding in 1865 followed the invention of the telegraph in 1844 by just a little over two decades[3].

[3] The founding members included twenty States: Austria, The Netherlands, Baden, Portugal, Bavaria, Prussia, Belgium, Russia, Denmark, Saxony, France, Spain, Greece, Sweden-Norway, Hamburg, Switzerland, Hanover, Turkey, Italy and Württemberg. See http://www.itu.int/ITU-T/50/history.html. Japan joined in 1879 and the U.S. joined later in 1908. See http://www.itu.int/cgi-bin/htsh/mm/scripts/mm.list?_search=ITUstates&_languageid=1&_foto=y

With the norm of international cooperation established, international management of telephony (patented in the US in 1876) and wireless telegraphy (developed in 1896) was soon to follow. While the International Telegraph Union began to develop policies for telephony, a separate conference dealing with emerging radio technologies was held in Berlin in 1906, The International Radiotelegraph Convention, at which the initial version of the Radio Regulations was developed[4]. The Radio Regulations serve as an international treaty within which both legal and technical issues relating to international spectrum management are detailed.

Subsequently, the separate organizations for telegraph, radio and telephone merged in 1932, at the Madrid Conference, to form what became known at the International Telecommunications Union, the ITU. The Madrid Conference established three processes related to radiocommunication including 1) dividing the world into two regions (which later became three) for spectrum assignments, 2) establishing two technical tables, one for frequency tolerances and the other for emission bandwidths, and 3) establishing processes for registration of radio stations (Timofeev, 2006)[5]. Within the ITU constitution the agency's responsibilities for spectrum management are oriented toward frequency notification, coordination and registration, with the goal of eliminating international radiocommunication interference and thereby avoiding international disputes. From this goal emerged a two step process by which the ITU, through its members, allocates spectrum bands to broadly defined services and then the assignment of licenses, which provide exclusive use of certain frequencies within the allocations to individual users/firms, are made by national authorities (ITU, 2004).

In 1947 at the ITU meeting in Atlantic City (USA) the organization became an official specialized agency of the United Nations[6] and subsequently international coordination of spectrum assignments became the responsibility of the newly formed International Frequency Registration Board (IFRB) (Ryan 2005). The IFRB managed registrations until the ITU restructuring of 1993 when it was replaced by the Radio Regulations Board (Jakhu, 2000)[7]. Modern frequency registration must contend with the roughly 40 different services defined in the Radio Regulations. Consequently, the current Master International Frequency Register includes roughly 1.2 million terrestrial frequency assignments, 325,000 space satellite assignments and another 4,265 satellite earth station assignments (ITU, 2004).

[4] At the same time, national governments began to assert their rights over spectrum management, with New Zealand reportedly be the first country to pass legislation in 1903 (ITU, 2004).

[5] http://www.itu.int/itunews/manager/display.asp?lang=en&year=2006&issue=03&ipage=radiotelegraphy&ext=html

[6] The ITU's status as a UN specialized agency influenced the activities and structure of the agency by establishing an explicit focus on development, which in the 1993 restructuring established a separate sector for development activities (ITU-D) (Martin, 2000). Currently, WIPO, also a UN specialized agency is in the process of restructuring partly in order to manage its development agenda.

[7] The change meant that the 5-member full time board of the IFRB became the part-time RRB with 15 members that meet 4 times per year (Jakhu, 2000).

The Radio Regulations and the spectrum ranges they controlled remained largely unchanged until 1979 when the ITU-sponsored World Administrative Radio Conference (WARC) sought to significantly update the Regulations. Described as a 'diplomatic marathon' (Timofeev, 2006), the session lasted more than three months, with the goal of expanding usable spectrum for emerging technologies. WARCs were held in '79, '84 and '92 before becoming the World Radiocommunication Conference, which holds conferences roughly every two to three years.

There are a number of factors that contribute to adherence to what is essentially a voluntary treaty. While adherence to the allocations is fairly uniform, national implementation is voluntary. First, the ITU's allocations use fairly general service descriptions that aim to allow similar competing services and to remain technology neutral (ITU 2004). Second, the high level of formal adherence is due in part to the use of footnotes, as well as through the use of primary and secondary services (Ryan, 2005). These provisions enable nations to make special provisions within the policies for their individual circumstances, which otherwise might cause them to formally be non-compliant. Third, allocations may be defined by region and hence the opportunity to craft more customized policies or allocations exists. Fourth, as stipulated in the Radio Regulations assignments of services not authorized for a particular spectrum allocation can be approved as long as they do not cause interference and accept that they will not be protected from interference (ITU 2004). However, despite these numerous mechanisms that foster harmonization, adherence can be a challenge as was observed in national allocations of International Mobile Telecommunications 2000 (IMT-2000) 3G spectrum (Ryan, 2005).

In assessing trends in harmonization of spectrum allocation, it is also important to note changing approaches to spectrum management. The current approach of the ITU, which some describe as 'command and control,' originally developed at a time when many telecommunications firms were state-owned enterprises. Increasingly, market mechanisms are being used in national spectrum management practices, particularly as regards spectrum assignments. One example is the use of secondary markets for spectrum, as has been introduced in the U.S. These trends may eventually reach into the spectrum allocation system with demands for market oriented mechanisms in choosing between services. Further emerging technologies, such as software defined radio, may go further and make spectrum management and harmonization a non-issue (ITU, 2004).

Finally, this general discussion of cellular policy harmonization would not be complete without a more general discussion of the pros and cons of harmonization in this domain. The benefits of harmonization include enhanced international compatibility for networks and roaming users and higher reliability due to a lack of interference. Also, equipment manufacturers may benefit from economies of scale when policies generate technical standards across markets. These benefits may however come at a cost of reduced flexibility and adaptivity in spectrum allocation (Maitland & Van Gorp, 2009) and in delays in assignments (Brown, Riccio, Kavetsky, & Weiskopf, 2001)[8].

[8] Brown et al. (2001) describe in detail the quite lengthy process, taking up to 10 years, to gain an international satellite spectrum assignment. The process includes among other steps notification to the ITU,

3.2 International Comparisons

Within the international system of cellular policymaking national legislatures and regulators implement spectrum allocations and make assignments. Across nations, the institutional structures for decision making vary as do the decisions themselves. The following paragraphs discuss international differences in the institutions responsible for cellular policy, their general orientation toward international harmonization, and their policies related to licensing 3G operators.

Institutions. In the U.S., unlike most other countries, spectrum management is divided between three organizations. The National Telecommunication and Information Administration (NTIA) manages government spectrum, while the Federal Communication Commission (FCC) manages public use of spectrum, and the Department of State manages international and bilateral negotiations through the ITU and directly with other nations (Mayher & Wentland, 1990). A second difference of the U.S. system compared with their international couterparts is that the FCC is independent from the executive branch, whereas in other nations spectrum management is typically undertaken by agencies with varying degrees of independence from the executive branch (Nunno 2002).

While ITU negotiations are carried out by the Department of State, once allocations are made it is the responsibilty of the FCC and in particular its Office of Engineering and Technology, in consultation with other Bureaus and Offices, to determine the optimal course of action. Also, it is the FCC that bears the responsibility of maintaining the U.S. Table of Frequency Allocations, which includes both governmental and non-governmental allocations.

As compared to its European counterparts, the U.S. engagement with the ITU has been luke warm and in the early days limited its participation to observer status. Several explanations have been put forth to explain the U.S. hesitancy, including that the U.S. market structure of a private, regulated monopoly set it apart from its European counterparts, which had publicly owned and operated PTTs. Second, the U.S. orientation toward market-oriented solutions was at odds with the more centrally and public managed solutions favored by its European counterparts. Finally, the system of voting in these bodies, which was typically one-country-one-vote favored those European countries, namely Britain, France and Portugal, with large numbers of colonies which were influenced to vote in line with their colonial power (Ryan 2005).

In Europe spectrum management occurs at both the regional and national level. In 2001 the EU passed regulatory framework on spectrum policy that called for greater cooperation between the national regulatory authorities (NRAs), gave more power to the EU and called for the formation of a Radio Spectrum Committee (Nunno, 2002). The Committee, which also works with European Conference of Post and Telecommunications Administrations (CEPT) (ITU 2004), helps the Commission

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which in turn identifies potential conflicts, which subsequently leads to bilateral negotiations between sometimes numerous member states.

establish decisions related to technical implementation measures. The Committee follows procedures laid out in the Comitology Decision, which enables the Commission to discuss implementation with national authorities in advance of making decisions to ensure that decisions to the extent possible accommodate national situations[9]. The authority of the Committee is limited however to spectrum allocations, with assignments continuing to be the domain of national authorities (Nunno 2002).

The system of telecommunications policymaking in Japan has also undergone changes. Having one of the most traditional systems of spectrum management in its Radio Department of the Ministry of Public Management, Home Affairs, Posts and Telecommunications (Nunno 2002), the Japanese government restructured to form the Ministry of Internal Affairs and Communications.

3G Policy Harmonization. Harmonization of 3G cellular can be assessed based on the degree of similarity in both spectrum allocations and assignments. As regards spectrum allocations the degree of harmonization achieved in 3G was influenced to some extent by the embedded systems. Globally, 2G systems operated in four bands, namely 800MHz, 900MHz, 1800MHz, and 1900MHz. The ITU's allocations for IMT-2000 included 5 bands, with namely 806-960 MHz, 1710-2025Mz, 1885-2025MHz, 2110-2200MHz, and 2500-2690MHz. They also made recommendations for pairing within these bands. However, some countries, including the U.S., were already using these bands for 2G service or military uses. Consequently the U.S. refused to commit spectrum for IMT-2000 since its current assignments made harmonization with European assignments possible only if it undertook the very costly task of clearing military use of the band. Given this conflict, in 2000 the WRC decided to allow countries to implement IMT-2000 services in any band allocated to mobile services or to choose different pairings, which created divergent approaches (Gruber, 2005). For example, in the U.S. IMT-2000 services could be offered in the 700MHz band and Japan's operators upgraded to IMT-2000 using pairings that did not conform to the recommended ones. Hence, if considering the U.S., Europe and Japan the level of harmonization in frequency allocations was low.

A similar situation exists in the processes and terms and conditions of spectrum assignments. While in earlier days spectrum assignments were made almost universally by administrative mechanisms, methods for choosing among contending potential service providers began to diverge in the early 90's. For 3G service, while some countries, notably the U.S., U.K. and Germany, choose to assign licenses through auctions, others such as France and Japan continued to use administrative mechanisms. In addition to the mechanisms for making selections, the role of the government in shaping eventual market structures, in particular, the number of entrants, varied. For example, whereas the Japanese government limited the number of licenses to three, for which it received three offers (Marks & Yuguchi, 2004), the German auction was designed to allow for between 4 and 6 service providers. Further, the terms and conditions of licenses varied significantly, even within the EU. There countries varied in terms of their rollout obligations, including timing and the extent of coverage, and even in those countries that held auctions the terms and conditions for license payment varied.

[9] See http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/eu_policy/rsc/index_en.htm

In summary, in examining the level of harmonization in 3G policies, both in spectrum allocations and assignments, the level is quite low. This is contrasted however with a trend toward harmonization in the nature of and structure of the institutions responsible for making these policies.

4. Copyright policy harmonization

The level of harmonization in cellular policy making can be contrasted with that in copyright policies across the globe. In both arenas governments have a long history of international coordination and are concerned with promoting efficient use of spectrum by limiting interference on one hand and protecting rights of authors to receive remuneration for their works on the other. In the following two sections I describe the history of international policymaking in copyrights as well as the status of current copyright legislation, with an eye toward policies for digital content, including the level of liability of online service providers, policies on use of peer-to-peer technologies and infringement remedies.

4.1 History of international copyright policymaking

The technological change that spurred international coordination in copyright policies occurred much earlier than that in wireless. With the invention of the printing press in the early 1400's, the technology had nearly 300 years to establish itself before one of the first policies establishing protections for authors was developed in the UK. While not strictly international, England's Statute of Anne (1709) applied to the recently formed United Kingdom, which included the kingdoms of England, Scotland and Wales. The legislation is considered the first modern copyright law and had international repercussions as it spurred international trade in infringing publications. With rights and hence revenues protected for UK publishers and authors, printers in Ireland and the North American colonies began to make reprints, providing no royalties. These cheaper reprints also found their way back to the UK, challenging the monopolies granted to UK publishers. In part to gain control over international trade of reprinted materials, Prussia and England subsequently entered a bilateral agreement in 1846. The Prussians were leaders in providing international copyright protections with legislation passed in 1794. These agreements laid the groundwork for the first multi-national copyright agreement, the Berne Convention of 1886.

The Berne Convention contained two significant premises that shaped international copyright law, which were also important for harmonization. The first is that the obligations spelled out in the treaty should define a lower bound on protections, and that nations would be free to implement more stringent policies. This premise was designed to make the Convention more inclusive, with the idea that any protections were better than none at all. The second premise was national treatment, being that a foreign author's work would be granted the same protections as a domestic author (Dinwoodie, 2000).

At the same time that 'copy' right law was developing in the UK, in France the legal basis of the 'author's' right was being established. The author's right or moral right can be similar to copyright in that they establish rights of authors versus publishers, however moral rights can conflict with property rights in that the moral rights of authors or artists need not be registered or subject to application and may persist even if the publisher obtains the right to publish and distribute the work. Hence in French law an artist's right to control modifications persists.

The differences between copyright and moral rights influenced international copyright law starting with the Berne Convention. Championed by France's Victor Hugo, the Berne Convention did not require registration an author assert his or her right. Signatories during the 19th century include Belgium, France, Germany, Italy, Spain, Switzerland, Tunisia, and the UK in 1887, Luxenbourg in 1888, Monaca in 1889, Norway in 1896, and Japan in 1899. The convention continued to grow and through active membership underwent revisions in 1908, 1914, 1928, 1948, 1967, 1971 and 1979. Similar to other international treaties, membership does not necessarily imply full compliance. For example, the UK, which became a member of the Berne Convention in 1887 did not fully implement the agreed upon legislation until 1988, over 100 years later.

The Berne stances on national treatment and particularly on registration were however contrary to U.S. law, which required registration and hence the U.S. did not initially join the Convention. Indeed, the U.S. approach to international cooperation has been labeled a 'copyright island' and a 'bastion of piracy' given its long held disinterest during the 19th and early 20th centuries in international cooperation (Nimmer 1992). However, in the 1950's it finally emerged on the international stage through it efforts to establish a competing group to Berne and in 1952 UNESCO's Universal Copyright Convention (UCC) emerged. The UCC was favored by those nations opposed to the strong rights imposed by the Berne Convention, namely the U.S., Soviet Union and some developing countries. However, due in part to the continued dominance of the Berne Convention as well as the development of other multilateral fora such as the World Intelluctual Property Rights Organization (WIPO) and the General Agreement on Tariffs and Trade (GATT), in 1988 the U.S. eventually agreed to change its laws and joined the Berne Convention (Dinwoodie 2000). Domestic factors also played a role in this capitulation as the copyright industries were helping to reduce the trade imbalance and the U.S. Congress sought to provide greater protections for them that the Berne Convention offered as well as the desire to establish a moral standing in international copyright arena, which joining Berne, the largest copyright agreement, would provide (Nimmer 2002).

WIPO's roots are in the Berne Convention, which, together with the Paris Convention on patents, in 1893 created an administrative body known as the United International Bureaux for the Protection of Intellectual Property, more commonly referred to by its French acronym 'BIRPI.' In 1967 BIRPI became WIPO and in 1974 WIPO, similar to the ITU's change in 1947, became a specialized agency of the United Nations.

WIPO's approach to copyright policymaking occurs through Dinwoodie (2000) refers to as the 'classical model,' in which international agreements are forged from the lowest-

common-denominator of national policies, resulting in largely backward-looking and inflexible policies. This combined with WIPO's UN-oriented system of policymaking and dispute resolution in which consensus is the primary mechanism but secondary mechanisms include the one-country-one-vote system, led some countries to pursue more strict copyright policymaking through different fora, including harmonization attempts within the European Union and more multilaterally through the General Agreement on Tariffs and Trade (GATT)[10].

These effort outside of WIPO resulted in the Trade Related aspects of Intellectual Property Rights (TRIPS) agreement, which is an annex to the WTO agreement of 1994. Consequently, through TRIPS, intellectual property rights obligations became binding for all countries seeking WTO membership, although waivers have been granted.

While the TRIPS agreement differs from the WIPO agreements at that time, it was developed to incorporate many of the principles of the Berne Convention and hence has a large degree of overlap with WIPO. Accordingly, and to avoid an internationally split system, the TRIPS Agreement requires consultation with WIPO and in 1995 the WTO and WIPO signed a formal treaty. [11] An important component of TRIPS, and of the WTO overall, which differentiates it from WIPO, is that it specifies civil, administrative and criminal procedures for enforcing intellectual property protections as well as formal mechanisms for dispute resolution. WTO governance includes a WTO Council, which handles dispute resolution, in addition to the TRIPS Council, which all WTO members are free to join, that manages the implementation of TRIPS and performs reviews.

However, in 1996 WIPO reasserted its role in international copyright matters through its WIPO Copyright Treaty (WCT) and the WIPO Phonograms and Performances Treaty (WPPT). The treaties provide additional protections for copyright that became necessary due to advances in both digital rights management (DRM) systems and those seeking to

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[10] It is likely that WIPO has also suffered from frictions between developed and developing countries. Currently, WIPO is implementing a restructuring based on a 'development agenda' adopted in 2007 that attempts to change WIPO's approach to IP. It requires a more critical perspective on property rights, promoting balanced analyses that also consider societal costs of monopoly rights. The agenda, promoted by Brazil and Argentina, is said to challenge developed country approaches to IP.

In a commentary on the development agenda in an IDRC publication, the author suggests that the development agenda will be difficult to implement in part because developing countries lack flexibility in their implementation of IP laws. The author provides several examples of recent U.S. cases that demonstrate how the balance of rights swings between property owners and public benefit. Conversely, he argues, developing countries tend to implement laws that favor property owners and provide little room for subsequent flexibility, such as for fair use. He argues further that it has become widely recognized that harmonization is counterproductive to policy innovation and that the diversity of policies helps move policy making forward.

Also, an unreferenced statement on Wikipedia explains the shift from WIPO to the GATT as due to the inability of developed nations to control the agenda and get policies through WIPO in the 60's and 70's led them to forum shift their efforts to the GATT.

[11] The main avenue of cooperation with WIPO is in managing a national law registration system, which WIPO already has in place and hence WTO member states are likely to be in compliance with TRIPS if they have registered legal changes with WIPO. For text of the agreement see http://www.wto.org/english/tratop_e/TRIPs_e/wtowip_e.htm and for further analysis see Cornell Law Cases WIPO TRIPS at http://www.law.cornell.edu/copyright/cases/wipo_trips.htm.

disable them. However, policies prohibiting circumvention of technical protection measures have been criticized as they may limit the ability to make fair use of copyrighted material and that it does not take into account the varying levels of economic and political development of nations (Dinwoodie, 2000; Meardon, 2006; Samuelson, Reichman, & Dinwoodie, 2008).

4.2 International comparison

Assessment of the level of international harmonization can first examine the extent to which countries have implemented the provisions of the WCT. In the U.S. the WCT was implemented largely through the Digital Millenium Copyright Act of 1998. In Europe the provisions are implemented through a variety of regional Directives that were enacted between the years of 1991 and (for technical protection measures) 2001[12].

In addition to the U.S. and European the Japanese have also adopted laws that bring into compliance with the DMCA[13]. Further, Japanese courts and industry organizations have pursued enforcement of those rights. In December of 2006 Japanese criminal court found developer of Winny filesharing software guilty of aiding in copyright infringement and fined him 1.5 million yen (about US $13,200). The prosecution asked for a jail sentence of one year. Also in December of 2006 police raided a travel agency for unauthorized use of landscape photos. Also in 2006 YouTube deleted nearly 30,000 files based on a request by the Japanese Society for Rights of Authors, which represents Japanese television and music companies[14]. While such an action is commonplace today this action by Japanese producers occurred relatively early in the life of YouTube, which had been in operations for just one year.

5.0 Cellular and Copyright Comparison

Comparing the current level of international harmonization in 3G cellular policies with those of copyright policies, one finds that at least between the U.S., EU and Japan the level of harmonization in copyrights is higher. In following, I seek to explain this difference through a discussion of mechanisms of harmonization that includes institutions, markets and technologies.

Initial results suggest that whereas harmonization of telecommunications policies has been driven largely by technical and market forces, harmonization of information policies occurs through a concerted multinational effort in which the U.S. is often a driver but also has made fundamental concessions. These differences can be explained in part by the institutions involved in policymaking in each of the domains, namely the ITU in telecommunications and both substantive and procedural treaties as well as WIPO in the copyright domain. Furthermore, the fundamental nature of these institutions is shaped by the technical requirements of the systems they are designed to govern as well as changes

[12] At the same time as the DMCA the U.S. passed a copyright term extension bill that extends the period of copyright an additional 20 years, which was not part of the WCT. The EU passed similar legislation at around the same time.
[13] See International Journal of Technology Law article.
[14] See stories in the San Francisco Chronicle.

in market structures, particularly ownership and operation of telecommunications carriers.

Further insight can be gained on the issue from Dinwoodie (2000) proposition that harmonization or internationalization of copyright policymaking has been occurring for decades and includes both public and private dimensions. In the public realm he recognizes two models: the classic and new. He describes the *classical model* as that embodied in the Berne Convention and WIPO that is uni-directional in that national policies serve as the basis for international policy making, that change or adaptation of the policy occurs through the diplomatic and time-consuming process of revising the treaty, and that dispute resolution mechanisms are onerous and therefore unused. Conversely, the *new model* as embodies in TRIPS/WTO and more recent policymaking in WIPO (Copyright and Performances and Phonograph Treaties 1996) in which policymaking in multidirectional, both influencing and being influenced by national policy, the policies can be adapted or recommendations made by specialized sub-committees, and dispute resolution mechanisms exist and are accessible. Finally, he proposes that international copyright policy making may be further enhanced by greater reliance on private mechanisms, in particular international arbitration, which requires a change in the nature of adjudicating international disputes (choice of laws in particular).

The private dimensions of cellular policymaking may in part explain the divergence rather than convergence. With the privatization of cellular carriers and the inclusion of equipment manufacturers into ITU membership, it may be that rivalry between private parties, which in turn creates rivalry between public entities, may be the cause of some divergence.

6. Conclusion

This comparison of both the history and current status of policy harmonization in cellular and copyright policies provides important insights into general international policymaking mechanisms, the role of the various nations/regions in those mechanisms, as well as highlights the ways in which markets and technologies influence harmonization.

Interpretation of the result must take into account several limitations. This is an aggressive undertaking in that the policy domains are quite different and therefore the analysis focuses on a limited number of variables that the two share, and hence likely excludes those that powerful yet unique in each domain. Also, the breadth of the analysis prohibits adequate depth in many regards.

Despite these limitations this research creates a bridge between the telecommunications and information policy literatures. The comparisons of international bodies and treaties and the similarities in challenges faced by these organizations, particularly regarding changes in technologies that may challenge the ability or need to maintain rights to materials or spectrum.

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