

Cooperative Standard-Setting: The Road to Compatibility or Deadlock? The NAFTA's Transformation of the Telecommunications Industry

Karen E. Lee(1)

Introduction

It is estimated that the telecommunications industry comprises \$3.5

trillion of the world's economy.(1) American telecommunications manufacturers have increasingly sought greater access to this lucrative global market(2) and elimination of trade barriers retarding U.S. penetration into foreign telecommunications markets. The North American Free Trade Agreement (NAFTA),(3) ratified by the United States in 1993, reduced both tariff and nontariff barriers that hindered telecommunications trade between the United States, Mexico, and Canada.(4)

The use of different product standards is one of the most significant types of nontariff barriers addressed by the NAFTA. Different product standards create incompatibility, which discourages users from purchasing a foreign manufacturer's product. The NAFTA directs its three member nations to utilize the product standards set by international standard-setting organizations as the basis for all their standards. Reliance on these organizations, proponents of the NAFTA argue, will result in global standards, eliminate incompatibility, and open new markets for trade.

These international organizations, however, face numerous problems that limit their effectiveness to formulate standards. In light of these problems, this Note argues that increased reliance on international standard-setting bodies in their current form, as mandated by the NAFTA, is not in the best interests of the American telecommunications industry. Part I discusses the importance of compatibility standards. Part II explains the NAFTA's impact on the standard-setting process. Part III identifies four major problems faced by standard-setting bodies, and Part IV examines the factors that affect standardization. Part V suggests two changes to improve the current process.

I. The Importance of Compatibility Standards

A standard is a "set of technical specifications adhered to by a producer, either tacitly or as a result of a formal agreement."(5) Several types of product standards exist. They include reference, minimum quality, and compatibility standards.(6) Minimum quality and reference standards assure consumers that a product, if it has met those standards, will perform at a particular level.(7) A compatibility standard certifies that a telecommunications product is fully operational within a network of similar equipment.(8) Different manufacturers may produce similar products. However, if all manufacturers adhere to the same compatibility standard, consumers can utilize those products in the same network.(9)

A. Benefits of Standardization

Standardization offers many benefits to the manufacturers, service providers, and users in the telecommunications sector. Compatibility decreases costs,(10) reduces the need for translators,(11) and increases consumer welfare.(12) A user gains greater utility from the consumption of a particular good when all other persons consume a good compatible with the user's product.(13) For example, the number of users of a particular personal computer affects the quantity and diversity of software available for the computer.(14) Furthermore, compatibility permits consumers to use all aspects of a system or network(15) and gives users more freedom to choose the brand name product that best suits their particular needs.(16)

Compatibility also reduces the possibility of "premature" technological obsolescence.(17) Users are more likely to purchase a communications technology if manufacturers cannot produce an incompatible commodity.(18) Compatibility increases the product's value to consumers. An incompatible commodity lessens the value of the product the consumer purchased.(19) Moreover, future users gain from a current user's experience with a particular

technology.(20) Manufacturers use consumer feedback to improve upon a technology. Thus, future consumers buy a better product.

Manufacturers and service providers also benefit from compatibility standards. Standards create a larger and more competitive market.(21) They may promote price competition among manufacturers.(22) Furthermore, compatibility standards prevent manufacturers from wasting resources by producing duplicative equipment that is not interoperable.(23)

Service providers, such as telephone and data network providers, profit as well. Providers must invest significant amounts of money in hardware and technology.(24) Service providers are reluctant to invest without a "guaranteed" user market. Compatibility creates the needed user market.(25) Thus, as a result of the proliferation of standards, providers are more willing to invest in the necessary equipment.(26)

B. Drawbacks to Standardization

Clearly, standardization has many benefits. However, standardization also has drawbacks. Compatibility may result in the loss of a technology with unique characteristics.(27) Some consumers may, in fact, highly value those unique services that a particular technology provides.(28) Standardization, therefore, reduces the variety of available goods and consumer choice. Moreover, once a standard is adopted, it is difficult to change. In some cases, the adoption of a standard may retard market penetration of technologies superior to the one employed.(29) Standards formulated for products not yet marketed compound this risk.(30) Without experience and consumer feedback, manufacturers and standard-setting bodies cannot assure consumers that they are adopting a practicable standard, let alone the best standard.(31)

Consumers may not be the only losers. Manufacturers whose technology is not adopted as the standard are forced to scrap their products.(32) This results in wasted resources. Moreover, manufacturers whose technology is adopted as the standard have a competitive edge over the losing manufacturers.(33) The winners have experience manufacturing goods that meet those compatibility standards, and they may retain patent rights to particular standards.(34) Manufacturers with those rights can raise the operating costs of its competitors.(35) Higher manufacturing costs force competitors to reduce output,(36) which allows the dominant manufacturer to raise its prices.(37) Such activity may force competitors to leave the market.(38) It may also create barriers to entry and harm industrial competitiveness.(39)

Manufacturers may also interpret compatibility standards differently.(40) For example, many countries have adopted the X.25 network standard promulgated by the International Telegraph and Telephone Consultative Committee (CCITT).(41) However, each country has applied the standards differently.(42) Many nations have rewritten the standards for their benefit.(43) Without sufficient clarification, these standards fail to provide the compatibility for which they were designed.

II. The NAFTA and the Standard-Setting Process

The NAFTA was signed on December 17, 1992 by American President George Bush, Mexican President Carlos Salinas de Gortari, and Canadian Prime Minister Brian Mulroney.(44) The U.S. Senate ratified the NAFTA on November 20, 1993 by a vote of 61 to 38.(45) The treaty has six key components: market access, trade regulation, foreign investment laws, intellectual property laws, service businesses, and dispute settlement.(46) It essentially creates a free-trade zone in North America. Six months after the treaty took effect, U.S. exports to Mexico rose to \$24.5 billion, a \$3.5 billion increase from the year before.(47)

Chapter 13 of the NAFTA, which deals exclusively with telecommunications, received high marks from industry representatives.(48) It mandates that Mexico, Canada, and the United States ensure reasonable and nondiscriminatory access to international and domestic public telecommunications networks used to provide value-added(49) and intracorporate telecommunications(50) services throughout North America.(51) It ordered the removal of Mexican restrictions on American and Canadian foreign investment in all value-added telecommunications services by July 1995.(52) The treaty also forces the three nations to price public telecommunications network services based on actual cost. Moreover, it penalizes nations for using technical product standards as barriers to trade in telecommunications

services.(53)

A driving force behind the NAFTA was the desire to eliminate the use of standard-related measures of telecommunication products and other products as nontariff barriers to trade.(54) A nontariff barrier includes all regulations of trade other than import taxes into a country.(55) A nation imposes a nontariff barrier to protect its domestic industries from foreign domination.(56) A standards-related measure serves as a nontariff barrier to trade when a country's product standards differ from that of another. The incompatibility between the two products prevents market penetration by the country seeking entry into a particular market.

Chapter 9 of the NAFTA deals exclusively with these standard-related measures. Article 904(4) prohibits the use of standards-related measures as nontariff barriers to trade. It states "no Party may prepare, adopt, maintain or apply any standards-related measures with a view to or with the effect of creating an unnecessary obstacle to trade between the parties."(57) Article 906(2) then mandates that the "Parties shall to the greatest extent practicable make compatible their respective standards-related measures, so as to facilitate trade in a good or service between the Parties."(58) Article 905(1) then states that "[e]ach Party shall use, as a basis for its standards-related measures, relevant international standards or international standards whose completion is imminent . . ."(59) Moreover, a nation's standards-related measures that conform to an international standard are presumed to be consistent with Article 904.(60)

Articles 904 to 906 essentially make what were once permissible standards promulgated by international standardization organizations mandatory ones. Articles 904 to 906 also compel the telecommunications industry to adopt cooperative standard-setting as the sole method used to achieve standardization.(61) Cooperative standard-setting occurs when market participants voluntarily delegate compatibility decision-making authority to standardization organizations. These organizations attempt to arrive at a consensus among the participants and exist at industry-wide, national, and international levels. The NAFTA relies exclusively on cooperative standard-setting to formulate product standards.

A. Structure and Procedure of Key Cooperative Standard-Setting Organizations

1. International Telecommunications Union

The two principal cooperative standardization organizations in the telecommunications industry are the International Telecommunications Union (ITU) and the International Organization for Standardization (ISO). The ITU is the only standardization organization that exclusively develops telecommunications standards.(62) The ITU's initial involvement in international standardization concerned telephony.(63) However, the ITU's work today covers all telecommunications services. Its activities are divided into three sectors: development, radio communications, and standardization.(64)

The standardization sector is divided into Technical Study Groups, which formulate standards for various telecommunications products. The Standardization Advisory Group coordinates standardization activities among those Study Groups within the ITU and other external standard-setting bodies. Moreover, it reviews the progress made in the various Study Groups and resets their goals if necessary.(65) The Standardization Activity Group also allows manufacturing representatives and users to evaluate and to contribute to the standardization process. However, the Group has no formal authority.(66) It cannot vote on proposed standards.

In addition, the ITU has a Standardization Bureau to address users' concerns that their current technology might be incompatible with future technologies. The Bureau evaluates whether proposed standards will permit users to continue to operate their old technology. The Bureau also ensures that technologies developed now can later adapt to future ones. Moreover, the Bureau revises Study Group questions as the needs of manufacturers, users, and service providers change between Plenipotentiary Conferences.(67)

2. International Organization for Standardization

Similar to the ITU, the ISO plays a significant role in the development of communications standards. However, the ISO deals with standardization issues in diverse fields, such as agriculture, nuclear-powered systems, and fabrics.(68)

Currently, the ISO has seventy-three members(69) and is a nontreaty organization of the United Nations.(70) Each nation is allowed one representative.(71) The United States' representative is the American National Standards Institute (ANSI).

ISO members can be categorized into two groups. Organizations such as ANSI comprise the first group. These organizations are voluntary. Private members, not the government, fund the activities of these organizations. However, some nations' representatives may work for their respective governments. ISO members in the second group are funded by their government, but permit some corporate involvement.(72)

The ISO's technical committees and subcommittees perform the bulk of standardization.(73) However, member and nonmember organizations of the ISO can request the formation of a technical committee to address any standardization issue that is international in scope. Member nations then vote on the proposed committee. A committee is created if a majority of the member nations support the proposal and if a minimum of five member nations are willing to actively participate in the committee. Once formed, the committee is chaired by a member nation that reports to the ISO Council.(74)

The technical committees then formulate standards. Member nations vote on the proposed recommendations at the General Assembly or by written ballot.(75) The General Assembly convenes only once every three years. Thus, the majority of voting occurs via written ballot.(76) Similar to the ITU, the recommendations, even if agreed to by a majority of the member states, do not bind the ISO's member states. ISO members may choose to follow or ignore the standards.(77) Furthermore, the ISO re- evaluates its recommended standards every five years.(78)

III. Problems Faced By Standard-Setting Organizations

A. Delays

The ITU's own members and directors, as well as industry leaders, have criticized the delays in the standardization process. On average, the ITU has taken four years to formulate a standard.(79) In 1992, the ITU was restructured to its current form to make the standardization process more efficient. It is yet to be seen whether the ITU will actually promulgate standards faster due to the recent restructuring. Some ITU chairpersons have criticized the restructuring effort for inadequately dealing with the needs of member nations in a rapidly changing telecommunications industry. W. H. Bellchambers, the current vice-chairperson of the ITU's Radio Regulations Board, argues that an even more efficient structure will not prevent the decline of the ITU's influence on telecommunications.(80)

Regional standardization organizations (RSOs) have developed in response to the inefficiencies of the ITU and now compete with the ITU in the formulation of standards.(81) In fact, the RSOs were formed to develop standards faster than the ITU.(82) Similar to the ITU, the RSOs attempt to reach consensus among all parties.(83) Given the smaller number of participants in the RSOs, consensus is easier to reach. However, if consensus cannot be achieved, the RSOs' procedural rules contain provisions to break the deadlock. For example, the Exchange Carriers Standards Association (ECSA) permits approval, withdrawal, or revision of a standard if only two-thirds of its members agree.(84)

The ITU's ineffective voting procedures, however, have not been the only reasons for the growing reliance on the RSOs. First, concern arose that the ITU's process excludes the opinions of private telecommunications manufacturers and limits voting rights to representatives selected by the governments of member nations. When governments were both manufacturers and regulators of telecommunications, the ITU's structure gave manufacturers and regulators a forum to articulate their needs. However, now that governments principally regulate the industry and private companies produce the hardware, the ITU excludes the voice of manufacturers. Comparatively the RSOs involve more participants. For example, local exchange carriers, interexchange carriers, and equipment manufacturers comprise the ECSA.(85) Thus, standards produced by RSOs more closely resemble the standards that evolve in the free-market absent such organizations.(86)

An additional problem for the ITU is the need to harmonize the interests of developing and industrialized nations. Developing nations may not contribute heavily in terms of money and technical knowledge to the ITU. However, developing nations have a right to vote for which standards are adopted. If the ITU must reach consensus among all

member nations, it must address the concerns of developing countries. At the same time, the needs of developing and industrialized nations differ in many instances. The RSOs circumvent this problem by permitting only developed nations to join.(87)

While RSOs resolve deadlock, incorporate the opinions of manufacturers, users, and service providers, and exclude developing nations, their proliferation does not imply that global standards are more likely to emerge. RSOs promulgate regional standards.(88) Reaching consensus among the various RSOs may be as difficult to attain as consensus in the ITU. Regardless of whether consensus among the RSOs is difficult or easy to reach, the ITU's role is diminished. If agreement comes easily, the ITU will have to concede to the standard supported by industrialized nations, which fund the majority of the ITU's activities. If the RSOs will not endorse a uniform standard, the ITU is not better equipped to formulate one.(89)

B. Cost

The delays caused by the standard-setting procedures used by organizations, such as the ITU and the ISO, have only added to the rising costs of standardization. France, Germany, Japan, Russia, and the United States each donate 9.3 million Swiss Francs per year to the ITU.(90) Moreover, Argentina, which hosted the first World Telecommunications Development Conference in March 1994, spent \$2.6 million for the event. Member nations incurred additional expenses by sending representatives to participate in the conference.(91)

Perhaps the best example of the financial cost of institutional standardization is the Federal Communication Commission's (FCC) attempt to select a standard for high-definition television (HDTV). Since 1987, the wonders of HDTV have been discussed in the United States. HDTV offers wide-screen television images with CD-quality sound.(92) HDTV may also be able to store and retrieve electronic still pictures, permit two-way radio communication, and receive programming in different formats from broadcasters, cable, satellites, and fiber-optic lines.(93) However, HDTV has yet to be sold in the United States.

The FCC designated its Advisory Committee on Advanced Television Service (ACATS) to recommend which manufacturer's HDTV standard should be adopted. The ACATS solicited proposals from various electronic manufacturers, receiving twenty-three proposals from fourteen electronic producers. Manufacturers spent numerous dollars researching and developing their proposals. For example, the Japanese invested over \$700 million on their Multiple Sub-nyquist Encoding Transmission (MUSE) proposal, which they eventually withdrew, because it was based on analog, rather than digital technology.(94)

By 1991, the ACATS reduced the number of proposals to four. They included one developed by AT&T and Zenith Electronics, two by General Instruments and MIT, and one by North American Phillips, Thomson Consumer Electronics, and the David Sarnoff Research Center.(95) The ACATS and the Advanced TV Test Center (ATTC),(96) a committee comprised of major network producers and broadcast-related trade associations, conducted tests to evaluate the four systems. The ATTC planned to spend \$13 to \$15 million to build the test laboratory and appraise the various systems. After the ATTC's preliminary testing, the HDTV standard which performed the best would then undergo a series of field tests. After such extensive testing, ACATS would then recommend a standard to the FCC.(97)

However, after one and one-half years of testing, the ACATS announced in February 1993 that it was unable to recommend any system.(98) Rather than authorize developers time to improve their products and conduct a second round of testing, the ACATS proposed that the various designers combine the strengths of their various standards. The joint venture between the producers is now known as the "Grand Alliance."(99) However, these manufacturers will have to invest additional time and money, before the FCC will formally adopt the HDTV standard of the "Grand Alliance."

C. Growing Trend Toward A Priori Decision Making

In the past, standard-setting organizations, such as the ITU and the ISO, selected a universal standard from among those already used in the market. Today, however, there is a growing trend among standard-setting organizations and

market participants to determine product standards before they are marketed to consumers. The emphasis on achieving a world standard has grown. Thus, it is argued all major competitors must have an equal opportunity to contribute to and benefit from the adopted standard. If a manufacturer has already invested significantly in a produced good, and has created a loyal customer following, then standardization is less likely to be achieved. The only way to avoid losses to all manufacturers is to rely on a priori decision making.(100)

However, as the HDTV example indicates, a priori decision making may have negative ramifications on technological development. Manufacturers were ready to introduce HDTV to the American public in 1988. Japan first began HDTV broadcasting in that year.(101) It used its MUSE system to broadcast the 1988 Summer Olympics to eighty-one sites in Japan.(102) Japan then began continuous HDTV broadcasting in 1989.(103)

The retardation of technology, however, is not the only negative consequence of a priori decision making. A standard may be adopted too quickly. It may not be technologically feasible to manufacture a product using the recommended standard. Moreover, decisionmakers may not have envisioned future difficulties when selecting a particular standard.(104) The Red Book standard for CD-Audio and the Yellow Book standard for CD-ROM are some examples.

The Red Book and Yellow Book standards began as a private agreement between Sony and Phillips. The two manufacturers agreed to the disc's chemical requirements, its dimensions, and its optical characteristics.(105) Sony and Phillips agreed to these standards before the first CD was ever sold. The International Electrotechnical Commission (IEC) eventually adopted the Red and Yellow Book standards as the world-wide standards for CDs.

The Red Book standard mandates that a disc should be at least 1.2 millimeters thick. Manufacturers may vary the disc's thickness within a certain range: +0.3mm and -0.1mm. However, shortages in raw materials used to produce the discs have occurred. The polycarbonate base and the aluminum metal component of the disc are now in short supply. Some manufacturers have tested thinner discs. However, a thinner disc may have a shorter life-span than a disc of 1.2 millimeters. Moreover, a thinner disc may not be playable on all CD players.(106) In this instance, reliance on a priori decision making by private manufacturers and standard-setting organizations prevented an accurate forecast of all potential problems in the future.

D. Politicization

Political bargaining, not technological decision making, also often dominates national and international standard-making bodies. National technical organizations may support the formation of a universal standard. However, a country may oppose a global standard if it is detrimental to the political and economic interests of that country. This occurs when the adoption of a national standard would protect domestic industries. The development of international standards would cause a losing nation to forfeit royalties from its domestically held patent rights. Moreover, a national standard may symbolize a country's political and technological power and independence from the rest of the world.(107)

Politics dominates national and international standardization organizations for several reasons. First, member nations designate which delegates will represent them at the various international standards meetings. The U.S. Department of State, Office of International Communications Policy, governs which American delegates serve on the various sector committees at the ITU. Second, these representatives, not the technical advisors, ultimately select which standards, if any, are adopted.(108) This allows representatives to couch political arguments in technological terms. Furthermore, commercial operators and manufacturers, such as AT&T, Motorola, and British Telecom, lack voting privileges.(109) Third, these designated representatives elect the directors of the key offices in organizations such as the ITU and the ISO. These directors set the policy agenda of the various organizations. Moreover, member nations financially support the activities of these organizations. Standard-setting bodies, thus cannot act independently from their major financial contributors.

This politicization hinders the development of international standards. The inability of the ITU to adopt a global color television standard in 1965 is just one example.(110) Three different color television systems emerged as a result of the ITU's failure. National Television System Committee (NTSC) system was developed by the Americans; Séquential à Mémoire (SECAM) by the French, and Phase Alternation by Line (PAL) by the Germans.(111) Approximately 95

percent of the component parts of the three systems are the same.(112) However, the way the color subcarrier is modulated, and the number of horizontal lines the systems carry differ.(113) These differences cause the incompatibility.

The desire of French politicians to protect France's technological industry and to develop an export market to the non-Western world accounts for their resistance to an international standard.(114) They also feared the growing American technological dominance at that time.(115) The French viewed SECAM as one way to reassert its national power and prestige. SECAM was a technology owned and developed by the French. It symbolized French independence from American technology.(116)

Moreover, the French economy stood to gain from the sale of license rights and from the export of the SECAM system. The export market included all countries except the United States, Japan, and Canada. Those three countries had already adopted the NTSC system as their standard. Had France agreed to adopt the American standard, it would have forfeited potential export markets and license sales. Moreover, France would have had to pay the United States license fees to produce the NTSC system.(117)

A more recent example of the effect of politics on standardization decisions is the FCC's attempt to select an HDTV standard. The United States currently imports a significant number of consumer electronic products. In 1990, the United States had a \$12 billion trade deficit in this area.(118) Americans feared the dominance Japan and other Asian nations enjoy in the manufacturing and the development of consumer electronics products.(119) American politicians have, thus, presented HDTV as the last opportunity to salvage the American consumer electronics industry.(120)

The American government has also justified its involvement in the selection of an HDTV standard to secure the creation of American jobs.(121) The Economic Policy Institute estimated that if American manufacturers capture 50 percent of the domestic market, then a \$10 billion trade surplus would result. Moreover, HDTV, it argued, would create millions of American jobs.(122) The Electronic Industries Association (EIA) projected 232,000 jobs would be created.(123) Moreover, U.S. Labor Secretary Robert Reich has stated that the number of American jobs created by a particular HDTV standard should affect which standard the FCC ultimately selects.(124)

Politicians, therefore, have pushed for a standard created by Americans. However, some argue that the selection of a foreign standard will not affect the domestic television industry significantly. Foreign television manufacturers already produce, in the United States, the majority of their sets sold in the United States.(125) This is because the cathode ray picture tubes used in television receivers are costly to ship.(126) Clearly, the political clamor surrounding HDTV in the United States has slowed the adoption of an HDTV standard and the introduction of this new technology into the American market. In fact, EIA Consumer Electronics Vice-President Gary Shapiro has challenged the FCC to set an HDTV standard by the 1996 Summer Olympics in Atlanta.(127)

IV. Some Factors Affecting Standardization

The delays, cost, and politicization associated with standard-setting bodies result, in part, because all parties involved—users, service providers, and manufacturers—want to minimize their personal losses and maximize their private gains. During the standardization process, these private interests cause conflict which prevents compatibility. Economists Stanley M. Besen and Garth Saloner identify the two principal factors affecting the standard-setting process: the private incentives of interested parties to promote the universal adoption of a particular standard and the extent those parties differ over which standard they should adopt.(128)

Having identified the two principal factors affecting the standard-setting process, Besen and Saloner derive four economic models; three are relevant to a discussion about the weaknesses of cooperative standard-setting bodies. The first is when all parties have a significant interest in adopting a compatible standard and have similar preferences as to which technology they adopt. All parties agree to one standard, because each party's own interests are maximized by the selection of a universal standard. This is known as the Pure Coordination Case. Most standard-setting bodies, such as the ITU and the ISO, assume all participants in those organizations approach the process with significant interest in and similar preferences for a universal standard. However, these organizations overlook the Pure Private Goods and Conflict Cases Besen and Saloner identify.(129)

The Pure Private Goods Case occurs when market participants have large differences in the technology they prefer. The parties have little economic incentive to formulate a standard. This leads to stalemate and failure to adopt a standard. In a market without a dominant manufacturer, producers use the standardization process to either promote their own technologies or block the adoption of another's standard. No compromise is ever reached.

However, a dominant producer in the market does not guarantee standardization will occur. A dominant firm will not seek an industry standard if it believes that its competitors will benefit from standardization. For example, consumer demand for a competitor's product might increase and lower the demand for the dominant manufacturer's good. The Pure Private Goods Case thus leads to three possible outcomes: incompatible standards, the adoption of the dominant manufacturer as a de facto market standard, or failure to develop a technology.(130)

In the Conflict Case, producers differ sharply over which standard they should adopt. However, all participants want a standard to emerge. If a dominant manufacturer exists in this market, the standard of that producer will emerge as the de facto standard. If no dominant player exists, market participants will engage in standardization. Manufacturers will form coalitions and offer side payments to the opposing producers. Absent the use of coalitions and side payments, manufacturers will not develop an industry-wide standard.(131)

The NAFTA, similar to the ITU and the ISO, is based on the assumption that all participants in the standard-setting process want universal standards and that little differences exist about which standards should emerge. That assumption is correct where the United States, Mexico, and Canada are concerned. The NAFTA allows American manufacturers to participate directly in the development of standards in Canada and Mexico on the same basis as domestic firms in those countries.(132) However, developments in European Union (EU) case law suggest that greater conflict exists over which standards should emerge at the global level.

The EU has encouraged its member nations to use "to the maximum" international standards and recommendations.(133) However, unlike the NAFTA, the EU has not required member nations to adopt international standards.(134) In fact, the *Cassis de Dijon*(135) case held that absent EU regulation, member states may determine technical standards.(136) They are limited only by the requirement that the standards are "necessary to satisfy mandatory requirements."(137)

A broad reading of *Cassis de Dijon* creates the presumption that goods legally made in one member state are entitled to free trade in any other EU member state.(138) This notion of "mutual recognition"(139) certainly promotes free trade, and one of the consequences of the *Cassis de Dijon* decision is the enhancement of consumer choice.(140) However, standardization by definition limits consumer choice, and the principle for which *Cassis* stands is antithetical to the notion of uniformity upon which the NAFTA is based.

V.Recommendations

The United States, Mexico, and Canada need to address the weaknesses of the NAFTA treaty in the telecommunications area with respect to its exclusive reliance on international standard-setting organizations. Changes must occur at two levels. At the treaty level, the NAFTA must be amended to allow member nations to opt out of the cooperative standard-setting process if international standard-setting bodies have not promulgated a standard within two years. The automatic opt-out clause could in turn be used to apply pressure to these standard-setting bodies to adopt reforms needed to reduce delays and decrease cost at the global level.

A. An Automatic Opt-out Clause

Currently, the NAFTA gives its signatory members a limited right not to rely on the decisions of international standards organizations. Article 905(1) of the NAFTA enables nations to formulate their own standard when international standards "would be an ineffective or inappropriate means to fulfill its legitimate objectives, for example because of fundamental climatic, geographical, technological or infrastructural factors, scientific justification or the level of protection that the Party considers appropriate."(141)

However, member nations have to justify such behavior to the Free Trade Commission, comprised of cabinet-level

representatives of the other member nations.(142) While such a procedure forces member states to adhere to the treaty, it only increases the cost and delay to achieve standardization if protracted litigation ensues. Furthermore, it delays the significant impact free market forces could have on the standardization process.

An automatic opt-out clause would give international standard-setting bodies two years to promulgate a standard. Two years would allow standardization to occur at a global level as the NAFTA envisions. If, however, no standard emerges during that time, the clause would allow member states to form regional standards and to take advantage of the bandwagon effect(143) likely to occur on the free market. The clause would also avoid the litigation that Article 905(1) entails, reducing cost and delay.

Furthermore, under this system, NAFTA members would enjoy a hybrid system of standardization. International standards bodies and free market forces together increase the chances of achieving compatibility. In a hybrid system, NAFTA members can insist that standardization committees adopt their standard or, as the treaty envisions, must concede to another standard adopted by the organization.(144) However, absent a standard in two years, NAFTA members can allow its market participants to adopt standards by themselves. Moreover, given the fact that American manufacturers may participate directly in Canada and Mexico on the same basis as domestic firms in those countries, it is unlikely that multiple and incompatible standards will emerge. This hybrid system, in effect, offers two opportunities for standards to arise.(145)

B. Structural Reforms of the ITU and the ISO

An automatic opt-out clause, however, does not address the weaknesses of international standard-setting bodies such as the ITU and the ISO. Three structural reforms also are needed to reduce the delay, cost, and politicization associated with these international organizations. First, these organizations should give RSOs voting privileges. Second, members with voting privileges should be limited to RSOs, and third, developing nations and other interested parties should be given an opportunity to comment on proposed standards to the voting members.

RSOs should have voting privileges for several reasons. RSOs allow more participants in the standardization process. For example, private manufacturers and their engineers may contribute to the standard-setting process. The expertise and experience that manufacturers bring to the process could avoid some of the problems when a priori decision making is used by international standard-setting bodies. In addition, including the voice of manufacturers at the international level would reduce the influence of governmental representatives, but would not exclude their concerns from the process.

RSOs also should have exclusive voting privileges within these international standard-setting bodies. Under this system, RSOs could take proposed international standards back to their regional members for a vote. The RSOs would rely on their own voting procedures to break ties and deadlocks. Procedures currently in place were specifically designed to circumvent the problems that have arisen at the ITU. Limiting voting rights to RSOs would further reduce delays and cost by streamlining decision making.

Finally, developing nations and other concerned parties should be given an opportunity to comment on proposed international standards. Industrialized nations should know about the concerns and problems that developing nations face when creating a telecommunications infrastructure. Voting members should consider the impact suggested standards will have on those nations. However, industrialized countries who fund the majority of the ITU's activities should not be limited and delayed by developing nations. Allowing these nations to comment on proposed standards would give them an opportunity to be heard while reducing the average time needed to promulgate an international standard.

Conclusion

The NAFTA has resulted in two significant changes in the American telecommunications industry. Provisions of the treaty require the United States to promulgate standards mandated by international standard-setting organizations and force the telecommunications industry to utilize cooperative standard-setting as the exclusive means by which to achieve standardization. The NAFTA mandates these organizations play a critical role in the era of free trade in North

America and around the world. However, without pressure by the NAFTA's signatory members to adopt structural changes, these organizations lack the ability to be a significant factor in the free trade era. Exclusive reliance on these standard-setting bodies in their current form can only mean delays, high cost, and the retardation of innovative technology to American telecommunication manufacturers, users, and service providers.

(1)B.A. (French and philosophy), Indiana University—Bloomington, 1993; J.D.,

Indiana University School of Law—Bloomington, 1996. Thanks to J. Ann Lee and Mark D. Lunney for their support and encouragement.

(1)Sumner M. Redstone, *Keynote Address*, 11 B.U. Int'l L.J. 133, 134 (1993).

(2)*See generally* National Telecommunications And Information Administration, U.S. Dep't of Com., Pub. No. 93-290, *Globalization of the Mass Media*

(1993).

(3)U.S. Gov't Printing Office, 1 North American Free Trade Agreement

(1993) [hereinafter NAFTA].

(4)In December 1994, the United States, Mexico, and Canada invited Chile to join the

NAFTA. Originally, the United States projected negotiations would be completed within 15 months. *See* Tracy Wilkinson & William R. Long, *Americas Summit Ends: Clinton Hails 'Watershed'*, L.A. Times, Dec. 12, 1994, at A1; Michael McQuire, *Chile Invited to Be Fourth NAFTA Partner*, Chi. Trib., Dec. 12, 1994, § 1, at 7. However, the Clinton administration failed to obtain "fast track" powers from Congress to make that possible. Currently, Chile is not expected to join the NAFTA until 1997. Stephen Fidler, *Latin America Worries about US Trade Shift: US Election Year Concerns Have Gone Beyond the Usual Ones*, Fin. Times, Feb. 28, 1996, at 5.

(5)Paul A. David & Shane Greenstein, *The Economics of Compatibility Standards: An Introduction to Recent Research*, 1 Econ. of Innovation & New Tech. 3, 4 (1990).

(6)*Id.*

(7)Id.

(8)D.M. Cerni & E.M. Gray, U.S. Dep't of Com., Pub. No. 83-15, *International Telecommunication Standards: Issues and Implications for the '80s* 50 (1983).

(9)David & Greenstein, *supra* note 5, at 4.

(10)Yale M. Braunstein & Lawrence J. White, *Setting Technical Compatibility Standards: An Economic Analysis*, 30 Antitrust Bull. 337, 337 (1985).

(11)*Id.* at 343. A translator is a "low-cost `add-on'" that allows a consumer to utilize

an otherwise incompatible technology. *Id.* at 340. An example of a translator is the Personal MacLAN Connect that allows Macintosh users to access a PC's files, send files to a

PC printer, and use a PC's hard disk, floppy drive, and CD-ROM. Carol S. Holzberg, *Seamless Mac and PC Connectivity: MacLAN Enables Macintosh and Windows Users to Share Files, Folders, Drives, and Printers*, Computer Shopper, Nov. 1993, available in LEXIS, Fedcom Library, Compub File.

(12)Braunstein & White, *supra* note 10, at 337.

(13)Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 Am. Econ. Rev. 424, 424 (1985).

(14)*Id.*

(15)Braunstein & White, *supra* note 10, at 343.

(16)Cerni & Gray, *supra* note 8, at 52.

(17)Stanley M. Besen & Leland L. Johnson, Nat'l Sci. Found., R-3453-NSF, *Compatibility Standards, Competition, and Innovation in the Broadcasting Industry* 8 (1986).

(18)Id.

(19)Id.

(20)Id.

(21)Cerni & Gray, *supra* note 8, at 52.

(22)Besen & Johnson, *supra* note 17, at 8.

(23)Braunstein & White, *supra* note 10, at 343.

(24)Cerni & Gray, *supra* note 8, at 53.

(25)Id.

(26)Id.

(27)Braunstein & White, *supra* note 10, at 343.

(28)*Id.*

(29)Cerni & Gray, *supra* note 8, at 53.

(30)Id.

(31)Id.

(32)Braunstein & White, *supra* note 10, at 343.

(33)*Id.*

(34)Joseph Farrell & Garth Saloner, *Coordination Through Committees and Markets*, Rand J. Econ. 235, 238 (1988).

(35)Steven C. Salop & David T. Scheffman, *Raising Rivals' Costs*, 73 Amer. Econ.

Rev. 267, 267 (1983).

(36)Id.

(37)Id.

(38)Id.

(39)Braunstein & White, *supra* note 10, at 343.

(40)Cerni & Gray, *supra* note 8, at 53.

(41)*Id.* X.25 is the CCITT and Open Systems Interconnection (OSI) standard for packet-switching networks that provide channels up to 64 Kbps. Examples of X.25 networks

include British Telecom, AT&T, and CompuServe. *See* Patricia Schnaidt, *Glossary: Networking Terms*, LAN Magazine, Dec. 1993, at 21, 23-24.

(42)Cerni & Gray, *supra* note 8, at 53.

(43)Id.

(44)Remarks on Signing the North American Free Trade Agreement, 28 Weekly

Comp. Pres. Doc. 2362 (Dec. 17, 1992).

(45)S. 1627, 103d Cong., 1st Sess., 139 Cong. Rec. 1356 (daily ed. Nov. 20, 1993)

(enacted). The House of Representatives approved the NAFTA by a vote of 234 to 200. H.R. 3450, 103d Cong., 1st Sess., 139 Cong. Rec. 1319 (daily ed. Nov. 17, 1993) (enacted).

(46)NAFTA, *supra* note 3, at art. 102; Business Law Symposium, *NAFTA: Overview*

of Legal, Economic and Practical Issues, 15 Loy. L.A. Int'l & Comp. L.J. 915 (1993).

(47)The NAFTA took effect on January 1, 1994. *See* Robert Keatley, *Reaping the*

Benefits: A Look at Some U.S. Companies Poised to Take Advantage of NAFTA, Wall St. J., Oct. 28, 1994, at R4. In 1995, the United States had a \$15.4 billion trade deficit with Mexico, the first in five years. The trade deficit was due to the devaluation of the Mexican peso and a 6% drop in Mexico's gross domestic product. However, U.S. exports to Mexico were 11% higher than in 1993. *Struggling Partner*, The Economist, Mar. 9, 1996, at 28, 28.

The debate about whether the United States should have signed the NAFTA continues to rage. For criticism of the NAFTA, see 141 Cong. Rec. S17,513 (daily ed. Nov. 27, 1995) (statement of Sen. Dorgan); and 141 Cong. Rec. H14,026 (daily ed. Dec. 6, 1995) (statement of Rep. Velazquez). Opponents of the NAFTA also have sponsored the NAFTA Accountability Act, H.R. 2651, 104th Cong., 1st Sess. (1995), which terminates congressional approval of the NAFTA unless certain conditions are met. Others continue to fully support the treaty. *See generally* *Execs Support NAFTA*, USA Today, Feb. 22, 1996, at A1; Tom Nutile, *On State Street: Kantor Defends NAFTA*, Boston Herald, Oct. 31, 1995, at 29; *Testimony Oct. 25, 1995 Jim Kolbe Congressman House International Relations Western Hemisphere South American Trade Issues*, Fed'l Doc. Clearing House Cong. Testimony, Oct. 25, 1995, available in LEXIS, News Library, Curnws File.

(48) *NAFTA Provisions on Telecommunication Get High Marks at Industry Conference*,

Daily Rep. For Executives, Nov. 16, 1992, at 221, 221; *Science and Technology Week: High-Tech Industries See Bright Future With NAFTA* (CNN television broadcast, Nov. 13, 1993). For additional information on Chapter 13, see Ivan H. Shefrin, *The North American Free Trade Agreement: Telecommunications in Perspective*, *Telecomm. Pol'y*, Jan./Feb. 1993, at 14; Alexandra Field, *Current Developments in the FCC: Telecommunications and the NAFTA*, 25 *Law & Pol'y Int'l Bus.*, Mar. 22, 1994, at 1145; U.S. Int'l Trade Comm'n, *Potential Impact on the U.S. Economy and Selected Industries of the North American Free Trade Agreement*, Pub. 2596 (Part 4), Jan. 1993; and Richard H. Steinberg, *What the North American Free Trade Agreement Means to Business: An Industry-by-Industry Analysis of Effects and Opportunities*, 9 *Corp. Couns. Q.* 52, 68-70 (1993).

(49) As defined by the NAFTA, value-added services are telecommunications services

that use computer processing applications that: "(a) act on the format, content, code, protocol or similar aspects of a customer's transmitted information; (b) provide a customer with additional, different or restructured information; or (c) involve customer interaction with stored information." NAFTA, *supra* note 3 at art. 1310. Examples of such services are voice mail, electronic mail, facsimile transmission, data capture and storage, and on-line database access. Andrew C. Gross et. al., *Industry Corner: Global Telecommunications: The Market and the Industry*, *Bus. Econ.*, Oct. 1995, available in LEXIS, Fedcom Library, Compub File.

(50) Intracorporate communications signify the means through which a business entity

"communicates: (a) internally or with or among subsidiaries, branches or affiliates, as defined by each Party, or (b) on a non-commercial basis with other persons that are fundamental to the economic activity of the enterprise and that have a continuing contractual relationship with it . . ." NAFTA, *supra* note 3, at art. 1310.

(51) Harry G. Broadman, *International Trade and Investment in Services: A Comparative Analysis of the NAFTA*, 27 *Int'l Law* 623, 642 (1993).

(52) *Id.* On June 8, 1995, Mexico passed its first federal telecommunications law, which

eliminated all restrictions on foreign investment in value-added services. Cheryl Schechter & Maggie Miqueo, *New Telecom Law Opens Market, Reduces Role of Government*, *Latin Am. Law & Bus. Rep.*, July 31, 1995, available in LEXIS, Fedcom Library, Compub File.

(53) *Id.*

(54) Anne M. Driscoll, *Key Provisions of the North American Free Trade Agreement*,

Bus. Am., Oct. 19, 1992, at 3, 7-8.

(55) Rhonda J. Crane, *The Politics of the International Standards: France and the Color TV War* 41 (1979).

(56) *Id.*

(57) NAFTA, *supra* note 3, at art. 904(4).

(58) *Id.* at art. 906(2).

(59) *Id.* at art. 905(1).

(60) *Id.* at art. 905(2).

(61)Prior to the NAFTA, two methods had been used to achieve standardization in the

telecommunications industry: noncooperative and cooperative standard-setting. Noncooperative standard-setting occurs when market participants make the standardization decisions. For more on noncooperative standard-setting, see Stanley M. Besen & Garth Saloner, *Rand*, P-7393, *Compatibility Standards and the Market for Telecommunications Services* 21-26 (1988); Besen & Johnson, *supra* note 17, at 22-26; Braunstein & White, *supra* note 10, at 345-49; and Katz & Shapiro, *supra* note 13, at 434-39.

(62)Cerni & Gray, *supra* note 8, at 4.

(63)Andrew Macpherson, *International Telecommunications Standards Organizations* 14 (1990).

(64)*New Structure of the ITU*, Exchange, Jan. 22, 1993, available in LEXIS, Fedcom Library, Compub File. For ITU history, see generally Macpherson, *supra* note 63.

(65)Nitin Shankar, *Setting a New Standard*, Comm. Int'l, Dec. 1992, available in LEXIS, Fedcom Library, Compub File.

(66)Id.

(67)*Id.* The Plenipotentiary Conference convenes every five to nine years. See Cerni

& Gray, *supra* note 8, at 5. The ITU's general policy, constitution, and articles of convention are determined at this Conference. The member nations also elect the directors of the various sectors at this Conference. See Macpherson, *supra* note 63, at 17.

(68)Cerni & Gray, *supra* note 8, at 10-11.

(69)Macpherson, *supra* note 63, at 95.

(70)Gerd Wallenstein, *Setting Global Telecommunications Standards: The Stakes, The Players & The Process* 85 (1990).

(71)Macpherson, *supra* note 63, at 96.

(72)Cerni & Gray, *supra* note 8, at 11.

(73)*Id.* at 12.

(74)Macpherson, *supra* note 63, at 102-03.

(75)*Id.* at 97.

(76)Cerni & Gray, *supra* note 8, at 13.

(77)Macpherson, *supra* note 63, at 97.

(78)Cerni & Gray, *supra* note 8, at 13.

(79)Marcel Werner, *ITU Making Standardization More Competitive*, Telecomm., July

1993, at 10, 10.

(80)*Summit Poses Questions About ITU Role in the 1990s*, FinTech Telecom

Markets, Apr. 28, 1994, available in LEXIS, Fedcom Library, Compub File.

(81)RSOs include the European Telecommunications Standards Institute (ETSI), the T1

Committee of the Exchange Carriers Standards Association (ECSA) in the United States, and the Telecommunications Technology Committee (TTC) in Japan. See Stanley M. Besen & Joseph Farrell, *The Role of the ITU in Standardization: Pre-eminence, Impotence or Rubber Stamp?*, Telecomm. Policy, Aug. 1991, at 311, 311.

(82)Id.

(83)Id.

(84)*Id.* at 314.

(85)Id.

(86)*Id.* at 320.

(87)*Id.* at 317.

(88)*Id.* at 312.

(89)*Id.* at 320.

(90)*Summit Poses Questions About ITU Role in the 1990s*, *supra* note 80.

(91)Id.

(92)David Ehrlich, *HDTV Update*, Playboy, July 1993, at 173, 173.

(93)Hugh Carter Donahue, *Choosing the TV of the Future: The Stakes are High in the*

Search for a Broadcast Standard for High-Definition Television, Tech. Rev., Apr. 1989, at 30, 30.

(94)Kenneth D. Springer, Note, *High-Definition Television: New World Order or*

Fortress U.S.A.?, 24 Law & Pol'y Int'l Bus. 1309, 1309 (1993). For an extensive bibliography on the development of HDTV standards, see *High-Definition Television: An Annotated Multidisciplinary Bibliography, 1981-1992* 169-222 (James E. Sudalnik et al., eds. 1994).

(95)*High Definition Television: Hearing Before the Subcomm. on Telecomm. and*

Finance of the House Comm. on Energy and Commerce, 103rd. Cong., 1st Sess. 10 (1993) (statement of Robert K. Graves, Vice-President, AT&T).

(96)Chris McConnell, *ATV Comes Out on Top of NTSC in Field Tests*, Brdcst. &

Cable, Sept. 26, 1994, at 56, 56.

(97)Randall Sukow, *State of the Art: Television Technology*, Brdcst, Oct. 15, 1990,

at 42, 44.

(98)Ehrlich, *supra* note 92, at 173.

(99)*High Definition Television: Hearing Before the Subcomm. on Telecomm. and*

Finance of the House Comm. on Energy and Commerce, 103rd. Cong., 1st Sess. 17 (1993) (Advisory Committee on Advanced Television Service).

(100)Wallenstein, *supra* note 70, at 21.

(101)Springer, *supra* note 94, at 1314.

(102)Id.

(103)*Id.* at 1316.

(104)Besen & Saloner, *supra* note 61, at 24.

(105)*CD Quality Standards: Not High Enough?*, Tape-disc Bus., Aug. 1993, available in LEXIS, Fedcom Library, Compub File.

(106)*Optical Raw Materials Quality Control*, Tape-disc Bus., Nov. 1993, available in LEXIS, Fedcom Library, Compub File.

(107)Crane, *supra* note 55, at 7.

(108)Cerni & Gray, *supra* note 8, at 7.

(109)*Summit Poses Questions About ITU Role in the 1990s*, *supra* note 80.

(110)Crane, *supra* note 55, at 8.

(111)*Id.* at 13.

(112)*Id.* at 14.

(113)*Id.* at 14-15.

(114)*Id.* at 39.

(115)Id.

(116)*Id.* at 45.

(117)Id.

(118)Springer, *supra* note 94, at 1311.

(119)*Id.* at 1309, 1314.

(120)See Al Gore, *Implications of HDTV on U.S. Policy*, in *HDTV: The Politics*,

Policies, and Economics of Tomorrow's Television 189-90 (John F. Rice ed., 1990).

(121)Springer, *supra* note 94, at 1322; *see generally* HDTV: The Politics, Policies, And Economics Of Tomorrow's Television (John F. Rice ed., 1990).

(122)J.J. Barry, *HDTV: America's Last Chance to Remain Competitive?*, in HDTV: The Politics, Policies, And Economics Of Tomorrow's Television 143, 145 (John F. Rice ed., 1990).

(123)Joanne Connelly, *HDTV: Who Speaks for U.S. Industry?*, Electronic News, Jan. 23, 1989, at 1, 1.

(124)Peter Lambert, *Reich Enters HDTV Fray As Talks Continue*, Multichannel News, Mar. 15, 1993, at 25, 25.

(125)Springer, *supra* note 94, at 1333.

(126)Id.

(127)*Clarion Call: Launch HDTV By 1996 Atlanta Olympics, Shapiro Urges FCC*, Comm. Daily, Apr. 20, 1993, at 6, 6.

(128)Besen & Saloner, *supra* note 61, at 3-4.

(129)*Id.* at 5-7.

(130)*Id.* at 7-8.

(131)*Id.* at 9-10.

(132)Anne M. Driscoll, *Key Provisions of the North American Free Trade Agreement*, Bus. Am., Oct. 9, 1992, at 3, 7.

(133)Towards a Dynamic European Economy: Green Paper on the Development of the Common Market for Telecommunications Services and Equipment, COM(87)290 final at 103.

(134)The European Telecommunications Standards Institute strives to develop common

ground between the 12 member nations on various standardization issues, but neither mandates that they accept its suggested standards nor that they adopt the standards of the ITU and ISO. Fraidoon Mazda, *Standardizing on Standards: European Perspectives*, Telecomm., Sept. 1992, available in LEXIS, Fedcom Library, Compub File.

(135)Case 120/78, Rewe-Zentral v. Bundesmonopolverwaltung für Branntwein, 1979

E.C.R. 649; Stephen Weatherhill & Paul Beaumont, EC Law: The Essential Guide to the Legal Workings of the European Community (1993). Although *Cassis de Dijon* was decided years before *Towards a Dynamic European Economy* was issued, it remains good law until the harmonization of all EU member nations' legislation regarding product composition. *See* Case C-412/93, Sociiiti d'Importation Idouard Leclerc-Siplic v. TF1 Publiciti SA and Another, 1995 All ER 343.

(136)Weatherhill & Beaumont, *supra* note 135, at 430.

(137)*Id.* at 431. Mandatory requirements are national laws limiting free trade which are

justified on the grounds of public morality, public policy, national security, and the protection of citizens, animals, plants, national treasures, or commercial property. Treaty Establishing the European Economic Community, Mar. 25, 1957, art. 36, 261 U.N.T.S. 140.

(138)*Id.* at 432.

(139)Id.

(140)*Id.* at 436.

(141)NAFTA, *supra* note 3, at art. 905(1).

(142)*Id.* at art. 2001.

(143)The bandwagon effect results when users in the market quickly adopt new

technology. Compatibility and interoperability are so highly valued that once some users switch to the new technology all others must also adopt it. Besen & Saloner, *supra* note 61, at 23-24.

(144)*Id.* at 24.

(145)*Id.*