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Globalization and Standards: The Logic of Two-Level Games

JANE K. WINN*

Abstract: The emergence of a global information architecture has fueled regulatory competition among nations and regions to set information and communication technology ("ICT") standards. Such regulatory competition can be thought of as a two level game: level one is competition to set ICT standards within a nation or region; level two is competition to set the global ICT standards with reference to local standards. The United States and the European Union are global leaders in setting ICT standards, and compete to set global ICT standards based on different local regulatory cultures: the U.S. is a "liberal market economy" ("LME") within which informal standard developing processes are perceived as legitimate, while formal standard developing processes are perceived as legitimate within the "coordinated market economies" ("CME") that tend to dominate EU regulation. In recent decades, informal ICT standard setting organizations ("SDOs") known as consortia, which are more narrowly focused and less transparent than traditional SDOs have emerged in the U.S. and have come to dominate global ICT regulatory competition. Standards for Radio Frequency Identifiers ("RFID") provide an example that illustrates this trend. EU regulators now are considering what changes may be needed in the EU system of harmonizing standards and EU regulation in order to reverse this trend. If EU regulators succeed in engaging with selected ICT standards consortia,

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this might permit CME regulation to prevail over LME regulation in competition to set global ICT standards.

I. INTRODUCTION

Robert Putnam once observed that there had been few systematic attempts to take account of the interaction between national strategies in international arenas and domestic strategies within national arenas. He further proposed the metaphor of the "two-level game" as a framework for organizing the analysis of national and international political dynamics simultaneously.[1] For Putnam, Level I was the international relations game, Level II was the domestic politics game, and the goal was to achieve acceptable outcomes to international relations challenges that were also acceptable outcomes within each of the domestic political systems of the relevant players.[2] This essay will apply Putnam's metaphor of the two-level game to the interaction between national strategies to achieve international agreement on technical standards that benefit domestic economic interests, and domestic strategies to balance the competing interests of producers and consumers with regard to the content of technical standards.[3] In the standards arena, global recognition of technical standards is the Level I game, while domestic recognition of standards is the Level II game.

In order to treat the adoption of technical standards as equivalent to the outcome of international diplomacy or domestic political processes, it is necessary to recognize the development and implementation of standards as the outcome of political, economic, and technical processes.[4] Different governance structures for

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[1] Robert D. Putnam, *Diplomacy and Domestic Politics: The Logic of Two-Level Games*, 42 INT'L ORG. 427, 436 (1988).

[2] *Id.* at 436–37.

[3] In order to distinguish industrial or engineering standards from legal standards or norms, the former are referred to in this paper as "technical standards." The International Organization for Standardization has defined the former as:

A document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context [and] . . . be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits. Standards and Regulations—Definitions, Int'l Org. for Standardization, Mar. 25, 2008, http://www.standardsinfo.net/info/livelink/fetch/2000/148478/6301438/standards_regulations.html.

[4] SAMUEL KRISLOV, HOW NATIONS CHOOSE PRODUCT STANDARDS AND STANDARDS CHANGE NATIONS 23–24 (University of Pittsburgh Press 1997). *See generally* ANTHONY OGUS,

standard-developing institutions have emerged in different countries, representing a wide range of approaches from markets, self-regulation, government regulation, and direct government control.[5] The study of the political processes associated with the development and diffusion of technical standards should therefore recognize that the full range of options included in "new governance" analyses of political institutions may be involved.[6] In technical standards arenas, the equivalent of a successful outcome in Putnam's two-level game in international relations would be the simultaneous voluntary adoption of technical standards in both global and domestic markets in a manner recognized as legitimate in both international and national political processes.

As the impact of information and communications technologies ("ICT") on national and international economic activities grows,[7] the importance of ICT standards is also growing. While ICT standards and SDOs share many features with traditional industrial economy product standards and SDOs, they differ significantly in certain respects.[8] One of the most notable differences is the magnitude of the externalities, or network effects, created by the need for interoperability of different ICT systems and products, and the

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REGULATION: LEGAL FORM AND ECONOMIC THEORY (Peter Cane et al. eds., Oxford University Press 1994); ROGER BOUT, MARC BRUSCHI, MONIQUE LUBY & SYLVAINE POILLOT-PERUZZETTO, LAMY DROIT ÉCONOMIQUE: CONCURRENCE, DISTRIBUTION, CONSOMMATION (Wolters Kluwer France 2006).

[5] Walter Mattli & Tim Büthe, *Setting International Standards: Technological Rationality or Primacy of Power?*, 56 WORLD POL. 1, 3–4, 23, 25 (2003).

[6] Lester M. Salamon, *The New Governance and the Tools of Public Action: An Introduction*, *in* THE TOOLS OF GOVERNMENT: A GUIDE TO THE NEW GOVERNANCE 18 (Lester M. Salamon ed., Oxford University Press 2002).

[7] *See* Bureau of Economic Analysis, U.S. Dep't of Commerce, *Private Services-Producing Sector Continued to Lead Growth in 2006*, Jan. 29, 2008, http://www.bea.gov/newsreleases/industry/gdpindustry/2008/gdpind06_rev.htm (noting ICT producing-industries constitute less than 4% of the U.S. GDP, but account for almost 15% of GDP growth).

[8] *See* CARL CARGILL, OPEN SYSTEMS STANDARDIZATION: A BUSINESS APPROACH 118–19 (Prentice Hall 1996), (noting that formal SDOs normally have two major components: the larger component is the volunteer committees made up of representatives of the engineering discipline that will be served by the completed standard (usually called working groups or technical committees), while the smaller component is the administrative section that manages meetings, tracks drafts, and administer voting procedures).

problem of high switching costs, or "lock-in."[9] In response to the rapid pace of innovation in ICT markets and the large economic stakes created when strong network effects are present, new forms of informal private SDOs known as "consortia" or "fora" have emerged in recent decades.[10] Although in theory, informal ICT standards bodies could be based in any developed market economy, as a practical matter, most of the hundreds of consortia now operating have roots in the U.S. economy.[11] While ICT standards consortia in particular are often more nimble and effective at navigating the treacherous straits of global standards competition than more traditional SDOs, one factor that often contributes to their greater agility is their lack of transparency and public accountability relative to traditional SDOs.[12]

The development of standards is normally an integral element of modern national political, economic and legal systems; the structure of SDOs normally varies from country to country just as their political,

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[9] CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 13, 104 (Harvard Business School Press 1999).

[10] Carl Cargill, *The Informal Versus the Formal Standards Development Process: Myth and Reality*, *in* STANDARDIZATION ESSENTIALS: PRINCIPLES AND PRACTICE 257, 260 (Steven M. Spivak & F. Cecil Brenner eds., Marcel Dekker, Inc. 2001) [hereinafter ESSENTIALS].

[11] For example, in the October 2008 survey of ICT standards fora and consortia published by the European Committee for Standardization ("CEN"), more than 90% of the 240 groups listed have roots in the U.S. *See* European Committee for Standardization, *Survey of Fora & Consortia*, Oct. 2008, http://www.cen.eu/cenorm/sectors/sectors/isss/consortia/survey+table+of+content.asp (listing standards-related fora and consortia).

[12] For example, traditional SDOs in the United States that have been accredited by the American National Standards Institute (see *infra* note 53 and accompanying text) commit to observe the "ANSI Essential Requirements: Due Process Requirements for American National Standards" in their processes. These include Membership must be open to all interested parties; the processes may not be dominated by a single party or interest group and efforts should be made to maintain balance among participants; efforts to resolve disputes should be undertaken in good faith, notices of standards activities must be publicized in a manner likely to encourage the participation of all interested parties; opinions of all participants, including dissenting opinions, must be considered before standards are finalized; standards should be finalized based on evidence of consensus such as voting; and an appeal process should be provided to challenge actions. *See* ANSI ESSENTIAL REQUIREMENTS: DUE PROCESS REQUIREMENTS FOR AMERICAN NATIONAL STANDARDS 4 (2008) [hereinafter ANSI ESSENTIAL REQUIREMENTS], http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/American%20National%20Standards/Procedures,%20Guides,%20and%20Forms/2008%20ANSI%20Essential%20Requirements/2008%20ANSI%20Essential%20Requirements%20031108.pdf.

economic and legal systems vary.[13] While the political consensus in the U.S. generally favors more individualistic, market-oriented institutional approaches to social issues, in many other developed economies such as France, Germany, and Japan, the political consensus generally favors a greater emphasis on social regulation and government coordination. As a result, SDOs in the U.S. operate largely outside any form of government oversight and focus intensely on market conditions, while SDOs in more highly regulated economies operate within a framework of government oversight and focus on regulatory as well as market variables.[14] As globalization increases the interdependence and integration of what were formerly discrete national institutions, these differences in national legal cultures open the door to many new forms of regulatory competition.[15]

This article will focus on regulatory competition to set global ICT standards. While not all ICT standards have an impact on human behavior, many do have the effect of channeling behavior in particular directions in much the same manner that law and other social norms do. In recent decades, ICT standards developed by ICT SDOs with ties to U.S. markets have generally enjoyed more success in global markets than have those developed by SDOs with ties to other countries or regions.[16] This success is due to many factors, including the larger scale of the ICT sector in the U.S. economy and the greater market-orientation of traditional American SDOs. Other factors include the greater ability of consortia, a non-traditional form of SDO, to detect or determine market trends, to remain narrowly focused on economic

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[13] Jay Tate, *National Varieties of Standardization*, *in* VARIETIES OF CAPITALISM: THE INSTITUTIONAL FOUNDATIONS OF COMPARATIVE ADVANTAGE 442, 442–46 (Peter A. Hall & David Soskice eds., Oxford University Press 2001); Ragnar E. Löfstedt & David Vogel, *The Changing Character of Regulation: A Comparison of Europe and the United States*, 21 RISK ANALYSIS 399, 399 (2001).

[14] U.S. Congress, Office of Technology Assessment, GLOBAL STANDARDS: BUILDING BLOCKS FOR THE FUTURE, TCT-512 14 (1992) [hereinafter GLOBAL STANDARDS: BUILDING BLOCKS FOR THE FUTURE], www.strategicstandards.com/files/GlobalStandards.pdf.

[15] *See* Daniel C. Esty & Damien Geradin, *Introduction to* REGULATORY COMPETITION AND ECONOMIC INTEGRATION: COMPARATIVE PERSPECTIVES xix, xix–xi (Daniel C. Esty & Damien Geradin eds., Oxford University Press 2001); William W. Bratton et al., *Introduction: Regulatory Competition and Institutional Evolution*, *in* INTERNATIONAL REGULATORY COMPETITION AND COORDINATION 1, 1–7 (William W. Bratton et al. eds., Oxford University Press 1996).

[16] GREG FITZPATRICK, SWEDISH ICT COMMISSION, THE FAILURE OF EUROPEAN ICT STANDARDS POLICY AND A POSSIBLE FUTURE? 10 (2003) [hereinafter SWEDISH ICT COMMISSION ON EUROPEAN ICT STANDARDS], www.itkommissionen.se/doc/650.html.

factors, and to deflect consideration of social factors in defining the scope of their work. To the extent that ICT standards have the effect of regulating human behavior, and to the extent that their content is shaped by U.S. economic and legal institutions, the success of SDOs with ties to the U.S. in achieving global adoptions of the standards they produce may have the effect of exporting U.S. models of regulation through the emerging global ICT architecture. Under conditions of trade liberalization, individual end users of ICT products and services located outside the U.S. may now have more opportunities to defect from highly regulated local markets, and to opt into global markets defined by U.S. ICT standards and weaker U.S. regulatory standards. As trade liberalization advances, the process of opening up local markets to products that incorporate ICT standards has tended to fuel the adoption of standards developed by U.S. ICT consortia based on the U.S. market-oriented approach to regulation.[17] ICT standards developed by U.S.-based consortia may often be available sooner, and be less expensive to adopt if they permit the externalization of social costs, while ICT standards developed in more heavily regulated markets outside the U.S. may often take longer to finalize and be more expensive to adopt if they require that more social costs be internalized.[18]

Switching the framework for analyzing these developments from regulatory competition (which often produces zero-sum games) to Putnam's two-level game metaphor shifts the focus to a search for outcomes that would be equally acceptable in societies with either high or low levels of regulation. In applying the metaphor of a two-level game in international relations, the goal is outcomes that are recognized as legitimate within each national political system in addition to producing a stable outcome at the international level. In the ICT standards arena, the goal is both market adoption and political legitimacy within each national economy as well as in international trade. This article will consider under what circumstances regulatory competition to set global ICT standards might be redirected toward building an institutional framework

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[17] Andrew Updegrove, *Standards, Cycles and Evolution: Learning from the Past in a New Era of Change*, CONSORTIUMINFO.ORG (Consortium Standards Bulletin, Boston, Mass.), May 2005, *available at* http://www.consortiuminfo.org/bulletins/may05.php.

[18] For any given sector of the economy, there exists an empirical question as to whether the regulatory framework in the U.S. or EU requires greater internalization of social costs or risk minimization; in some economic sectors, the U.S. may be more proactive in regulating certain risks than EU countries. *See* Jonathan B. Wiener & Michael D. Rogers, *Comparing Precaution in the United States and Europe*, 5 J. OF RISK RES. 317, 319 (2002).

perceived as legitimate within different national political orders, supported by a multilateral consensus, and capable of producing widely implemented standards. Of course, such a goal is a very tall order, but it may not be as impractical as it may seem at first glance: the basic outlines of such a framework may already exist in the Code of Good Practice for the Preparation, Adoption and Application of Standards contained in Annex 3 to the WTO Agreement on Technical Barriers to Trade.[19]

II. POLITICAL ECONOMY OF MODERN STANDARDS INSTITUTIONS

Standards play a pivotal role in both domestic and international economic activity, yet are rarely studied from a social science perspective.[20] With regard to the role of standards in the U.S. economy, where most standards are set by private-sector organizations, the author of one of the few books on the political economy of American standards setting noted "[t]he universe of private standards is massive and mysterious."[21] The relevant data are difficult if not impossible to collect, notwithstanding the formal commitment of many public standard-developing organizations to maintaining transparent processes. A recent EU study by industry experts on standards developments related to radio frequency identifiers found that:

> access to information is variable . . . even within different ISO committees. The quality of information can certainly improve with insider knowledge that is not generally available to the public. As the authors have insider knowledge for some areas, and are

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[19] Agreement on Technical Barriers to Trade, Apr. 15, 1994, 1868 U.N.T.S. 120, 138.

[20] Tim Büthe, *Current and Recent Research Projects and Papers on the Politics of Standards, Regulations, and Non-Tariff Barriers to Trade*, DUKE UNIVERSITY, http://www.duke.edu/~buthe/research/standards_regulation.html (last visited May 23, 2009). Some notable exceptions exist. *See* ROSS E. CHEIT, SETTING SAFETY STANDARDS: REGULATION IN THE PUBLIC AND PRIVATE SECTORS (University of California Press 1990); MICHELLE P. EGAN, CONSTRUCTING A EUROPEAN MARKET: STANDARDS, REGULATION, AND GOVERNANCE (Oxford University Press 2001); HARM SCHEPEL, THE CONSTITUTION OF PRIVATE GOVERNANCE: PRODUCT STANDARDS IN THE REGULATION OF INTEGRATING MARKETS (Hart Publishing 2005).

[21] CHEIT, *supra* note 20, at 21.

> members of the public for others, this is reflected in the quality of the analysis.[22]

In non-U.S. developed countries with a tradition of developing their own national standards, a single dominant national standards body ("NSB") normally handles the work of standards developing.[23] NSBs may be organized as private sector organizations or government agencies.[24] At the international level, the International Organization for Standardization ("ISO"),[25] the International Electrotechnical Commission ("IEC"), and the International Telecommunications Union ("ITU"), an agency of the United Nations, are recognized as *de jure* international standards organizations. Countries designate the standard developing body that will represent them in these international bodies. NSBs established as government agencies generally work closely with other government agencies in charge of developing and executing national economic development strategies.[26] In Europe, the work of NSBs is subject to EU law,[27] and is coordinated with the work of "European Standards Organizations" ("ESOs") including the European Committee for Standardization ("CEN"), the European Committee for Electrotechnical Standardization ("CENELEC"), and the European Telecommunications Standards Institute ("ETSI").[28] The ESOs have made a formal commitment to

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[22] GLOBAL RFID FORUM FOR STANDARDS (GRIFS), D1.3 RFID STANDARDISATION STATE OF THE ART REPORT– VERSION 1 110 (2008) [hereinafter GRIFS], http://www.grifs-project.eu/data/File/GRIFS%20D1_3%20State%20of%20the%20Art%20Report.pdf.

[23] Examples of such NSBs include the British Standards Institute ("BSI"), Association Française de Normalisation ("AFNOR"), Deutsches Institut für Normung e. V. ("DIN"), Japanese Industrial Standards Committee ("JISC"), and Standardization Administration of China ("SAC").

[24] ALAN SYKES, PRODUCT STANDARDS FOR INTERNATIONALLY INTEGRATED GOODS MARKETS, 58–59 (Brookings Institution 1995).

[25] N.B., the name ISO is a standard, not an acronym, so it is the same in all languages.

[26] GLOBAL STANDARDS: BUILDING BLOCKS FOR THE FUTURE, *supra* note 14, at 61; Cargill, *The Informal Versus the Formal Standards Development Process: Myth and Reality*, *supra* note 10, at 22.

[27] *See, e.g.*, Council Resolution 85/C 136/01, 1985 O.J. (C 136) 1, 2 (establishing the "New Approach" to European standardization).

[28] Council Directive 98/34/EC, 1998 O.J. (L 204) (EP) (laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society Services.).

cooperate with ISO and IEC; this commitment forms part of a framework of coordination of standard setting that integrates the work of European NSBs, ESOs and international SDOs.[29] Even in countries with a more public, centralized approach to standards developing, social scientists studying regulation and government economic policies may note the existence of NSBs; but they rarely focus their attention directly on the political economy of NSBs themselves.[30]

The decades following World War II have seen economic growth unparalleled in history, and at the same time, economic interdependence among nations has increased sharply.[31] With economic growth and increased trade, the role of technical standards in cross-border trade has increased. The General Agreement on Trade and Tariffs ("GATT"), established in 1947, and the World Trade Organization ("WTO"), established in 1995, have contributed to an enormous reduction to explicit barriers to international trade in the form of quotas and tariffs. As explicit barriers have dropped, however, the significance of implicit barriers in the form of incompatible national standards has grown enormously.[32] Under the

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[29] INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO) & EUROPEAN COMMITTEE FOR STANDARDIZATION (CEN), AGREEMENT ON TECHNICAL CO-OPERATION BETWEEN ISO AND CEN (VIENNA AGREEMENT), http://isotc.iso.org/livelink/livelink/fetch/2000/2122/3146825/4229629/4230450/4230458/01__Agreement_on_Technical_Cooperation_between_ISO_and_CEN__Vienna_Agreement_.pdf?nodeid=4230688&vernum=0 (last visited Feb. 25, 2009). *See also* Council Resolution 2000/C 141/01, 2000 O.J. (C 141) 1, 3–4 (Paragraph 10 notes the importance of emphasizing "the role of European standardisation as a means to meet specific needs of the European market, to serve the public interest, in particular in support of European policies, to provide standards in new domains, to implement international standards in a coherent way and, while respecting the independence of national standards bodies, to facilitate mutual understanding between Member States' standards bodies and the preparation of coherent positions in international standardisation.")

[30] Two notable exceptions are Egan and Schepel. EGAN, *supra* note 20; SCHEPEL, *supra* note 20.

[31] *See generally* Henry J. Aaron, et al., *Preface to* ALAN O. SYKES, PRODUCT STANDARDS FOR INTERNATIONALLY INTEGRATED GOODS MARKETS (The Brookings Institution 1995); INFLUENCING AND MEETING INTERNATIONAL STANDARDS: CHALLENGES FOR DEVELOPING COUNTRIES (International Trade Center 2003) [hereinafter INFLUENCING AND MEETING INTERNATIONAL STANDARDS].

[32] ALAN O. SYKES, PRODUCT STANDARDS FOR INTERNATIONALLY INTEGRATED GOODS MARKETS (The Brookings Institution 1995); INFLUENCING AND MEETING INTERNATIONAL STANDARDS: CHALLENGES FOR DEVELOPING COUNTRIES 1 (International Trade Center 2003).

General Agreement on Trade and Tariffs ("GATT"), issues related to standards and trade have been addressed by the voluntary GATT Standards Code.[33] Within the Uruguay Round of negotiations which produced the WTO, obligations governing technical standards changed from voluntary to mandatory under the Agreement on Technical Barriers to Trade ("TBT Agreement").[34] As a result of the growing impact of standards on trade in goods and under international law, the role of standards in international trade has attracted more academic attention.[35] Such attention is dwarfed, however, by the attention given to the WTO dispute settlement system.[36]

Although it is never easy to explain "why the dog didn't bark,"[37] it is possible to hazard some guesses as to why the political economy of modern standards institutions remains nearly invisible to legal academics and social scientists. Most participants in modern SDOs have scientific or engineering backgrounds, and many of the issues they resolve are highly technical in nature, making it difficult for social scientists lacking a technical background to separate the technical from political issues.[38] In situations such as those where there are no

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[33] Agreement on Technical Barriers to Trade (with Annexes), Apr. 12, 1979, 1186 U.N.T.S. 276.

[34] *See* ANSI ESSENTIAL REQUIREMENTS, *supra* note 12, at 120.

[35] *See, e.g.*, SYKES, *supra* note 32.

[36] For example, a 2002 bibliography of publications about the WTO dispute resolution publication in English contained over 200 hundred entries. *See* Barbara Monroe, *WTO Dispute Settlement Procedure Bibliography*, Dec. 2002, www.law.georgetown.edu/iiel/research/projects/dsureview/documents/dsubib.doc; However, in 2009, an online search for U.S. law review articles analyzing issues related to WTO TBT agreement in depth turned up only 24 entries. *Query– "WTO TBT,"* WESTLAW, www.westlaw.com (using the Journals & Law Reviews database, type in "WTO TBT"). A leading trade law textbook over 1500 pages long omits coverage of the TBT altogether. *See* Raj Bhala, INTERNATIONAL TRADE LAW: INTERDISCIPLINARY THEORY AND PRACTICE (3d ed., LexisNexis 2008).

[37] However, Sherlock Holmes did manage to discern why the dog did not bark in one murder case (the murderer was the dog's master). ARTHUR CONAN DOYLE, *Silver Blaze*, *in* SHERLOCK HOLMES: THE COMPLETE NOVELS AND STORIES VOLUME I 455, 475 (Bantam Books 1986).

[38] In 1972, Laura Nader famously commented on a similar situation in anthropology. Laura Nader, *Up the Anthropologist: Perspectives Gained from Studying Up*, *in* REINVENTING ANTHROPOLOGY 284 (Dell Hymes ed., Pantheon Books 1972). She demanded that more anthropologists should "study-up" (meaning study elite rather than oppressed groups in society), but also ventured a guess as to why so few do: "anthropologists value

incumbent technologies already on the market, it may be possible for competitors to base decisions largely on technical variables with minimal political conflict. In other situations, however, the participants in standard-setting processes understand very clearly the distributional effects of different outcomes, and fight hard to advance their private interests. While participants in standard-developing processes may have a very sophisticated understanding of the politics of standards setting, they have few incentives to write about their understanding of those processes in the form of academic commentary and to try to publish those commentaries in social science journals. Non-participants may simply be unaware of the magnitude of the political conflicts that technical personnel resolve within standard-setting processes, or may mistakenly believe that most issues can be resolved with reference to scientific rather than political criteria. In-depth analyses of the politics of standard-setting organizations by American legal academics have tended to focus on the impact of antitrust or intellectual property law on the standards they produce, rather than SDOs as institutions.[39]

The politics of ICT standards may be a slightly more glamorous and visible topic than the politics of traditional standards bodies, but there remain few in-depth studies of ICT standards as social institutions. While many commentators on the politics of "cyberspace" have noted that information technology may regulate human behavior in much the same way laws do,[40] and while the relationship between the work of SDOs and the enforcement of intellectual property rights has recently become a subject of intense

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studying what they like and liking what they study . . . ." *Id.* It is this author's opinion that, presumably, most social scientists do not much like engineers, given that social institutions dominated by engineers, such as SDOs, are so little studied by social scientists.

[39] *See, e.g.*, Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1891–92 (National Fire Protection Association 2002). Some exceptions exist, however. *See, e.g.*, ROBERT G. DIXON, JR., STANDARDS DEVELOPMENT IN THE PRIVATE SECTOR: THOUGHTS ON INTEREST REPRESENTATION AND PROCEDURAL FAIRNESS 5–8 (1978) (listing fear of underrepresentation of consumers and small business as well as anticompetitive effects as sources of concern about private standards making).

[40] *See, e.g.*, WILLIAM J. MITCHELL, CITY OF BITS: SPACE, PLACE AND THE INFOBAHN 111 (Massachusetts Institute of Technology 1995) ("Out there on the electronic frontier, code is the law."); Joel R. Reidenberg, *Lex Informatica: The Formulation of Information Policy Rules Through Technology*, 76 TEX. L. REV. 553, 553–55 (1998); LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE 6 (Basic Books 1999); Mitch Kapor's Blog, http://blog.kapor.com/?p=29 (April 23, 2006, 10:56 EST).

controversy,[41] there have been few in-depth studies of ICT SDOs as a source of regulatory norms.[42]

Although standards are as old as commerce itself,[43] demand for standardization increased sharply in the 19th century, resulting in the emergence of new institutions for developing responsive standards more quickly and effectively. Modern technical standards are thus one by-product of the Industrial Revolution, developed in response to the need to increase the coordination among large-scale producers of increasingly complex manufactured products operating in national and international markets.[44] By the mid-20th century, standards and SDOs had come to play an essential role in the process of regulating industrial economies.[45] In 1979, the importance of regulations concerning technical standards and conformity assessment procedures to international trade was given official, but limited, recognition when the GATT Standards Code was added to GATT because accession to the Standards Code was optional for GATT members, and few countries adopted it. When the WTO was established in 1995, accession to the TBT was made a mandatory part of WTO membership. The regulatory and economic significance of technical standards has increased steadily with the growth of international trade in recent decades.[46] As of 2005, some estimates put the volume of international trade in goods subject to standard-related measures at eighty percent.[47]

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[41] *See, e.g.*, Lemley, *supra* note 39; U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION (Apr. 2007), http://www.usdoj.gov/atr/public/hearings/ip/222655.pdf.

[42] *But see, e.g.*, Tineke M. Egyedi & Sebastiano Toffaletti, *Standardising Social Responsibility: Analysing ISO Representation Issues From an SME Perspective*, *in* PROCEEDINGS 13TH EURAS WORKSHOP ON STANDARDISATION 121–36 (Kai Jakobs & Eva Soederstroem eds., 2007).

[43] ESSENTIALS, *supra* note 10, at 7.

[44] SUZANNE BERGER, HOW WE COMPETE 9–16 (Currency Doubleday 2005); KRISLOV, *supra* note 5, at 21–22.

[45] KRISLOV, *supra* note 4, at 49.

[46] NATIONAL RESEARCH COUNCIL, STANDARDS, CONFORMITY ASSESSMENT AND TRADE: INTO THE 21ST CENTURY 107–08 (National Academy Press 1995).

[47] U.S. Dep't of State, *United States Combating Use of Standards as Trade Barriers*, May 13, 2005, http://www.america.gov/st/washfile-english/2005/May/20050513162339ajesroM0.5901605.html; ORG. FOR ECON. CO-OPERATION & DEV. (OECD), STANDARDS AND CONFORMITY ASSESSMENT IN TRADE:

The onset of the Information Revolution toward the end of the 20th century fueled growth in ICT standards and standard-setting processes in much the same way that the Industrial Revolution fueled the growth of product standards in the 19th century. However, the first global ICT standards organizations had been established much earlier to facilitate interoperability among local, national, and international telegraph and telephone networks. In 1865, representatives of 20 countries signed the first International Telegraph Convention; and the International Telegraph Union was established to facilitate subsequent amendments to the treaty.[48] In 1934, it merged with the International Radiotelegraph Union to form the ITU; and in 1947, it became a specialized agency of the United Nations. In furtherance of its mission to maintain interconnections among domestic telephone systems, the ITU continues to support the development of ICT standards and is a leading example of a "*de jure*" international ICT standards body. Although ICT standards have played a foundational role in global integration of markets for more than a century, until recent decades, they were overshadowed in economic and political significance by product standards for goods.

In recent decades, a particularly aggressive new form of SDO emerged from the U.S. standard-developing system which has given the U.S. system a decisive edge in global regulatory competition to set ICT standards in global markets. In order to promote private-sector involvement in standards developing and reduce overlapping research efforts, the U.S. enacted legislation which removed regulatory obstacles to the growth of consortia in 1984 with the National Cooperative Research Act,[49] and in 1993 with the National Cooperative Research and Production Act ("NCRPA").[50] The NCRPA was originally drafted to encourage research and development by making it clear that the impact of a joint research and development or production venture should be assessed under the more liberal "rule of reason" standard, and provides limited protection from antitrust

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MINIMISING BARRIERS AND MAXIMISING BENEFITS 194 (Nov. 2005), http://www.oecd.org/dataoecd/19/27/36223999.pdf.

[48] Int'l Telecomm. Union ("ITU"), ITU's History, http://www.itu.int/aboutitu/overview/history.html (last visited Apr. 14, 2009).

[49] National Cooperative Research Act of 1984, Pub. L. No. 98-462, 98 Stat. 1815.

[50] National Cooperative Research and Production Act of 1993, Pub. L. No. 103-42, 107 Stat. 117. *See also*, The Standards Development Organization Advancement Act of 2004, Pub. L. No. 108-237, 118 Stat. 661 (further extending the provisions of the NCRPA to standards development organizations).

liability to standard-developing consortia that follow NCRPA notification procedures.[51]

These legislative reforms only exacerbated a fundamental difference between the basic U.S. approach to standards development and the approach taken by all other leading developed economies. The U.S. system of developing standards is decentralized and largely in the hands of private enterprises. The American National Standards Institute ("ANSI") helps to oversee and coordinate the U.S. system of standards development and represents U.S. SDOs at ISO, the multilateral international standards organization. Unlike NSBs in other countries, however, it does not itself develop standards.[52] Around 200 U.S. SDOs are "ANSI accredited" which means that they observe minimum due process standards known as "ANSI Essential Requirements."[53] One benefit to American SDOs of becoming ANSI accredited is that it is easier for them to have their standards submitted to ISO for recognition as international standards. One drawback is that greater openness and transparency in procedures may slow down the standard-setting process or make it easier for uncooperative parties to obstruct their work. While many traditional U.S. SDOs are ANSI-accredited, non-traditional U.S. SDOs such as consortia are not ANSI-accredited precisely because such a commitment to transparency might slow them down or distract their focus from the immediate goals of their members. Because the U.S. system relies even more heavily on private-sector initiative than do the standards systems of other developed economies, U.S. observers are fond of describing it as a "bottom up" system unlike the "top down" system favored by other countries. This characterization is generally rejected by non-U.S. observers, however, who point out that even outside the U.S., standards setting is normally undertaken in response to private-sector demand, and the role of NSBs is normally limited to helping coordinate work undertaken largely by private-sector entities. Whether or not the "top down/bottom up" distinction is accurate, it is clear that ANSI-accredited SDOs generally operate in a more decentralized, market-oriented environment than do NSBs in other developed market economies, and that U.S.-based consortia

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[51] U.S. DEPARTMENT OF JUSTICE ANTITRUST DIVISION MANUAL 11–29 (2008), http://www.usdoj.gov/atr/public/divisionmanual/atrdivman.pdf.

[52] Cargill, *supra* note 8, at 244.

[53] American National Standards Institute ("ANSI"), Introduction to ANSI, http://www.ansi.org/about_ansi/introduction/introduction.aspx (last visited Apr. 15, 2009).

operate in an even more decentralized, market-oriented manner than ANSI-accredited SDOs.

The difference between the U.S. approach to standards developing and the approach taken by other developed market economies is one manifestation of a larger difference in regulatory institutions. Political scientists distinguish between "coordinated market economies" ("CMEs") such as Germany or Japan, and "liberal market economies" ("LMEs") such as the United States. The distinction is based on the most common forms of business organizations and the preponderance of either market or relational institutions.[54] One way to characterize some of the institutional differences this distinction attempts to capture is that CMEs have favored a "producerist" approach to economic regulation (which focuses on labor-management relations, and relations among enterprises), while the U.S. has favored a "consumerist" approach (which focuses on competition in retail markets).[55] In recent years, some observers have argued that CMEs favor the precautionary principle more strongly than do LMEs, although this assertion has been the subject of considerable controversy.[56] Perhaps less controversial is the general observation that regulatory regimes for managing risk vary from country to country, and that some societies, which happen to include most LMEs, adopt a more "individualist" approach to the management of risk, while other societies, which happen to include many leading CMEs, take a more "hierarchical" approach to the management of risk.[57] With regard to generalizations about differences in LME and CME approaches to risk, it is clear that the U.S. system of standards developing, like many other American economic institutions, focuses on market incentives and tends to externalize many social costs, while standard-developing systems organized around an NSB place a greater emphasis on central coordination of economic activity and can internalize social costs more effectively. Under conditions of global regulatory competition to set ICT standards, it should hardly be surprising that ICT SDOs with roots in the U.S. standards system are

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[54] Hall & Soskice, *supra* note 13, at 8.

[55] James Q. Whitman, *Consumerism versus Producerism: A Study in Comparative Law*, 117 YALE L.J. 340, 340 (2007).

[56] David Vogel, *The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Regulation in Europe*, 33 BRIT. J. POL. SCI. 557, 557 (2003).

[57] CHRISTOPHER HOOD, HENRY ROTHSTEIN & ROBERT BALDWIN, THE GOVERNMENT OF RISK: UNDERSTANDING RISK REGULATION REGIMES 13 (Oxford University Press 2001).

able to compete more effectively in the struggle to define the emerging global information architecture than are SDOs with roots in CMEs.

Drafting economic regulations that refer to or incorporate technical standards can be very difficult. If not done correctly, references to technical standards can quickly become anachronistic, contribute to market failures in a myriad of different ways, or otherwise prove challenging to administer.[58] Stephen Breyer noted that efforts to craft regulations based on technical standards are plagued with endemic problems, including information asymmetries between regulators and participants in standard developing processes, coordination problems, enforcement problems, and anticompetitive effects.[59] While these remain chronic problems for U.S. regulators, European regulators have developed legislative strategies to reduce these problems that are well suited to regulation within CMEs.

During the process of building the internal market, the EU established a framework known as the "New Approach" to standardization to reduce technical barriers to trade among member states.[60] Before the New Approach, efforts to harmonize technical standards in the internal market were based on "approximation of laws," which required the development of broad, mandatory standards, and which resulted in political deadlock as member states fought to block the adoption of standards that might put their domestic producers at a strategic disadvantage.[61] This rigid, hierarchical approach also created a risk of technological obsolescence problems due to the delay in adopting harmonized standards and the difficulty of revising them. The New Approach solved political, legal and technological problems with the process: once legislation has been prepared that requires an associated technical standard in order to be implemented effectively, then an associated European

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[58] For example, the copyright status of privately developed standards referenced in state or local laws is ambiguous under U.S. law. *See Veeck v. S. Bldg. Code Cong. Int'l Inc.,* 293 F.3d 791, 800, 802, 807–08 (5th Cir. 2002).

[59] STEPHEN BREYER, REGULATION AND ITS REFORM 109–16 (Harvard University Press 1982).

[60] Council Directive 83/189/EEC, 1983 O.J. (L 109) 8 (laying down a procedure for the provision of information in the field of technical standards and regulations), *amended by* Council and European Parliament Directive 98/48/EC, 1998 O.J. (L 217) 18.

[61] EGAN, *supra* note 20, at 78–81.

standardization effort is initiated by one of the EU standards bodies.[62] The Commission sends an observer to the standard-developing process but otherwise the process of developing the technical standard remains unchanged.[63] The resulting standard establishes a "safe harbor" for regulated entities: compliance with the standard is strictly voluntary, but proof of conformity with that standard creates a presumption of compliance with the corresponding law.[64] If the standard becomes outdated, it can be replaced by withdrawing the first standard and publishing a new standard in the official journal; but no changes need be made in the text of the directive or by any member state implementing legislation.[65] Although political and technological challenges remain in the process of harmonizing product standards to remove barriers to trade in the internal market, the New Approach is generally regarded as a very successful CME regulatory strategy.[66]

The significance of technical barriers to trade and regulatory competition in the area of ICT standards was clear by the late 1980s, when the commitment to create what is now known as the GSM (originally Groupe Spécial Mobile, later Global System for Mobile communications) network was made by European regulators.[67]

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[62] This is the "general reference to standards" formula (*renvoi aux norms*) statute drafting technique that was first used in the Low Voltage Directive and is a hallmark of New Approach legislation. EGAN, *supra* note 20, at 118.

[63] The relationship between the Commission and ESOs regarding Commission mandates for the development of technical standards to support New Approach directives, including payments by the Commission to ESOs, is governed by a memorandum of understanding and guidelines for cooperation between the Commission and the ESOs. *Id.* at 124.

[64] Council Resolution (EC) No 85/C 136/01 of 7 May 1985, O.J. (C 136),3 ("[n]ational authorities are obliged to recognize that products manufactured in conformity with harmonized standards (or, provisionally, with national standards) are presumed to conform to the "essential requirements" established by the Directive. This signifies that the producer has the choice of not manufacturing in conformity with the standards but that in this event he has an obligation to prove that his products conform to the essential requirements of the Directive.").

[65] *Id.*

[66] Jacques Pelkmans, *The New Approach to Technical Harmonization and Standardization*, 25 J. COMMON MKT. STUDS. 249, 253, 267 (1987); *but see also* Andrew McGee & Stephen Weatherill, *The Evolution of the Single Market– Harmonisation or Liberalisation*, 53 MOD. L. REV. 578, 595 (1990) (concluding that the New Approach provides more access to commercial interests than to consumer interests).

[67] Jacques Pelkmans, *The GSM Standard: Explaining a Success Story*, 8 J. EUR. PUB. POL. (SPECIAL ISSUE) 432, 433–35 (2001) [hereinafter *The GSM Standard*].

European countries had lagged behind the U.S. in adoption rates for analog mobile phone service, and there was widespread consensus that an integrated approach was essential to increase European adoption rates for digital mobile phone service.[68] As a result of many legal, political, economic, and technical compromises, when the GSM system was launched, it was an immediate success in Europe and was quickly adopted in many other countries around the world, becoming the most successful mobile phone standard in the world.[69] By contrast, U.S. regulators relinquished the role they had played in coordinating standards for analog mobile telephony and allowed competition among different standards to emerge with the switch to digital mobile telephony. The result was a decade of bad service and high prices for U.S. mobile phone customers as competing service providers built overlapping incompatible networks in certain areas, while leaving other areas of the country without coverage.[70]

At around the same time that the GSM model showed the benefits of the CME approach to ICT standardization, the emergence of the Internet showed its shortcomings. The explosive growth of the Internet that commenced in the late 1980s began around the same time that informal ICT SDOs emerged within the U.S. standards system. Internet Engineering Task Force ("IETF") is an informal private SDO that has sponsored the development of many essential Internet standards since its founding in 1986.[71] At that time, IETF took over management of the Internet Protocol Suite,[72] which had been developed in 1981 by the U.S. Department of Defense. It now coordinates the work of hundreds of working groups developing

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[68] Sandor Bakalis, Muriel Abeln & Enid Mante, *The Adoption and Use of Mobile Telephony in Europe, in* COMMUNICATIONS ON THE MOVE: THE EXPERIENCE OF MOBILE TELEPHONY IN THE 1990S (Leslie Haddon ed., 1997), *available at* http://www.cost269.org/Cost248/2_ADOPT.doc.

[69] *Global GSM Subscriber Growth Rate to Slow in 2008*, CELLULAR-NEWS, Apr. 7, 2008, http://www.cellular-news.com/story/30361.php?source=newsletter.

[70] Pelkmans, *The GSM Standard*, *supra* note 67, at 448.

[71] Kaushik Das, *Internet Engineering Task Force (IETF)*, IPV6.COM, http://www.ipv6.com/articles/organizations/IETF-History-IPv6.htm (last visited Apr. 15, 2009).

[72] The Internet Protocol Suite is based on the Transmission Control Protocol/Internet Protocol (TCP/IP) standard, defined in INFORMATION SCIENCES INSTITUTE, UNIVERSITY OF SOUTHERN CALIFORNIA, TRANSMISSION CONTROL PROTOCOL: DARPA INTERNET PROGRAM PROTOCOL SPECIFICATION (1981), http://www.ietf.org/rfc/rfc793.txt.

various standards in some way related to the Internet Protocol Suite. While the IETF is clearly an informal ICT SDO because it lacks the kind of *de jure* mandate that ISO or ITU have, it is more of a "forum" than a "consortium" because of the large scale of participation in its projects and the openness of its processes. Although processes at the highest levels of IETF management may be somewhat opaque, standard-developing processes carried out by working groups are generally very open and transparent, and represent the collaborative efforts of thousands of volunteers from around the world. In 1994, the World Wide Web Consortium ("W3C") was established at MIT under the leadership of Tim Berners-Lee and, like the IETF, is now a leading global ICT standards forum responsible for the development of many Internet standards. Like the IETF, activities of W3C working groups are open, transparent and involve thousands of individuals around the world.[73]

The Internet Protocol Suite and the work of the IETF completely eclipsed a much more formal effort established in 1981 by ISO and the ITU to create a global ICT networking standard known as "Open Systems Interconnection" ("OSI").[74] During the 1980s, the IETF was still a relatively small, collegial organization, while the OSI effort was carried out on a large scale with formal procedures. As a result, the Internet Protocol Suite was already in widespread use by the time the OSI standards were finished. The OSI effort was more politicized than the IETF because its work was carried out by dozens of NSBs competing for tactical advantages rather than a handful of engineers. As a result, many of the design decisions in the final OSI standard are problematic from a technological perspective, having been adopted to resolve political conflicts. While the OSI standards were more comprehensive than the IETF standards, addressing in depth issues such as security that were given short shrift when IETF standards were developed and achieved global adoption, they were also much more complex and difficult to implement.[75] The dominance of IETF and W3C in Internet standards arenas represents the triumph of informal ICT standards forums with roots in the U.S. standards system at the expense of formal *de jure* international ICT standards

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[73] Internet Engineering Task Force, Wikipedia entry, http://en.wikipedia.org/wiki/IETF; World Wide Web Consortium, Wikipedia entry, http://en.wikipedia.org/wiki/W3c.

[74] ANDREW S. TANENBAUM, COMPUTER NETWORKS 46 (4th ed. Prentice Hall PTR 2003).

[75] *Id.* at 46–48.

bodies like the ITU with stronger ties to European standards systems.[76]

In the decades following the global adoption of the GSM standard and the Internet Protocol Suite, the EU has not enjoyed any successes of the magnitude of the GSM in the global regulatory competition to establish ICT standards. For example, the EU chose to regulate online authentication systems with the 1999 Electronic Signature Directive, while the U.S. chose to let market forces determine the appropriate authentication technology and degree of standardization rather than regulate commercial practice in this area. [77] In the 2000s, these EU efforts have led regulators and EU businesses up a blind alley as they try to implement digital signature and public key infrastructure systems that failed to achieve market acceptance in the 1990s. Less regulated markets in the U.S. have developed a new approach known as "federated identity management" to deal with authentication problems. Informal ICT SDOs have produced new standards to promote the adoption of federated identity management systems, such as the Security Assertion Markup Language ("SAML")[78] and OpenID,[79] which are rapidly gaining acceptance in global markets.[80] While these new U.S. standards have yet to enjoy the same degree of success that the Internet did relative to the OSI framework, they are nevertheless enjoying more success in global markets than are EU efforts to mandate a particular approach to strong authentication technologies.[81]

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[76] FITZPATRICK, SWEDISH ICT COMMISSION ON EUROPEAN ICT STANDARDS, *supra* note 16.

[77] Jane K. Winn, *U.S. and EU Regulatory Competition and Authentication Standards in Electronic Commerce*, 5 INT'L J. IT STANDARDS & STANDARDIZATION RES. 84, 84 (2007).

[78] *Id.* (SAML is an XML standard for exchanging authentication and authorization data between security domains). *See generally* Security Assertion Markup Language, Cover Pages, http://xml.coverpages.org/saml.html (last visited May 23, 2009).

[79] OpenID is a decentralized, user-centric single-sign on authentication system for the Internet. *See generally* What is OpenID?, OpenID, http://openid.net/what/ (last visited May 23, 2009).

[80] Winn, *supra* note 77, at 93.

[81] In 2007, a study undertaken for Commission DG Information Society identified many problems related to the Electronic Signature Directive which were contributing to lack of adoption of the technology in Europe. *See* SEALED, DLA Paper, and Across Communications, STUDY ON THE STANDARDISATION ASPECTS OF ESIGNATURE, (2007), http://ec.europa.eu/information_society/eeurope/i2010/docs/esignatures/e_signatures_standardisation.pdf. In 2009, the Commission DG Taxation and Customs called for the elimination of electronic signature requirements from e-invoicing regulations, citing them

In 2008, the European Commission initiated a public debate on the disadvantages suffered by ICT SDOs rooted in CMEs in the competition to set global ICT standards, and to identify strategies for changing the terms of global regulatory competition to set ICT standards.[82] The simplest solution—to grant legal recognition as "European Standards" to any standards developed by *de facto* private consortia that appear to meet the needs of European consumers and producers—is not politically viable. The Commission has been working with ESOs for many years to try to develop new standards processes that are politically viable within Europe and that produce ICT standards that are economically viable outside Europe, but these efforts have yet to produce any successes of the magnitude of GSM. The Commission's new initiative was designed to identify a middle ground: increase the scope of the dialogue between EU regulators and informal ICT standards consortia while also working for modest reforms in European standards institutions to permit them to respond more effectively to global market demands. Deliberative processes within the Commission started in 2008,[83] but it may take years before reforms are made as a result of those deliberations.

III. CHANGING THE LOGIC OF TWO-LEVEL GAMES

The growth of informal *de jure* ICT SDOs at the expense of formal *de jure* ICT SDOs is yet another manifestation of the "real new world order" dominated by networks of informal institutions in lieu of hierarchical multilateral institutions.[84] The real challenge facing regulators outside the U.S. opposed to their growing influence is therefore not to stop the adoption of consortia standards, but to ensure that their adoption serves the same interests that were served by the work of traditional SDOs. In order to accomplish this, changes

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as a major barrier to the adoption of e-invoicing by European businesses. *See*, Press Release, Europa, VAT: Commission Proposes a Review of the VAT Rules on invoicing with a View to Reduce Burdens on Business and to Help Member States Tackle Fraud (Jan. 28, 2009), *available at* http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/132.

[82] DG ENTERPRISE, EUROPEAN ICT STANDARDISATION POLICY AT A CROSSROADS: A NEW DIRECTION FOR GLOBAL SUCCESS 2 (2008), http://ec.europa.eu/enterprise/ict/policy/standards/cf2008/080206-dispaper.pdf [hereinafter THE WAY FORWARD].

[83] *Id.*

[84] Anne-Marie Slaughter, *The Real New World Order*, 76 FOREIGN AFF. 183, 184 (1997).

will be required in the governance framework within which consortia operate. One of the lessons of the "new governance" is the importance of matching the right regulatory instrument with whatever challenge is under consideration. Furthermore, a dynamic strategy of changing regulatory instruments in light of circumstances may also be necessary to increase the effectiveness of regulation. For example, Ayres and Braithwaite have argued that in many regulatory environments, a "pyramid of regulatory strategies" is likely to be the most effective approach.[85] The base of the pyramid is informal enforcement strategies which can be replaced with increasingly punitive enforcement strategies in response to manifestations of disregard for less punitive efforts. While traditional product standards may be soft law if voluntary, or hard law if made mandatory by incorporation into or reference from legislation,[86] when the adoption of ICT standards is driven by strong network effects, the regulatory effect of those standards may exceed that of even "hard" law.[87] This technologically enhanced hard mandate is directly at odds with the idea of calibrating enforcement mechanisms based on risk and the potential for collaborative outcomes. While an ICT standards "mandate" enforced by strong network effects may be perceived as legitimate in some LME national political systems, it may be opposed as illegitimate in others, such as CME systems, especially if it impedes compliance with national social regulations such as privacy laws.

The most obvious way to minimize *ex post* political resistance to such ICT standards mandates would be to increase *ex ante* collaboration among countries in the development of standards before they are widely adopted. While this was successful in the case of GSM, it has proven difficult to reproduce that success. The challenge currently facing ICT SDOs based in Europe is that, under conditions of trade liberalization, products can be sold directly to European

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[85] IAN AYRES & JOHN BRAITHWAITE, RESPONSIVE REGULATION: TRANSCENDING THE DEREGULATION DEBATE 39 (Oxford University Press 1992).

[86] John J. Kirton & Michael J. Trebilcock, *Introduction: Hard Choices, and Soft Law in Sustainable Global Governance*, *in* HARD CHOICES, SOFT LAW: VOLUNTARY STANDARDS IN GLOBAL TRADE, ENVIRONMENT AND SOCIAL GOVERNANCE 8–10 (John J. Kirton & Michael J. Trebilcock eds., Ashgate 2004). Soft law consists of rules which are neither strictly binding nor completely void of any legal significance; with time these may "harden" into customary international law. *See generally*, MARK WESTON JANIS, INTERNATIONAL LAW 55 (5th ed. 2008).

[87] Jane K. Winn, *Standard Developing Organizations as a Form of Self-Regulation*, *in* THE STANDARDS EDGE: STANDARDIZATION: UNIFIER OR DIVIDER (Sherrie Bolin ed., The Bolin Group forthcoming 2009).

producers and consumers that incorporate consortia-based standards, resulting in *ad hoc* recognition of *de facto* standards before *de jure* standards can be completed. Under conditions of trade liberalization, it would be difficult as a practical matter and politically controversial for EU regulators to block access in local markets to products based on consortia standards.[88] Borrowing from Hirschman, the EU system of developing ICT standards relies on the milder discipline imposed by systems of "voice" accountability enforced by long-term political processes, while the U.S. system of developing ICT standards relies on the harsher discipline of "exit" accountability enforced by markets.[89]

Another option for EU regulators might be to shift from a "voice" system based on direct participation of interested parties in the process of standards developing to a system based on a modified form of "exit" (perhaps more properly called "entrance") after they have been developed. In this context, however, CME regulators might offer to consortia formal *ex post* ratification of their standards under certain conditions that have been clearly specified in advance. While the EU has well-developed mechanisms, such as the "New Approach" to harmonizing legislation with product standards developed by *de jure* EU SDOs, there are not yet well-developed mechanisms to permit formal legal recognition of ICT standards that have been developed by *de facto* ICT SDOs outside of the EU system of *de jure* ESOs.[90] In its 2008 consultation, the Commission suggested that a reform of EU law to permit such *ex post* recognition might be appropriate, or even

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[88] The WTO recognizes certain general exceptions to the duty to obligation permit trade with other members in WTO Agreement Article XX which *inter alia* provides: "Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures: . . . (b) necessary to protect human, animal or plant life or health; . . . (d) necessary to secure compliance with laws or regulations which are not inconsistent with the provisions of this Agreement . . . [and] (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption; . . ." Objections to free trade in "smart" goods that embody consortia standards rather than *de jure* standards would not be covered by any WTO exceptions. General Agreement on Tariffs and Trade, Art. XX, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194, *available at* http://www.wto.org/english/tratop_e/envir_e/issu4_e.htm#gatt20.

[89] *See* ALBERT O. HIRSCHMAN, EXIT, VOICE, AND LOYALTY: RESPONSES TO DECLINE IN FIRMS, ORGANIZATIONS AND STATES 3–5 (Harvard University Press 1970).

[90] THE WAY FORWARD, *supra* note 82.

necessary, to achieve EU policy objectives in ICT arenas.[91] Given the often intense competition among *de facto* SDOs to achieve a critical mass of adoptions for their standards, articulating the conditions for *ex post* ratification might create powerful incentives to some consortia to increase the transparency and accountability of their processes *ex ante*.

National and international processes for insuring the transparency and accountability of *de facto* ICT SDOs are generally much less developed than similar processes for conventional product standards.[92] Consortia have emerged as major players in standards arenas very recently, operating largely in economic arenas dominated by the U.S. at the same time that U.S. political institutions were generally enamored with deregulation and opposed to regulation. Liberalization of national telecommunications and product markets ushered in by the WTO has made it possible for a handful of ICT product developers to form consortia, develop and implement ICT product standards and market finished products to end users around the world without reference to the formal international standards bodies. As a result, consortia are often able to evade oversight within the conventional international standards framework developed since WWII and centered on ISO, ITU and IEC.

Within the system of *de jure* international standards, the possibility of recognition as a *de jure* international standard recognized by ISO and distributed throughout the world might once have provided strong incentives to stay within the *de jure* system. The success of IETF and W3C in setting global Internet standards without the imprimatur of ISO, ITU or IEC has undermined those incentives. In the *de jure* international standards systems, recognized NSBs may submit national standards to ISO for adoption as international standards.[93] For example, the ISO 9000 standard, first issued by ISO in 1987 and subsequently updated several times, began life in 1979 as BS 5750 issued by BSI, the British NSB formerly known as the British Institute. In the U.S., standards developed by ANSI Accredited SDOs may be designated as "American Standards" and sent on to ISO for consideration as international standards. The possibility of recognition by ISO at some point in the future is too weak an incentive

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[91] *Id.*

[92] Updegrove, *supra* note 17.

[93] ISO/IEC DIRECTIVES, PART 1: PROCEDURES FOR THE TECHNICAL WORK 62 (2008), http://www.iec.ch/tiss/iec/Directives-Part1-Ed6.pdf.

to bring any ICT standards consortia to see ANSI certification. Successful consortia target end users in global markets directly in order to achieve *de facto* market-based recognition, disregarding *de jure* politically based recognition procedures administered by ISO.

The recent controversy in the EU surrounding the widespread adoption of radio frequency identifier ("RFID") technology illustrates how market acceptance of *de facto* ICT standards can pose problems for regulators limited to working with formal ICT SDOs, as well as suggesting what a possible solution's features might include. RFID technology permits automatic identification and data capture by means of radio communications. RFID systems include a tag that can receive radio signals and that can store, and possibly even process, information; a reader that transmits and detects radio waves returned from tags; and a system for collecting data. World War II pilots used the earliest predecessor to modern RFID system to help their ground crews detect whether an incoming plane was a "friend or foe."[94] Work began on the first RFID standard relevant to current mass-market applications in the ISO/IEC Joint Technical Committee 1/SC 31 in 1997.[95] In 1999, the Uniform Code Council,[96] EAN International,[97] Proctor & Gamble, and Gillette provided funding to the Massachusetts Institute of Technology to establish the Auto-ID Center, which developed the network communications model currently in use in mass-market RFID applications.[98] Since then, many major multinational corporations have worked to develop a wide range of commercial applications for this technology. During the 2000s, RFID tags came into widespread use in certain sectors.[99] GS1, the successor

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[94] The History of RFID Technology, RFID Journal, http://www.rfidjournal.com/article/view/1338/1/129 (last visited Apr. 15, 2009).

[95] GRIFS, *supra* note 22, at 110.

[96] The Uniform Code Council was in charge of standards for "universal product code" bar codes in the U.S. *See* GS1 US, ANNUAL REPORT 10 (2005), http://www.gs1us.org/pdf/Annual_Report2005.pdf. In 2005, it changed its name to GS1 US. *Id.* at 7.

[97] European Article Numbering ("EAN") International was in charge of standards for "universal product code" bar codes in Europe. In 2005, it changed its name to GS1. EAN INTERNATIONAL, ANNUAL REPORT 2003/2004 8 (2003/2004), http://www.gs1.org/docs/publications/annual_report/annual_report_2003_2004.pdf.

[98] The History of RFID Technology, *supra* note 94.

to the Uniform Code Council and EAN International, emerged as the most important international RFID standard-developing organization.[100] GS1 is a standard-developing consortium, and its members include business enterprises from around the world.[101] In 2003, GS1 together with GS1 U.S. formed EPCglobal, a global membership organization that works to promote the adoption of "electronic product codes" and RFID technology.[102] EPCglobal develops standards, provides conformity certification for products, accredits other organizations to provide conformity testing, and provides training, marketing and political advocacy for RFID products and services.[103] Due in part to the promotional efforts of SDOs and trade associations such as EPCglobal, adoption rates for RFID technologies were increasing in the U.S. and in Europe.[104]

Although concern among privacy advocates about potentially invasive uses of RFID technology had been expressed since the early 2000s,[105] the controversy surrounding privacy and security issues created by unregulated commercial RFID applications escalated dramatically when Vivian Reding, Commissioner for Information

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[99] K.C. Jones, *Interest Increasing in RFID Applications, Survey Shows*, INFO. WK., Aug. 7, 2008, www.informationweek.com/news/mobility/RFID/showArticle.jhtml?articleID=209904397.

[100] Wikipedia, European Article Number-Uniform Code Council, http://en.wikipedia.org/wiki/European_Article_Numbering-Uniform_Code_Council (last visited Apr.15, 2009).

[101] Wikipedia, GS1, http://en.wikipedia.org/wiki/GS1 (last visited Apr. 15, 2009).

[102] GS1, Timeline, http://www.gs1.org/about/media_centre/timeline.html (last visited Apr. 15, 2009).

[103] GS1, Overview About EPC Global, http://www.gs1.org/productssolutions/epcglobal/overview.html (last visited Apr. 15, 2009).

[104] *See generally* EPCGLOBAL RESPONSE TO EU RFID ONLINE CONSULTATION (2006), http://www.rfidconsultation.eu/docs/ficheiros/EPCglobal_Response_to_EU_RFID_Online_Consultation.pdf

[105] *See generally* Electronic Privacy Information Center, *Radio Frequency Identification (RFID) System*, May 13, 2009, http://epic.org/privacy/rfid/ (listing privacy concerns such as invasive profiling of consumer preferences through undisclosed, nonconsensual monitoring of consumer behavior).

Society, launched a public consultation in 2006.[106] The public consultation was intended to establish global standards for RFID technology and insure their compliance with EU data protection laws. A Commission Communication followed this in 2007 articulating the twin EU goals of harnessing RFID as a tool to promote innovation and growth as well as insuring that its use complies with EU law.[107] In 2008, work began on several projects designed to help coordinate the EU response to RFID developments and contribute to the development of EU-compliant RFID technologies, including Coordination and Support Action for Global RFID-Related Activities and Standardisation ("CASAGRAS"), the Global RFID Interoperability Forum for Standards ("GRIFS"), and the Cluster for European RFID Projects ("CERP"), all of which received major funding through the Seventh Framework Programme, the EU's primary program for funding scientific research.[108]

Although the EU response to regulatory challenges created by rapid adoption of RFID technology has been multifaceted and broad, it has also tended to proceed on bureaucratic time rather than Internet time. As of the time of this essay's publication, it is too soon to know what impact EU efforts to change the institutional framework within which RFID products and standards are developed and used will have in global markets. In order to overcome the "privacy invasive" character of RFID standards developed in industry-dominated consortia over the last decade with little input from end users or regulators, significant changes in the design of commercial RFID systems will be needed. In response to the 2007 Commission Communication, Peter Hustinx, the European Data Protection Supervisor ("EDPS"), issued an opinion in 2008 arguing that not enough was being done to ensure that RFID applications were

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[106] *How the Debate Started*, Europe's Information Society, http://ec.europa.eu/information_society/policy/rfid/eu_approach/how_started/index_en.htm (last visited Apr.15, 2009) (explaining how the European Commissioner for Information Society and Media launched a public debate on RFID at a 2006 technology conference).

[107] *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Radio Frequency Identification (RFID) in Europe: Steps Toward a Policy Framework*, at 3 COM (2007) 96 final (Mar. 15, 2007), *available at* http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0096en01.pdf.

[108] Press Release, European Commission, A New Vision for the Internet, (Dec. 23, 2008), *available at* http://cordis.europa.eu/fetch?CALLER=FP7_NEWS&ACTION=D&RCN=30283.

deployed in a manner that respected the privacy rights of EU citizens.[109] In this opinion, Hustinx noted the need for clearer guidance on how to apply the current legal framework to the RFID environment and for new EU legislation to regulate RFID use.[110] In addition, Hustinx also argued that Article 3(3)(c) of the Radio and Telecommunications Terminal Equipment Directive (which requires certain equipment classes or apparatus of particular types shall be so constructed that they incorporate safeguards to ensure that the personal data and privacy of the user and of the subscriber are protected) had not yet been used to require RFID technologies to provide data protection protections, but might support such a requirement.[111] In addition, he argued for recognition of the "opt-in" principle for collection of personally identifiable information by means of RFID technology, and the identification of "Best Available Techniques" which would support the privacy-by-design principle.[112] However, a 2008 report issued by GRIFS on the "state of the art" of RFID standards noted, "There have been a number of proposals, particularly from an academic base, to introduce privacy enhancing technologies ("PETs") to RFID technologies. Few, almost none, of such PETs are so far present in the devices and air interface protocol standards."[113]

Although EU efforts to harness RFID technology to serve economic goals while also complying with EU regulation may ultimately fail (just as OSI failed after the simpler TCP/IP protocol was introduced)[114] such an outcome is far from certain. These efforts

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[109] *Opinion of the European Data Protection Supervisor on the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on 'Radio Frequency Identification (RFID) in Europe: Steps Towards a Policy Framework'*, 2008 O.J. (C 101) 1, 2 [hereinafter *RFID in Europe: Steps Towards a Policy Framework*], *available at* http://www.edps.europa.eu/EDPSWEB/webdav/site/mySite/shared/Documents/Consultation/Opinions/2007/07-12-20_RFID_EN.pdf.

[110] *Id.*

[111] *See RFID in Europe: Steps Towards a Policy Framework supra* note 109, at ¶59 (citing Directive 1999/5/EC of the European Parliament and of the Council of Mar. 9, 1999, on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, O.J. L 91/10 (Mar. 9, 1999)).

[112] *Id.*

[113] GRIFS, *supra* note 22, at 113.

[114] ANDREW S. TANENBAUM, COMPUTER NETWORKS 46 (4th ed. Prentice Hall PTR 2003).

may instead contribute to outcomes perceived as positive in both LMEs and CMEs, meeting Putnam's standard for winning both levels of two-level games. The GRIFS survey of the "state of the art" of RFID technology was undertaken jointly by GRIFS, a special purpose policy research vehicle funded by the Commission on a temporary basis, ETSI, the European telecommunications standards agency, and GS1, the private consortia responsible for leading the development of many commercial RFID standards currently in use.[115] Formal cooperation on global benchmarking efforts by ETSI, a *de jure* ESO, and GS1, a major global consortium that is not ANSI-accredited, and thus lacks *de jure* status under EU standards law and policy, is not unprecedented. The ICT Standards Board was established in 1995 by CEN, CENELEC and ETSI to expand the scope of dialogue among *de jure* ESOs and *de facto* ICT SDOs.[116]

The EU Commission has suggested that moving from informal coordination among politically based *de jure* and market-based *de facto* international ICT SDOs to formal legal recognition should be based on the criteria developed by the WTO with reference to the Code of Good Practice for the Preparation, Adoption and Application of Standards contained in Annex 3 to the WTO Agreement on Technical Barriers to Trade.[117] These principles have been restated in the following terms:

> A standard may be used in association with EU legislation and policies when the following attributes have been taken into account during the technical consensus-building phase as well as in the subsequent formal acceptance process:
>
> 1. Openness: Standards will be developed and maintained by a non-profit making organisation. Ongoing development will occur on the basis of an open decision making process accessible to all interested parties. An open standardisation process

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[115]GRIFS, *supra* note 22, at 113.

[116] ICT Standards Boards, About, http://www.ictsb.org/About/ToR.htm (last visited May 30, 2009).

[117] Patrick Van Eecke & Maarten Truyens, *Standardisation in the European ICT Sector: Official Procedures at the Verge of Being Overhauled*, SHIDLER J. L. COMM. & TECH. (forthcoming 2009).

will be driven by the relevant categories of stakeholders and reflect user requirements;

2. Consensus: The standard making process is a collaborative and consensus based activity. The process will not favour any particular category of stakeholder;

3. Balance: The standardisation process should be accessible, at any stage of the development and decision making process, on a non-discriminatory basis to relevant stakeholders and the participation of all interested categories of stakeholders will be sought with a view to achieving balance;

4. Transparency: The process is accessible to all interested parties and all information concerning technical discussions and the decision making process is archived and identified. Information on (new) standardisation activities is widely announced through suitable and accessible means. Consideration and response will be given to comments by interested parties;

5. Maintenance: Ongoing support and maintenance over a long period is guaranteed;

6. Availability: Standards are publicly available for implementation and use at reasonable terms (including for reasonable fee or free of charge);

7. Intellectual Property Rights: IPRs essential to the implementation of standards will be licensed to applicants on a (fair) reasonable and nondiscriminatory basis (F)RAND, which may permit, at the discretion of the IPR holder, licensing essential IPR without compensation. However, Royalty free ("RF") IPR cannot be imposed by the Commission or a public procurement authority;

8. Relevance: The standard shall be effective and relevant: standards need to respond to market needs

and regulatory requirements, especially when these requirements are expressed in mandates;

9. Neutrality and stability: Standards should whenever possible, be performance-oriented rather than based on design or descriptive characteristics. They should not distort the (global) market, and should maintain the capacity for implementers to develop competition and innovation based upon them. Additionally and in order to enhance their stability, standards should be based on advanced scientific and technological developments.

10. Quality: The quality and level of detail are sufficient to permit the development of a variety of competing implementations of interoperable products and services. Standardised interfaces are not hidden or controlled by anyone other than the standards setting organisation.[118]

The Commission has asked for feedback on the idea that reference might be made to *de facto* standards that comply with these principles in EU legislation.[119] The possibility of EU funding for collaborative activities involving *de facto* and *de jure* ICT SDOs and the high profile given to RFID-related privacy and data security issues may also provide strong incentives for private consortia such as GS1 to focus on transparency, accountability and regulatory compliance as well as the short-term commercial objectives of consortia members.

To the extent that EU regulatory policies are more representative of regulatory policies in most other developed and developing economies than the more market-oriented policies characteristic of LMEs such as the U.S., then the EU may be able to create strong economic incentives for informal global ICT SDOs to comply voluntarily with WTO standard developing principles. Because consortia lack *de jure* authority to engage in standard developing, they must continually struggle to justify their existence in terms of market

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[118] *Decisions and Recommendations Adopted by the Committee Since 1 January 1995*, G/TBT/1/Rev.8, 23 May 2002, Section IX (Decision of the Committee on Principles for the Development of International Standards, Guides and Recommendations with relation to Articles 2, 5 and Annex 3 of the Agreement), *available at* http://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm#annexIII.

[119] THE WAY FORWARD, *supra* note 82, at 2.

adoption of the standards they produce. The proliferation in recent years of ICT consortia, and the absence of any regulatory framework other than antitrust law governing their activities in the U.S., contributes to wasteful competition among ICT SDOs.[120] If EU regulators can articulate clear criteria for the recognition of standards developed by ICT consortia, then consortia may begin to compete for EU recognition as a way to distinguish themselves and their products in crowded global markets. To the extent that consortia are able to combine responsiveness to market conditions with increased compliance with WTO standard developing principles, then the likelihood of "winner takes all" victories in global markets for ICT standards incompatible with CME regulatory goals would be reduced.

IV. CONCLUSION

Under certain circumstances, ICT standards may regulate human behavior in a manner similar to that of more traditional legal institutions. With the emergence of global ICT networks, the ICT standards that define the architecture of those networks have the potential to regulate behavior in many different countries simultaneously. In recent decades, informal ICT SDOs with roots in the U.S. system of standards developing have dominated the process of developing and implementing ICT standards. In the U.S., the legitimacy of the activities of SDOs, formal or informal, is generally perceived to be a function of resulting standards' responsiveness to market conditions. Outside the U.S., the nature of the formal legal mandate to an SDO is generally perceived as pivotal in assessing the legitimacy of its work. In many areas, the work of informal ICT standards consortia and fora has eclipsed the work of more traditional international ICT standards organizations with clear formal *de jure* mandates from multilateral organizations or member countries. Technology companies with roots in the U.S. economy tend to dominate the work of ICT consortia, and often are rewarded well for their efforts in terms of market adoption of technologies they have developed or control. It is hardly surprising, therefore, that the dominance in global markets of ICT standards produced by informal consortia is perceived in a positive light by most U.S. observers while it is regarded as a threat to politically legitimate standard-developing processes by many observers outside the U.S.

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[120] Andrew Updegrove, *Standards Wars: Situations, Strategies and Outcomes*, CONSORTIUMINFO.ORG (Consortium Standards Bulletin, Boston, Mass.), Mar. 2006, at 1, *available at* http://consortiuminfo.org/bulletins/pdf/mar06/feature.pdf.

Applying Putnam's two-level game metaphor to the political economy of ICT standards development in national and international markets, ICT standards processes that are perceived as legitimate within CMEs and LMEs often differ significantly. Under conditions of global trade liberalization, when strong network effects influence end user product choices, aggregation in global markets of individual end user choices may lead to widespread adoption of ICT standards that are incompatible with law and social values in CMEs. In order for global ICT standards to be recognized as politically legitimate and to achieve widespread market adoptions in both LMEs and CMEs, some form of coordination between the two systems of standards developing is needed. Given the practical difficulties of mandating greater transparency and accountability *ex ante* by ICT standards consortia, it may be more practical for CMEs to offer *ex post* recognition on a selective basis to leverage the interest of consortia in achieving the widest possible adoption of the standards they produce. By integrating both the market accountability of consortia and the political legitimacy of *de jure* ICT SDOs, it would be possible to win on both levels of the two-level game.