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Jane Winn
University of Washington School of Law

Nicolas Jondet

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Jane Winn · Nicolas Jondet

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Abstract As consumer use of information and communication technology (ICT) products grows, the importance of ICT standards in consumer markets also grows. While standards for manufactured products were once developed at the national level in formal standards bodies, standards for ICT products today are more likely to be developed by informal standards bodies that target global markets, creating new challenges for national consumer protection laws. As part of the process of creating a single market, the EU developed an innovative and successful form of "coregulation" known as the "New Approach" that coordinated the work of legislators and standards developers to reduce technical barriers to trade in the internal market. In order to protect consumer interests in markets for ICT products effectively, another "New Approach" is needed to coordinate the work of global ICT standard-developing organizations with the goals of national and regional consumer protection laws, but the institutional challenges facing such a strategy are daunting. The French DADVSI legislation represents progress in this direction; further progress may be possible by adopting "better regulation" strategies.

Keywords Standardization · Consumer protection · Information and communication technologies · Digital rights management · DADVSI

Goods and services that are integrated into information and communication technology (ICT) networks are transforming the lives of consumers today. ICT networks require interoperability to function, and in turn, standards often play a critical role in assuring interoperability. As a practical matter, ICT standards have been regulating consumers' use of new technologies for some time, but national consumer protection laws have not yet

J. Winn (✉)
Shidler Center for Law, Commerce and Technology, School of Law, University of Washington,
William Gates Hall, P.O. Box 353020, Seattle, WA 98195-3020, USA
e-mail: jkwinn1@u.washington.edu

N. Jondet
School of Law, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 9YL, UK
e-mail: njondet@yahoo.com

been updated to take account of the growth of this form of "soft law" (Kirton and Trebilcock 2004, pp. 22–23). A generation ago, when technical standards for consumer products focused on conventional manufactured goods, it was common for product standards to be developed by national standards bodies working within the framework of national economic regulation, which made it feasible for national regulators to exercise some control over standards for consumer products. As the nature of the goods and services that consumers use has changed, the environment within which technical standards are developed has also changed. Just as ICT networks now have a global reach, ICT standard-developing processes have a global reach, making it difficult for national regulators to track their activities, much less to exercise any control over them.

Harnessing the power of technical standards to serve consumer protection legislation is never an easy task due to the risks of statutory obsolescence or inefficiencies caused by "technology-forcing legislation" (Miller 1995) or of getting bogged down in the complex politics of health and safety regulation (Breyer 1982, pp. 109–118; Cheit 1990, pp. 3–5). ICT standards play a critical role in achieving interoperability and thus the value consumers derive from ICT products, but exist in a bewildering array of forms. ICT standards range from de facto standards created by the popularity of a proprietary technology (such as Microsoft's Windows operating system or Apple's iTunes music service) to the products of informal private standard-developing "consortia" that generally operate beyond the control of national regulators (Cargill 2001) and to de jure standards produced by formally recognized international standards organizations such as the International Telecommunications Union. Furthermore, there is little consensus regarding what constitutes an ICT standards consortium: The term might describe the efforts of a handful of multinational corporations acting as a partnership or alliance to develop a specific product or it might describe sprawling, open, popular organizations such as the Internet Engineering Task Force (IETF) or the World Wide Web Consortium (W3C).[1]

Coordinating the development and implementation of various kinds of de facto standards with the goals of national consumer protection laws will be difficult. Recent legislation in France that prohibits "technical protection measures" used by IPR owners to prevent piracy from interfering with interoperability of consumer ICT products can be seen as a tentative, ad hoc attempt by national regulators to respond to this problem. However, a more coherent response from regulators may be required to arrest the incremental deregulation of consumers' use of ICT products that is occurring as a result of the increasing globalization of ICT markets. The notion of "better regulation" may provide a helpful framework within which attempts by national authorities to insure that global ICT standards serve the interests of consumers can be assessed, although this would require the political will to advance consumer interests in the face of intense lobbying for standards focused on advancing producer interests, which appeared to be absent in the Department for Business Enterprise and Regulatory Reform consultation on strategies to combat peer-to-peer file-sharing (BERR 2008).

Regulatory Challenges from Growth of Consumer ICT

In 1943, when Thomas Watson, then chairman of IBM, said, "I think there is a world market for maybe five computers," it was not yet clear how computers and other

[1] A list of thousands of standards consortia can be found at http://www.consortiuminfo.org, a Web site maintained by Andrew Updegrove.

information technologies would change the lives of ordinary consumers. By 2008, it has become clear that consumers' lives are being transformed by goods and services that incorporate ICTs. As new technologies have become pervasive in the lives of ordinary consumers, what were once minor or isolated challenges to the framework of consumer protection law have become major issues. The first consumer ICT products, such as personal computers or mobile phones, were clearly distinguishable from more traditional consumer goods and touched the lives of relatively few consumers. The first personal computers introduced in the 1970s may have been of interest to only a few hobbyists, but they have now become essential appliances for most households. According to the US Census Bureau, in 2003, 63% of American households had personal computers and had mobile phones (US Census Bureau 2007). In 2007, the Commission found that there were more mobile phones than people in the EU (CEC 2007).

The migration of ICT products into the mainstream of consumers' lives has put pressure on both consumers and merchants to adapt. Just as consumers have been challenged to understand new products, manufacturers and retailers have been challenged to find new ways of marketing them. Establishing the rights and obligations of consumers with regard to software on computers was a major challenge in the early years of personal computer use and remains a major challenge today. In the absence of a clear statutory framework, software developers, consumer advocates, courts, and legislatures have struggled with only limited success to clarify the rights and obligations of manufacturers, software publishers, retailers, and consumers in software. While US courts have generally deferred to merchant innovations such as "shrinkwrap" software licenses (Winn and Wright 2008, § 6.02), in other countries, they have met with greater resistance (Guibault 2002). In a similar fashion, Microsoft's power in the market for personal computer operating systems has been treated very differently by antitrust regulators in the US and competition regulators in the EU (Winn and Wright 2008, § 15.02).

Conflicts among consumers and producers of copyrighted materials ranging from books to music to film have been even more intense and likewise show few signs of abating any time soon. Although as early as 1978, the impact that widespread use of computers would have on the copyright industries was recognized by some (CONTU 1978), the full repercussions of switching from analog to digital technology have only become apparent to the average consumer much more recently. While publishers of digital content have worked to develop and deploy systems for "digital rights management" (DRM) to preserve threatened business models (CEC 2004), consumer advocates have argued that if such technologies are widely deployed, they may erode competition, consumer choice, and ultimately, the vitality of civil society (BEUC 2004).

The rise of social networking on the Internet has turned many consumers into producers, turning the traditional distinction between consumers and producers on its head and calling into question many fundamental assumptions behind consumer protection law as a whole. The term Web 2.0 was coined in 2003 to describe what is widely perceived to be a second generation of Web-based communities organized around applications to facilitate collaborative work process and social interactions. Distinctive features of Web 2.0 applications include end user control, rather than publisher control, over the process of aggregating content and collaborative organization of content or "folksonomies." Web 2.0 applications include blogs, podcasts, wikis, "really simple syndication" (RSS data feeds), mashups created "on the fly" from multiple sources, and social networking. Traditional media companies have responded to the growth of collaborative production systems in a variety of ways, including litigation to block unauthorized contributions of copyrighted materials.

National consumer protection laws, some of which date back to the nineteenth century and many of which date back to the 1960s and 1970s, often fail to address any of the new problems facing consumers as a result of rapid technological innovation and the rapid expansion of ICT product markets (Winn 2008b). In order to meet these challenges, new consumer protection laws that differ not merely in substance but in form may be required. One such new form might result from the formal, explicit harmonization of ICT standards developed by private parties responding to global market forces with national consumer protection laws. Such an innovation in formal regulation could build on the role ICT standards already play as de facto regulators of consumer behavior.

Role of Standards in Regulating ICT Markets

The benefits to consumers of standardization are well-recognized. The historical roots of the modern standards movement and the modern consumer movement were closely intertwined (Krislov 1997, pp. 43–45). Before the 1930s, the American National Standards Bureau (now known as the National Institute for Standards and Technology) played a major role in broader consumer movement strategies to improve the quality and safety of consumer products (Krislov 1997, p. 90). Consumer advisory committees to provide direct consumer input into standard-setting processes were an important feature of consumer protection policy in postwar Britain, although by the 1970s, the role of consumer groups had diminished, reflecting doubts about the effectiveness of direct consumer participation in technical standard-setting organizations (Hilton 2003, pp. 178–183).

For industrial economy products, standardization can reduce costs by simplifying complex processes, increasing economies of scale in production, increasing the amount and quality of information about products shared between vendors and their customers, and promoting competition among vendors. Use of standards may have costs, too: reduced product variety, increased risk of being locked-in to a particular solution to a problem, and a possible one-time increase in production costs if existing production systems must be reengineered to accommodate a later standard (Egan 2002).

When the relevant markets are defined by ICT networks, then standards may be even more pivotal than in markets for traditional industrial economy products (Varian et al. 2004). Many products that contribute to ICT networks have high initial development costs and low marginal production costs. For example, it may be very expensive to develop a software program, but the cost of distributing each copy of the program in digital form may approach zero. Markets for products with these characteristics were once called "natural monopolies" by economists, and they tend to be dominated by one or a small handful of producers with significant market power. Other features of markets based on ICT networks may also tend to suppress competition, such as high switching costs or lock-in. For example, if all of a consumer's downloaded music files have been stored using a proprietary file format that cannot be used on digital music players produced by other manufacturers, the cost to a consumer of switching to a new digital music player might be prohibitively high, resulting in that consumer being "locked-in" to the first manufacturer's technology.

Strong positive "network effects" associated with using technology within a particular network may also make consumers reluctant to change vendors or networks (Varian et al. 2004). "Direct" network effects are normally a function of how many people use a particular network. For example, if an Internet service provider offers a proprietary instant messaging service used by 100 million subscribers that is not interoperable with the instant messaging services of any of its competitors who have fewer subscribers, then subscribers

to the dominant ISP would have a strong incentive to stay with the dominant ISP in order to have access to the largest possible instant messaging service subscriber base. "Indirect" network effects are those created when end users are not sure whether a new ICT standard or product will gain enough adoptions to generate strong direct network effects. For example, competing groups of manufacturers may develop competing standards for high-definition digital video disks and retail merchants may offer DVD players from both groups to consumers. If consumers feel unsure which of the two technologies will ultimately prevail, they may refrain from buying any high-definition DVD player until the conflict is resolved, which in turn will make it harder for either of the competing technologies to prevail.

Use of "open" standards in ICT markets can offset some of the competition-stifling effects of ICT networks. While it is possible to say that a widely used proprietary technology, such as the Windows operating system, is a de facto standard, it is clearly not an open standard, and depending on how the proprietary technology is managed by its owner, may be used to suppress competition. By contrast, ICT standards developed by the IETF or the W3C are distributed without charge over the Internet and, where possible, made available on a royalty-free basis with regard to any intellectual property required to implement the standards (Weitzner 2002). Defining ICT networks with open standards can reduce barriers to entry and promote competition among vendors of different products and services.

Of course few consumers are interested in "open standards" per se. Most consumers are interested in ICT products that allow them to easily socialize with others, engage in recreational activities, and access cultural goods. ICT innovations can provide consumers with access to new products, as well as lower prices or easier access to existing products. ICT standards are an important and very visible strategy for the diffusion of innovation and the promotion of competition in ICT markets, although other strategies (including proprietary technologies such as Microsoft Windows or Apple iTunes) may also achieve similar ends (Gasser and Palfrey 2007).

The "New Approach" to Harmonizing Law and Standards

Although the task of harmonizing technical standards with regulatory requirements is never easy, the "New Approach" is a well-known example of success in this area. The New Approach played an important role in creating a single market by removing technical barriers to cross-border trade within the European Union (Schepel 2005, pp. 63–67). During the early decades of the Common Market before the New Approach was adopted in 1985, technical barriers to trade were recognized as a major obstacle to economic integration, but efforts to establish harmonized European standards were frequently deadlocked. Political conflicts could be intense when the goal was the development of broad, mandatory European standards as individual Member States fought hard to push European-level standards in a direction that favored their domestic industries and to block the adoption of any new standards that conflicted with their existing national standards (Pelkmans 1987). Before the system was overhauled, negligible progress had been made in removing technical barriers to the growth of the internal market (McGee and Weatherill 1990, p. 582).

In contrast to that earlier experience, the New Approach is generally recognized as a success story of European integration (Egan 2001, pp. 130–132). The New Approach clarified the division of responsibility between the Commission, which retained control over drafting the relevant directives, and European standards bodies, which retained control

over the development of technical standards.[2] It also shifted the focus of EU level standard-developing to minimal harmonization of only essential requirements with an emphasis on performance standards rather than design standards. Implementation of the resulting standard was optional, providing a "safe harbor" of presumed compliance with the requirements of the associated directive for manufacturers if their products were certified compliant with the EU standard. However, manufacturers retain the option of establishing their compliance with the law even if their product does not conform to the referenced technical standard, although proof of compliance might be more difficult. If a New Approach reference standard becomes out of date, it can be replaced by withdrawing the first standard and publishing a new standard in the Official Journal, without the need to make any changes to the text of the directive or to any Member State implementing legislation. In addition, the New Approach required Member States to provide notice of plans to develop standards that might affect the internal market, allowing other Member States to request that work on the standard be halted temporarily or that the work be transferred to the EU level to avoid creating new barriers to trade. This "coregulatory" system for coordinating the development of standards and legislation has been recognized as a successful example of better regulation in a recent EU white paper on European governance (CEC 2001).

Although the New Approach is lauded as a success by many, the legitimacy of such a coregulatory system is questioned by others on the grounds that industry representatives dominate the standard-developing process and may fail to consider broader public interests that will ultimately be affected when the standards are implemented (McGee and Weatherill 1990, pp. 595–596). The practical challenges facing any effort to legitimate the quasiregulatory work of standard-developing bodies by requiring participation of consumer or other public interest representatives in the standard-developing process itself are well-recognized (Dixon 1978; Mathis 2006). In 2003, the Commission launched a review of the New Approach with a view to preserving the effectiveness of EU efforts to harmonize technical standards and to remedy shortcomings which had become apparent in the 20 years since it was first established. ANEC, the European organization advocating consumer interests in standards, had generally been critical of the New Approach as being too narrowly focused on technical issues and for using processes that were not transparent to consumers or consumer advocates. In comments submitted in the context of the New Approach review, ANEC asked that consumer stakeholder participation in standard-developing processes be increased to the extent possible and that alternative forms of representing the public interest, such as the comitology process, be used when direct participation may not be feasible (ANEC 2006).

Whatever questions might be raised about the legitimacy of the New Approach, the same questions can generally be raised even more sharply regarding the work of de facto ICT standards consortia. Furthermore, finding ways to establish and maintain an "interface" between the work of national regulators and ICT standards consortia is certain to be difficult. In recent decades, the only clear global success story for European ICT standards has been the GSM mobile phone standard developed more than 20 years ago. Standards produced by informal standards organizations based outside Europe today dominate both global and European ICT markets, notwithstanding the efforts of EU regulators to insure that EU ICT standard-developing efforts are globally competitive as well as transparent and

[2] The European Union standards bodies are the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC), and the European Telecommunication Standards Institute (ETSI).

accountable. In 2008, DG Enterprise, the Commission's primary standards regulator, began looking for ways to overhaul its official policies to find ways to revitalize EU ICT standards efforts as well as to increase the transparency and accountability of those informal consortia whose standards are now used in Europe (Van Eecke and Truyens 2009). It will take some time to see whether these efforts by leading EU standards experts will bear fruit in terms of reducing the gap between EU regulatory objectives and global market norms. Consumer protection regulators normally have less experience working with standards organizations than regulators in charge of industrial policy, making the problem of harmonizing the content of a fragmented, volatile patchwork of standards developed by informal consortia with the content of consumer protection law even more challenging. Regulators may not have the luxury of disregarding the work of informal ICT standards processes, however, if the standards they produce are a new source of "soft" law that has already been added to the complex patchwork of existing consumer protection laws.

One role that an updated form of the New Approach might play in consumer ICT markets in the future could be reducing indirect network effects by facilitating the transition from an established but obsolete technology to a newer technology. The Commission experimented with a modified form of the New Approach with the intent of facilitating the transition to "electronic signatures" as a new, improved form of online authentication with the drafting of the Electronic Signature Directive. This attempt to develop a "New Approach-Lite" for ICT standards has not met with much success, however. The E-Signature Directive was structured in much the same way as New Approach directives for industrial products because it referred to technical standards that would later be developed and promoted interoperability among different e-signature systems around Europe. Unlike the standards developed by European standards bodies for New Approach directives, the sponsors of the E-Signature Directive hoped that the relevant standards would emerge from the private sector in response to market demand, so no mandate to develop a reference standard was given to one of the de jure European standards bodies. As a practical matter, market demand for e-signatures turned out to be considerably less than the drafters of the Directive anticipated, so a great deal of behind-the-scenes prodding from regulators was required before appropriate standards emerged. The European Electronic Signature Standardization Initiative (EESSI) developed standards that were later recognized as having formally met the technical and market requirements of the E-Signature Directive (Winn 2006). By 2008, the only significant adoptions of e-signature technologies in Europe were in response to public sector requirements to access e-government services. So the first, and so far only, attempt to update the New Approach to deal with the challenges of ICT markets has not been much of a success, but this may be due more to the shortcomings of e-signature technologies than to shortcomings in the regulatory process.

Harmonizing Consumer Protection Law and ICT Standards

The New Approach is a form of coregulation that brings together legislators and de jure standard-developing organizations that are both working within the same legal and political system. Coregulation based on cooperation between national authorities and international ICT standards consortia will no doubt be more difficult to establish in the absence of a common legal and political framework. The legal status of standard-developing organizations and the standards they produce is often complex and ambiguous; and this problem has only been exacerbated by the growth of informal standard-developing consortia. The fluidity and lack of transparency associated with the use of proprietary

technologies as de facto standards or the development of standards by private consortia stand in marked contrast to the more stable, open processes associated with the development of standards for industrial products by de jure standard-developing organizations (Cargill 2001, p. 257).

Given the difficulty of achieving direct consumer involvement in the slower, more transparent de jure standard-developing processes for industrial product standards, it seems certain that direct consumer involvement in the faster, less transparent de facto ICT standards processes will be even harder to achieve. While direct consumer ex ante involvement at the point standards are being developed would clearly legitimate the work of de facto ICT standard-setting organizations, it is unclear what authority national or regional regulators would have to try to impose such a requirement on ICT standards consortia operating outside their territories. National regulators may have few viable strategies for influencing consortia behavior while standards are under development other than the threat of ex post liability once new ICT products have been brought to market. A controversial recent French law can be seen as an attempt to do just that.

In 2006, France enacted the "Loi sur le Droit d'Auteur et les Droits Voisins dans la Société de l'Information" (DADVSI)[3] which includes, among other provisions, a requirement that technical protection measures (TPMs), which are used by content producers to control access to their works, must not prevent effective interoperability between digital file formats and the various software and devices on which they can be played (Jondet 2006). French lawmakers were worried that a successful proprietary TPM technology could become a de facto standard, thus locking in customers of cultural goods to the exclusive benefit of the technology provider.

French lawmakers were particularly concerned about what was already happening in the field of digital music distribution. Apple had been dominating the market both in sales of digital music files, through its iTunes music store, and in sales of portable media players, thanks to its iPod player. Part of this success stemmed from Apple's strategy to use its exclusive TPM technology, called FairPlay, to tie the music sold on iTunes with the iPod player. As a consequence, iPod owners who wished to buy digital music could only get compatible files from iTunes. Conversely, owners of digital players produced by another manufacturer could not play songs bought from Apple. Apple's proprietary technology was becoming the de facto standard for digital music distribution. French lawmakers felt that such a technology-based monopoly in the market for cultural goods would be detrimental to consumers and to the dissemination and equal access to culture.

To tackle this issue, the French Parliament had to be creative. International instruments mandating the legal recognition and protection of TPMs did not address the negative consequences TPMs might have on consumer choice in the market for cultural goods. The World Intellectual Property Organization (WIPO) Internet Treaties[4] adopted in 1996 and the 2001 European Copyright Directive (EUCD)[5] were drafted at a time when TPM technology was still in its infancy and had yet to be deployed on a large scale. Problems associated with TPMs first emerged only a few years after the adoption of the international instruments which legalized them. France had missed the December 2002 deadline for transposing the

[3] Loi no. 2006-961 du 1er août 2006 relative au Droit d'Auteur et aux Droits Voisins dans la Société de l'Information; parue au JO no. 178 du 3 août 2006, page 11529.

[4] The WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT) adopted in Geneva on December 20, 1996.

[5] Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society.

EUCD into national law, so by the time the French lawmakers finally took up the matter in earnest in 2006, the potential impact of TPMs on consumer choice had become fully visible. The French Parliament was in the awkward position of being under an international obligation to legalize TPMs, while nevertheless being fully aware of the problems with this approach, and so decided to try to ameliorate some of the shortcomings of TPMs. The French Senate Committee argued that, although the Copyright Directive did not itself contain provisions relating to consumer issues, the recitals of the directive provided some legal basis for an interoperability requirement (Sénat 2006, p. 145). The Senate Committee pointed to Recital 48 which states that the legal protection granted to TPMs should not be limitless and notably that it "should respect proportionality and should not prohibit those devices or activities which have a commercially significant purpose or use other than to circumvent the technical protection." The Senate Committee also pointed to Recital 54 which acknowledges that even though "important progress has been made in the international standardisation of [TPMs] …differences between [TPMs] could lead to an incompatibility of systems within the Community," then concluding that "compatibility and interoperability of the different systems should be encouraged" and that "the development of global systems" should also be encouraged. French lawmakers took the initiative to translate these mere aspirations into a legal requirement.

They decided that some form of "technology-forcing" legislation was needed to compel recalcitrant copyright owners using TPMs to support interoperability. The option of introducing compulsory licensing had been strongly opposed by the business community, so the less coercive requirement that TPMs should interoperate was adopted instead. The parliamentary debate then focused on determining which institution should be in charge of enforcing this requirement. Civil courts were deemed unsuitable because they would lack the expertise, speed, and secrecy required to deal with highly sensitive and fast-evolving technologies. The Council on Competition would have been the preferred choice of lawmakers as it did have the relevant competence. Unfortunately for French lawmakers, however, the Council had ruled in 2004 that Apple's refusal to make its TPM technology interoperate with that of its competitor was not an abuse of dominant position.[6] The French Parliament observed that the Council's decision was legally sound and that, since then, no new element had emerged that would make the Council reverse its decision (Sénat 2006, p. 152). As a result, it was clear that if the Council were given the mandate to enforce a new interoperability requirement, it would likely refuse once again to find a legal justification to intervene in the market, thus making the whole exercise pointless.

Ultimately, the DADVSI law created a dedicated independent administrative authority to enforce the interoperability requirement. The administrative body was given the power to force the owner of a TPM to disclose information essential to interoperability, notably by imposing huge fines. France is the first country to address the problem posed by TPMs by mandating interoperability. So far, the mechanism has not yet been tested. This is in part due to the fact that, as of 2008, the independent authority was not yet fully operational. In 2008, another bill had been introduced to completely overhaul the structure of the authority by changing its name, composition, and missions, notably by involving the authority in combating illegal file-sharing. Until the adoption of the second bill, which is expected to occur in early 2009, it seems unlikely that an interoperability case can be brought before the authority. Even after the authority is fully functional, the strict rules regarding the entities allowed to refer a case might ensure that no interoperability case would ever be brought forward. Indeed, under the current system, consumers and consumer groups are not allowed

[6] Conseil de la Concurrence, Décision 04-D-54 du 9 novembre 2004.

to bring an interoperability claim before the authority. This possibility is only open to some technology companies, namely, software publishers, manufacturers of technical systems, and services providers. The decision to exclude consumers from a process designed to protect them seems, at first, inconsistent. However, French lawmakers argued that allowing the general public to have access to highly confidential information about TPMs could compromise their integrity. Technology companies were deemed more able both to safeguard and make good use of the information essential to interoperability. However, excluding consumers from the process could render the whole mechanism pointless if technology companies enter a tacit pact of nonaggression. It will be interesting to see, once the authority is up and running, which technology company, if any, will bring the first interoperability case. But in spite of these shortcomings, the mere existence of the DADVSI law may have already had an impact with regard to TPMs in the field of digital music (Jondet 2007). It may have played an important part in Apple's decision, in early 2007, to push records labels to offer digital music without TPMs. Apple was already facing strong opposition from consumers and legal challenges in the US and Europe over its TPM technology, and the prospect of having to deal with French regulators could have been the deciding factor in the company's change of direction.

ICT Standards and Consumer Protection as "Better Regulation"

While this French attempt to promote interoperability is innovative and important, it also suffers from some obvious shortcomings, so other countries may be reluctant to use it as a model for regulating consumer ICT markets. National authorities seeking new strategies to protect consumers from the harmful effects of unregulated competition in global ICT markets will need to be at least as creative as the French authorities, however. The notion of "better regulation" might provide a general framework within which national initiatives to regulate consumer ICT markets, including DADVSI, can be both developed and evaluated. Better regulation generally refers to efforts to streamline government while increasing its effectiveness (Weatherill 2007). Even though the term was not in widespread use in 1985, the New Approach can be seen as an early example of better regulation because it combined industry self-regulation based on standard-developing with conventional regulation based on directives to successfully promote the growth of the internal market.

While neither the theory nor the practice of "better regulation" is without controversy, the notion may nevertheless help provide a modest normative framework for the analysis of the complex interface between pervasive ICT technologies and conventional legal institutions. Better regulation, like regulation itself, is a slippery concept to define with any rigor. Morgan and Yeung suggest that regulation can be thought of as a control system with at least the three following components: setting norms that permit distinctions between more or less preferred outcomes to be made; gathering information to monitor the current or changing states of the system; and some capacity for behavior modification (Morgan and Yeung 2007, p. 3). Systems for developing product and ICT standards both include these three elements, making them one more example of the kind of architecture-based regulation frequently encountered in the information economy (Lessig 1999). The problem of crafting legislation that harmonizes ICT standards with the public interest enshrined in more conventional forms of legislation is an example of the problem of "structural coupling" identified by Teubner in his analysis of the "regulatory trilemma" (Teubner 1987, p. 5). For the purposes of this discussion, therefore, "better regulation" will be defined as any resolution of the problem of structural coupling between the "code-based" regulation and

more conventional consumer protection laws that is both reasonably efficient and also recognized as legitimate.

While the UK has led "better regulation" movement within the EU (Hodges 2007), its own recent efforts to address consumer rights in ICT product markets do appear to qualify as "better regulation," at least if finding a balance of consumer and producer interests widely recognized as fair is required for legitimacy. In 2006, the Gowers Review noted that the procedure established to permit end users to complain that TPM prevented them from benefiting from certain copyright exceptions appeared to be a failure and recommended that it be reformed (Gowers 2006, p. 73). The procedure analyzed in the Gowers Review requires the end users to issue a "notice of complaint" to the Secretary of State who can then take steps to remedy the problem. Although the problem of TPMs preventing consumers from enjoying the benefits of copyright exceptions is widespread, the slow and cumbersome procedure for lodging complaints had never been used. In terms of Teubner's regulatory trilemma, the complaint procedure appears to be failing as a result of "mutual indifference" between the social and legal spheres (i.e., irrelevance). By contrast, the regulatory force of TPMs appears to be "juridifying" or disintegrating the social and cultural spheres that copyright exceptions were intended to protect. In July 2008, the consultation on legislative options to address illicit P2P file-sharing issued by BERR focused exclusively on finding regulatory solutions to the failure of TPM to achieve their primary objective (blocking illicit copying) and did not address consumers' need to limit the scope of TPM to insure that legal copying remains feasible (BERR 2008). UK regulators did not take the opportunity to promote any novel regulatory strategies, such as promoting the development of TPM standards to insure that consumers can actually enjoy the benefits of copyright exceptions, but instead focused on requiring ISPs to assume new IPR enforcement obligations within a new system of "self-regulation" designed to accommodate the demands of the copyright industries.

Consumer protection may target either consumer economic interests or consumer health and safety interests (Whitman 2007, p. 367). Consumer protection laws applied to ICT product markets may take the form of economic regulation to reduce abuses of monopoly power or social regulation to insure that consumers are treated fairly. The tendency for a monopoly provider to emerge in many ICT markets as a result of strong network effects may be deemed a market failure that justifies a regulatory intervention on behalf of consumers. From a better regulation perspective, the challenge would be to find the most cost-effective form of government intervention to correct such a failure, while insuring that the cure is not worse than the disease. Trying to apply traditional "command and control" regulation of the type once applied to "natural monopolies" such as telecommunications to consumer ICT markets would only produce a regulatory failure at least as severe as the market failure it was designed to correct, resulting in less innovation, higher prices, and fewer choices for consumers. A better regulation strategy would look for less formal, more flexible alternatives to traditional prescriptive regulation that would encourage voluntary private sector compliance with regulatory objectives. For example, instead of mandating the use of a standard, the public sector might provide incentives for private sector development of open ICT standards and promote market adoption of products based on those standards by targeting public procurement spending. Or a national regulator could agree to recognize compliance with a privately established standard as establishing presumptive compliance with a statutory requirement. If successful, a better regulation strategy would correct market failure with lower enforcement costs and better compliance that traditional regulation could achieve.

Under the New Approach, the Commission simply requested that a de jure European standards body develop standards in support of directives; and the standards were

developed. With global ICT product markets, regulators may not even be aware of the existence of different consortia working to develop ICT standards, and even if they were aware of them, would probably have a hard time predicting which among competing standards would ultimately prevail in global markets. Because explicit ex ante cooperation between national authorities and global consortia on the substance of ICT standards may not be feasible, national authorities may find it more effective to focus on clarifying ex post consequences for failure to meet minimum requirements. While the interoperability provisions of DADVSI are clearly a step in this direction, it might be a bit too generous to characterize DADVSI as "better regulation," given its weak enforcement provisions, the absence of industry support, and the lack of any mechanisms to promote responsible self-regulation within copyright industries.

The effectiveness of ex post strategies such as DADVSI might be increased if the regulatory objectives could be articulated more clearly. In the case of DADVSI, this would require clarification of the concept of interoperability, which in turn would make it easier for private actors to further those regulatory objectives while defining the content of ICT standards. The idea of "interoperability" is easy to invoke, but can be very difficult to nail down with any specificity, however, so this may be difficult to do (Gasser and Palfrey 2007). A more rigorous ex post liability strategy would be consistent with demands from consumer advocates that consumer interests in intellectual property (such as copyright limitations and exceptions) should be more fully and explicitly articulated, making them easier to embody in the operation of ICT products (BEUC 2004). It would also be consistent with the notion of "enforced self-regulation" which delegates to industry associations the development of standards that governments retain the power to enforce (Parker and Braithwaite 2005).

Skeptics of better regulation, like skeptics of the New Approach, question the degree to which self-regulation can be an effective substitute for conventional regulation. Self-regulatory systems may be plagued by the same sources of regulatory failure as formal government institutions, while providing even less transparency and accountability to the public (Ogus 1995). In the case of ICT product markets, however, much of the coercive quality of ICT standards as a form of regulation comes from market forces caused by strong network effects (Winn 2008a), not from the imprimatur of public sector approval. To the extent that markets for ICT products are increasingly globally integrated, while national regulation remains fragmented, national authorities may be unable to halt the growth of self-regulation in ICT markets. Collaboration among national authorities to create more powerful ex post incentives redirecting the work of ICT standards consortia toward the goals of national consumer protection laws might at least help channel the growth of self-regulation.

Conclusions

ICT products play an important role in the lives of consumers today, but many of the ICT standards essential to the operation those products are developed in global markets beyond the control of any national consumer protection authority. Although traditional national consumer protection laws may be unable to correct failures arising in global ICT standards markets, it may nevertheless be possible to preserve a role for national authorities in defining the content of those standards. Designing effective regulatory strategies to influence the content of ICT standards ex ante (while they are still being developed and before they are embedded in products being sold to consumers) will be difficult, however.

Recent French legislation requiring interoperability for copyright technical protection measures provides ex post review of the impact of ICT standards embodied in consumer electronics. This in turn may create indirect incentives for private standard-developing organizations to focus more on consumer rights ex ante as part of the standard-developing process. Viewing the problem as a "better regulation" challenge that can be addressed with decentralized, informal, flexible forms of government intervention may lead to even more effective regulatory strategies to protect consumer interests in ICT markets.

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