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Standard-setting practices at the crossroad: IPRs vs competition rules

A comparative perspective between the United States of
America and the European Union

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I. INTRODUCTION

Are standards important? Standards are essential in today's life: they are everywhere, but most of the time we don't even notice them. They govern the design, operation, manufacture and use of nearly everything that mankind produces. There are standards to protect the environment, the human health and safety, and to mediate commercial transaction¹. Standards are often critical to the effective functioning of markets and they play an important role in international trade. For consumers, standards provide information and serve a quality assurance function. Standards play also an important role for the competitiveness of industry, both in support of better regulation or as a tool to enter new markets: in a recent screening of the European manufacturing industry², standardization has been identified as a priority issue for the competitiveness of a number of industrial sectors.

Most of all, standards are fundamental in the Information and Communication Technologies (ICT) industry, because the existence of standards makes it possible to develop compatible and interoperable products by competing firms; they ensure the compatibility between complementary products and even between the various parts of a particular product. Telephones talk to each other, the Internet works, because private groups have set "interface" standards allowing products made by different manufacturers to be compatible. It

¹ U.S. Congress, Office of Technology Assessment, "Global Standards: Building Blocks for the Future", op. cit., available at www.wws.princeton.edu/ota/disk1/1992/9220_n.html (last visited 10 July 2006).

² See Commission Communication "Implementing the Community Lisbon Programme: A Policy Framework to Strengthen EU Manufacturing – towards a more integrated approach for Industrial Policy EU Industrial Policy" – COM(2005)474 final of 5.10.2005.

is important that different companies be able to make products that comply with the standard. For example, in the digital world, in the absence of standards for CDs, CD-ROMs, DVDs, JPEG and a number of other systems that enable different companies to make products that are compatible, there would be insurmountable problems for products of one company to interface with, connect to, or be used in, equipment made by other companies.³ According to the American National Standard Institute's (ANSI) 2003 data, the standardization in the ICT markets concerns 42% of the computer industry, 29% of the wireless telecommunication industry and 17% of the other telecommunication system industry.⁴

Over the last few years, the topic of standardization has increasingly drawn the attention of academics as well as policy makers and law and economics practitioners that have tried to analyse the numerous questions that arise in the standard-setting processes.

In particular, the heart of the question concerns the use of patented technologies in the development of technical standards, an issue at the interface between intellectual property and competition law.⁵

It concerns an aspect which, on close examination, is upheld by an evident contradiction between the owner conditions associated with the intellectual property rights and

³ Burrone, Esteban "Standard, Intellectual Property Rights and Standard-setting Process" available at http://www.wipo.int/sme/en/documents/pdf/ip_standards.pdf (last visited 20 July 2006).

⁴ Granieri, Massimiliano, "Profili comparativi. La situazione statunitense e gli sviluppi europei", in AA.VV., "Standard, proprietà intellettuale e logica antitrust nell'industria dell'informazione", Il Mulino, Bologna, 2005, p. 36.

⁵ Granieri, Massimiliano "La proprietà intellettuale nell'industria delle ICT" in AA. VV. "Standard, proprietà intellettuale e logica antitrust nell'industria dell'informazione", op. cit., p. 33.

the “open” nature of standards, whose use and adoption should be available to all at no, or at least low, costs as they represent a condition for market access.⁶

It is a matter of finding a compromise between the protection of intellectual property rights and the need for a widespread access to innovations through standards. This is particularly relevant in today’s Information and Communication Technologies industry, where firms invest significantly in the development of new technologies and products, often protected by intellectual property rights (IPRs), and it is common that the best technology for a technical standard is a proprietary technology, protected by one or more patents.

The development of standards more and more frequently leads to conflicts between standards, intellectual property rights and competition. But what is the relationship among industry standards, intellectual property rights and competition?

The standard-setting activities represent a fertile ground for undertakings to use their intellectual property rights strategically in the attempt to influence the standardization process through anticompetitive behaviours, such as refusing to license their intellectual property rights essential to implement the standard or voluntarily omitting to disclose, during the standard-setting activities, a patent essential for the standardized technology. So that intellectual property rights

⁶ Granieri, Massimiliano, “La proprietà intellettuale nell’industria delle ICT” in AA.VV., “Standard, proprietà intellettuale e logica antitrust nell’industria dell’informazione”, op. cit., p. 33.

become a means to hinder competition, more than a means to protect innovation.

In industries characterized by network effects, such as the ICT sector, a standard represents a relevant economic value for the industry as a whole and it increases the economic interests of firms that participate in formulating the standard. In fact, when a patented technology is adopted as an industry standard, the power potentially conveyed by the patent is greatly amplified, and the patent holder consequently may gain significant market power.

The treatment of intellectual property in the standard-setting processes depends in large part on the rules governing intellectual property rights that are adopted by Standard-setting Organizations (SSOs) and how those rules are enforced. Generally, these rules typically address to companies that own such protected technology, to individuals and companies involved in the standard-setting process as well as to all those enterprises which will then adopt the standard for their products or processes. In particular, these rules intend to address the several questions that may arise in the standard-setting activities, such as: should a technology protected by IPRs be incorporated in a technical standard? Do companies willing to adopt a standard need to obtain a license from the IPR/patent holder? If so, under what terms and conditions? Do companies involved in the standard-setting process have a duty to disclose information, to the other members of the standard-setting committee, about their patents or patent applications? What happens if the patent holder fail to comply with the

SSOs' rules or refuses to provide licenses for the use of patented technology?⁷

In addition, there is the risk that standard-setting activities may be a forum for anticompetitive agreements among participants. The scrutiny of antitrust authorities arise as Standard-setting Organizations are typically groups of undertakings that most of the time are horizontal competitors and therefore SSOs could play the role of a "platform" for commercial collusion among participants through the exchange of information.

The present thesis intends to analyze, in a comparative perspective between the United States (U.S.) and the European Union (E.U.), the relationship among technical standards, intellectual property rights and competition, with particular regard to the ICT industry, together with the role that Standard-setting Organizations play in such relationship.

The thesis will firstly highlight the impact that standards have in today's network economy and it will provide a historical overview on the evolution of standardization in the United States and the European Union.

An analysis of the central role that Standard-setting Organizations play in standardization processes will be undertaken, while the core part of the discussion will then focus on the topical issues that arise at the intersection between intellectual property and competition in the standard-setting context, with particular regard to the intellectual

⁷ Burrone, Esteban "Standard, Intellectual Property Rights and Standard-setting Process" available at http://www.wipo.int/sme/en/documents/pdf/ip_standards.pdf (last visited 20 July 2006).

property policies of Standard-setting Organizations and the legal remedies to SSO participants' misconduct.

The final point of discussion will be the analysis of the antitrust concerns in the standard-setting process, and the different legislative responses to such concerns that the U.S. and the E.U. have put in place.

What emerges is a fragile equilibrium between industrial policy issues and the risk that standard-setting bodies may put in practice anticompetitive behaviours. At stake, the future of the high-tech industry, as well as the welfare of consumers.

II. STANDARD-SETTING IN PRACTICE

A. The impact of standards in the new network economy: benefits and costs

An operative definition⁸ of standards is contained in § 159 European *Guidelines for the application of art. 81 to horizontal co-operation agreements*, where standards are referred to as “technical or quality requirements with which current or future products, production processes or methods may comply”.⁹

While structurally the standard is nothing more than a relevant fraction of information, its meaning can only be comprehended when understanding its functional character in the industry and the reason for which it is necessary to adhere to the standard.¹⁰ The standardization phenomenon is, in fact, directly connected to industrialization, as the need to make commodities, services and equipment compatible and interoperable is indeed an intrinsic feature of the market, which is rooted in the division of work and is becoming more and more relevant with the rapid technical and economic progress.¹¹

In particular, the role of standards is strengthened in the new network economy, where markets are making way for

⁸ Granieri, Massimiliano “La proprietà intellettuale nell’industria delle ICT” in AA.VV. “Standard, proprietà intellettuale e logica antitrust nell’industria dell’informazione”, op. cit., p. 44.

⁹ *Guidelines on the applicability of Article 81 of the EC Treaty to horizontal cooperation agreements*, OJ C 3 of 6.1.2001, p. 24, § 159. The definitions of standard abound. The International Organization for Standardization (ISO) defines a formal standard as “a document, established by consensus that provides rules, guidelines or characteristics for activities or their results”.

¹⁰ Granieri, Massimiliano “La proprietà intellettuale nell’industria delle ICT” in AA.VV. “Standard, proprietà intellettuale e logica antitrust nell’industria dell’informazione”, op. cit., p. 44.

¹¹ Granieri, M. “Profili comparativi. La situazione statunitense e gli sviluppi europei”, in AA. VV. “Standard, proprietà intellettuale e logica antitrust nell’industria dell’informazione”, op. cit., p. 61.

network systems, and ownership is steadily being replaced by access. In the new era of networks, the exchange of property between buyers and sellers - the most important feature of the modern market system - gives way to access between servers and clients operating in a network relationship.¹²

In such a context, the standards' importance to facilitate interoperability is evident, and this is particularly true in the sector of the economy that is growing most quickly and characterized by rapid innovation, such as the Information and Communication Technologies sector, due to the very complex nature of the commodities, in which physical components are integrated with non-physical (typically, hardware and software), the production and development of which involves several market players.¹³ Numerous are the examples of standards in the ICT sector: emblematic is the GSM (*Global System for Mobile Communications*) standard, that emerged in the digital mobile telephony system some years ago, as the first example of communication technology able to transmit voice and data simultaneously through the use of a single equipment.¹⁴ Today GSM is the most popular standard for mobile phones in the world. GSM service is used by over 2 billion people across more than 210 countries and territories.¹⁵ Then, it was developed a new international mobile system, commonly known as "third-generation mobile system" and that is soon going to succeed the second-generation mobile system: this is the UMTS (*Universal Mobile*

¹² Rifkin, Jeremy "L'era dell'accesso", Mondadori Editore, Milan, 2000, p. 6-7.

¹³ Shapiro, C. and Varian, H. "Information Rules. Le regole dell'economia dell'informazione" Etas, Milano, 1999, p. 12.

¹⁴ Ibid at p. 323.

¹⁵ http://en.wikipedia.org/wiki/Global_System_for_Mobile_Communications (last visited 20 August 2006).

Telecommunication System), a mobile telephony system able to provide broadband services, such as Internet access, video-conference and other multimedia functions. Among the standards of information, the TCP/IP protocols in Internet, the CD standard for music, the VHS standard for video cassette players, the standard for digital video disks (DVD), and the 31/2" floppy disk drive standard, that enable to exchange information without the need to convert the data's format.

Generally, standards perform a range of useful functions in a modern economy and provide a wide variety of substantial pro-competitive benefits.¹⁶ They may provide for compatibility between products or systems, they may serve to enhance quality, and, more generally, they promote understanding of technology by providing information. Literature¹⁷ tends to classify standards into four categories, according to their functions, i.e. compatibility/interoperability, quality, variety-reducing and standards of information.

The compatibility and interoperability functions of standards have been the most intensively studied by economists, as they provide numerous economic benefits, e.g. they increase consumer welfare by enhancing consumer choice, facilitating comparisons among products and reducing

¹⁶ Anton, James J. and Yao, Dennis A. "Standard-Setting Consortia, Antitrust, and High Technology Industries", in *Antitrust Law Journal*, no. 64, 1995, p. 248.

¹⁷ Standards can be classified in many ways. Some writers favour a categorization based on the process used to create a standard (i.e. formal or *de facto*), or a categorization based on whether the standard relates to products, services, or process, and so on. Paul David was the first to propose a categorization based on the economic effects of the standard in "Some New Standards for the Economics of Standardization in the Information Age", 1987. His classification was based on three kinds of standards (reference, minimum quality and compatibility). It has been widely used (e.g. Nicolas and Repussard, 1988; Gewiplan, 1988; Swann, 1990), though some later writers have extended the three categories to four.

the costs of goods. Standards specify properties that a product must have in order to work (physically or functionally) with complementary products within a product or service system. Compatibility or interoperability is typically manifested in the form of a standardized interface between components of a larger system. Interface standards provide “open” systems and thereby allow multiple proprietary component designs to coexist - that is, they enable innovation at the component level by being competitively neutral with respect to design. In effect, competitors can innovate on “either side” of the interface, while the consumer of the product system can select the particular components that optimize system design. Standards also allow substitution of more advanced components as they become available over time, thereby greatly reducing the risk of obsolescence of the entire system. Most importantly, compatibility or interface standards help to expand market opportunities because they help to increase network effects or externalities.¹⁸ These are benefits that follow from being part of a large network of users. The essence of the “network economy” is that consumers place greater value on large networks than small ones.¹⁹ When all users are on a single network, the size of the network is maximized and so is the realization of network benefits. Such “network effects” clearly apply to *real networks*, such as

¹⁸ Swann, Peter (2000) “The economics of standardization”, Final Report for standard and Technical Regulations Directorate, Department of Trade and Industry, p. 5, available at www.dti.gov.uk/files/file11312.pdf (last visited 20 July 2006).

¹⁹ Over the last few years the economics literature on the network economies has considerably increased. For a detailed study on this subject-matter see Katz M. and Shapiro C., “Network externalities, competition and compatibility”, in *American Economic review*, vol. 75, n. 3, June 1985, p.424 and also Shapiro C. and Varian H. “Information Rules. Le regole dell’economia dell’informazione”, Etas, Milan, 1999, p. 221.

networks of telephone users, compatible fax machines, or compatible modems. Perhaps less obviously, they also apply to *virtual networks*, such as the network of Apple Macintosh users, the network of users of Microsoft Excel, or the network of users of DVD machines. In industries ranging from computer software and hardware, to credit cards, ATM cards and smart cards, to telecommunications networks and the Internet itself, network effects are a critical part of the competitive landscape.²⁰

Also, standards may be used to certify the quality of a product or process. Costumers can sometimes face a bewildering variety of different products and find it hard to assess their quality before purchasing. Information asymmetries between buyers and sellers could lead to a severe market failure. Minimum quality or quality discrimination standards can help to overcome this risk. If buyers cannot distinguish high quality from low quality before purchase, then it is hard for the high quality seller to sustain a price premium and it is likely that they are driven out by low quality sellers who sustain lower costs. While, if quality standards exist and are well understood, then the buyer can confidently distinguish high quality from low quality before purchase and high quality sellers can sustain a price for their superior product. Moreover, minimum quality or quality discrimination standards can reduce transaction costs and search costs. If the standard defines the product in a way that reduces buyer uncertainty, then first the risk to the buyer is reduced, and second there is

²⁰ Shapiro, Carl "Exclusivity in Network Industries", 1999, available at <http://faculty.haas.berkeley.edu/shapiro/>

less need for the buyer to spend time and money evaluating the product before purchase.

The term “standardization” is often related to the idea of a reduction in variety, in both the products and manufacturing processes; standards often limit a product to a certain range or number of characteristics such as size or quality levels and this effect may be considered as a cost. Nevertheless, the variety reduction function may either enhance or inhibit innovation. In fact, on one hand, the need to adhere to a standard imposes limits on firms’ product design choices. These limits can lead to static losses from the reduction of variety and to dynamic losses as firms are foreclosed from certain path of R&D that could result in innovative new products that could not comply with the standards²¹. On the other hand, however, variety reduction typically enables economies of scale to be achieved by minimizing the wasteful proliferation of minimally differentiated models. Also, variety-reducing standards can help to develop new markets; in particular in the formative stages of a market for a new technology when there is often no focus or critical mass in developing a market for that technology, standards can play an important role in achieving that focus and hence help the market to take off.

Finally, standards help provide evaluated scientific and engineering information in the form of publications, electronic data bases, terminology, and test and measurement methods for describing, quantifying, and evaluating product attributes. In technologically advanced manufacturing industries, a range

²¹ Shapiro, Carl, (2000) “Setting Compatibility Standards: Cooperation or Collusion?”, p. 8, available at <http://haas.berkeley.edu/~shapiro/standards.pdf> (last visited 20 August 2006).