

AVOIDING THE TRAGEDY OF THE ANTICOMMONS: COLLECTIVE RIGHTS ORGANIZATIONS, PATENT POOLS AND THE ROLE OF ANTITRUST.

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ABSTRACT: The growing importance of intangible property and the development of new technologies come together with the current trend of covering by intellectual property rights (IPRs) an increasingly broader area of resources. Heller showed up that the transition from commons to privatization generates a situation in which too many property rights are owned by too many parties, a spiral of overlapping IPRs in the hands of different owners, with the consequence to obstacle future innovation. The need to coordinate various owners, overcoming transaction costs, strategic behaviours and cognitive biases, supports the rising diffusion of collective rights organizations, a myriad of formal and informal institutions designed to regularize technology transactions and break relational bottlenecks: they include the patent pooling, that is the arrangement among multiple patent holders to aggregate their patents making them available to each member. Antitrust authorities have come closer to a rule of reason analysis towards patent pools, namely a balanced approach able to weigh procompetitive benefits and anticompetitive effects: even if pooling may enhance static and dynamic efficiency by integrating complementary technologies, reducing transaction costs, clearing blocking positions and avoiding costly infringement litigation, at the same time it may be a way to conspire to suppress competition.

The first person who, having enclosed a plot of land, took it into his head to say this is mine and found people simple enough to believe him, was the true founder of civil society.

Rousseau, *Discours sur l'origine de l'inégalité*, 44 (1754)

1. Commons, anticommons and the tragedies of property governance.

A time-honored question is why there should be any property rights. The basis of property rights has always been the object of scholarly inquiry: “in the world of Robinson Crusoe property rights play no role”¹. The common understanding describes them as an instrument of society, the answer to the need to govern human relationships. It is often said, indeed, that, in the absence of protection of possessory rights, individuals would find it rational to devote time and resources taking things from others and protecting them from being taken²: in this sense, the reason for property rights is in the attitude to specify how persons may be benefited and harmed. The definition, allocation and protection of property rights remains one of the most complex sets of issues any society has to resolve.

Today, most literature is concerned not with their basic justification, but rather with their most desirable character³. More generally, asking in what

¹ H. DEMSETZ, *Toward a Theory of Property Rights*, 57 *Am. Econ. Rev.* 347 (1967).

² See T.W. MERRILL, *Property and the Right to Exclude*, 77 *Neb. L. Rev.* 730 (1998) stating that the right to exclude is fundamental to the concept of property: in demarcating the line between ‘property’ and ‘nonproperty’ (or ‘unowned things’) the right to exclude others is a necessary and sufficient condition.

³ As noted J.B. BARON, *The Expressive Transparency of Property*, 102 *Colum. L. Rev.* 208 (2002): “the prestigious law reviews have interrupted their regular programme of constitutional and corporate articles to bring us new inquiries into the structure, boundaries, and history of various property rights - their fragmentation into dysfunctional ‘anticommons’ and possible recombination into novel and more adaptive forms, such as ‘limited’ or ‘liberal’ commons”. See also T.W. MERRILL – H.E. SMITH, *What Happened to Property in Law and Economics?*, 111 *Yale L. J.* 357 (2001) criticizing the academic discourse which, due to the influence of Coase’s identification of transaction costs as the key determinant of the structure of legal entitlements, goes on focussing on the concept of property as a bundle of rights, without taking into account the *in rem* dimension; in the conclusion at 398: “these modern commentators, not surprisingly, were more interested in problems that had not been solved, such as managing long-term contractual relations, controlling the behavior of agents in complex organizations, and fine-tuning incentives for the efficient management of spillovers. In other words, modern legal economists were interested not in the problem of order but in the maximization of welfare. What this overlooks, of course, is that the refined problems of concern in advanced economies exist at the apex of a pyramid, the base of

respects the protection of possessory interests could foster social welfare, Steven Shavell has recently resumed a short list of factors usually suggested for the pro-welfare justification of property rights⁴: they are mainly associated with the incentives to work and improve things, the avoidance of dispute and efforts to protect or to take things, the protection against risk and, *dulcis in fundo*, the achievement of a desired distribution of wealth. By the way several idealized forms of ownership must be distinguished: there are communal, private or state properties⁵.

In a seminal paper Garrett Hardin highlighted how a resource would suffer the ‘tragedy of the commons’ where it is prone to overuse because too many owners have a right to use the resource and no one has the right to exclude the others⁶: canonical examples are given by depleted fisheries, overlogged forests, overgrazed fields and so on⁷. Where resources are freely available to everyone in common, because no one can bind anyone else's actions, individuals have an incentive to take as much of that resource as they can, even though the collective result may be the destruction of the resource itself. Moreover, to each his actions are insignificant, therefore it seems that “the inherent logic of the commons

which consists of the security of property rights. Without an accurate understanding of the base, our conceptions of what happens in the refined atmosphere of the apex will often be distorted, or at least incomplete”.

⁴ S. SHAVELL, *Economic Analysis of Property Law*, Harvard Law School, Discussion Paper n. 12 (2002), in <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=370029>.

⁵ M.A. HELLER, *The Three Faces of Private Property*, 79 *Or. L. Rev.* 417 (2000); but see S.L. HSU, *A Two-Dimensional Framework for Analyzing Property Rights Regimes*, George Washington University Law School, Working Paper n. 58 (2002), forthcoming in *UC Davis L. Rev.* and available at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=376300>, suggesting four fundamental regimes (common property, private property, administrative and third-party protection regimes).

⁶ G. HARDIN, *The Tragedy of the Commons*, 162 *Science* 1243 (1968). Frank Michelman [*Ethics, Economics and the Law of Property*, 24 *Nomos* 3, 9 (1982)] has defined commons property as "a scheme of universally distributed, all-encompassing privilege ... that is opposite to [private property]". See also H.S. GORDON, *The Economic Theory of a Common Property Resource*, 62 *J. Political Econ.* 124 (1954).

⁷ For a recent application to the parks, see A. BELL – G. PARCHOMOVSKY, *Of Property and Anti-Property: the Perverse Virtues of Transaction Costs and Anticommons*, University of Pennsylvania Law School, Research Paper n. 4 (2003), in <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=387520>; looking at the conservation of Central Park in Manhattan, the Authors introduce the concept of anti-property, a veto rights mechanism granted to a large number of private actors (for instance, the neighbours) that would likely produce a regime in which it is practically impossible for unwanted development to threaten conservation of the defended property.

remorselessly generates tragedy” and society would be better off restraining consumption and preserving resources⁸.

For this reason, the tragedy of the commons has been among the most compelling arguments given in favor of private ownership of resources and against forms of commons or state ownership. Demsetz was the first theorist to define a cost-benefit analysis suggesting the superiority of private property over common ones⁹: recalling the theorem used by Alchian to summarize the difference between public and private ownership –“under public ownership the costs of any decision or choice are less fully thrust upon the selector than under private property”¹⁰-, the need to impose extra constraints on public agents, due to the lack of responsibility for the costs of their actions, would make public property a higher cost, thus a less efficient, solution than private one. Because of the absence of effective management of the resource, the usage should be limited and the assignment of ownership rights, thus, seems the efficient way to change the incentive structure overcoming what has been drawn as a sort of prisoner’s dilemma: for this school of thought relied on utilitarian theories, the failure of the commons ownership, as typical collective action problem¹¹, is inevitable and privatization is the only approach¹². On the other side, recent academic literature has underlined that some commons do not lead to tragic outcomes: Elinor Ostrom,

⁸ In the words of Hardin, “as a rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, ‘What is the utility *to me* of adding one more animal to my herd?’ This utility has one negative and one positive component. 1) The positive component is a function of the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly +1. 2) The negative component is a function of the additional overgrazing created by one more animal. Since, however, the effects of overgrazing are shared by all the herdsman, the negative utility for any particular decision-making herdsman is only a fraction of -1. Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit - in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all”.

⁹ H. DEMSETZ, *supra* note 1.

¹⁰ A.A. ALCHIAN, *Some Economics of Property Rights*, 30 *Il Politico* 816 (1965).

¹¹ B.H. THOMPSON, *Tragically difficult: the obstacles to governing the commons*, Stanford Law School, Working Paper N. 187 (2000), in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=236031.

¹² See also T.L. ANDERSON - P.J. HILL, *The Evolution of Property Rights: A Study of the American West*, 18 *J. L. & Econ.* 163 (1975); R.C. ELLICKSON, *Property in Land*, 102 *Yale L. J.* 1315 (1993).

Carol Rose and others have shown empirically how people sometimes develop informal norms and institutions to manage commons property efficiently, noticing that local communities have been able to avoid the tragedy through the development of local management institutions¹³. These success stories, based on a communitarian approach, nevertheless seem to require strong limitations on alienability compromising individuals' right to exit.

Summing up, solutions offered for managing common resources call for a clear dichotomy between privatization and sacrifice of individual autonomy. To avoid this dilemma, it has been suggested a theory of 'liberal commons', focussing on the creation of well-tailored institutions for commons resource management that encourage people to come together to create limited-access and limited-purpose communities dedicated to shared management of a scarce resource¹⁴. It is an attempt to mediate liberty and cooperation, building a participatory commons regime that allows members the freedom to come and go, a type of ownership distinct from both private and commons property but drawing elements from each. Starting from the distinction between open access, in which anyone may use a resource and no one may be excluded, and commons ownership, in which a bounded group controls access to a valuable resource, this legal regime is supposed to enable a limited group of owners to capture the economic and social benefits from cooperative use of a scarce resource, while also ensuring autonomy to individual members who retain a secure right to exit.

The analysis of the institutions created for the management of resources will be the core of this paper, but we will focus on a different tragic outcome, instead of the commons. Indeed, while until a short time ago the tragedy of the commons was the only one in town, Michael Heller recently introduced the tragedy of the anticommons metaphor explaining how Hardin's paper overlooks

¹³ C. ROSE, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 *U. Chi. L. Rev.* 711 (1986); E. OSTROM, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, 1990; W.H. SIMON, *Social-Republican Property*, 38 *UCLA L. Rev.* 1335 (1991); M.A. MCKEAN, *Success on the Commons: A Comparative Examination of Institutions for Common Property Resource Management*, 4 *J. Theoretical Pol.* 247 (1992); D.R. LEAL, *Community-Run Fisheries: Avoiding the "Tragedy of the Commons"*, 19 *Population & Env't* 225 (1998).

¹⁴ H. DAGAN – M.A. HELLER, *The Liberal Commons*, 110 *Yale L. J.* 549 (2001).

the possibility of underuse when too many people have rights to exclude others¹⁵: that is, privatization can solve one tragedy but can cause another.

The term was coined by Frank Michelman, who, challenging the presumptive efficiency of private property, defined anticommons as “a type of property in which everyone always has rights respecting the objects in the regime, and no one, consequently, is ever privileged to use any of them except as particularly authorized by others”¹⁶. The commons and anticommons are the typical two sides of the same problem and result symmetrical because they come from a misalignment of the private and social incentives of multiple owners in the use of a common resource¹⁷: the misalignment is due to externalities not captured in the calculus of interests of the users (commons situations) and excluders (anticommons situations). The basic logic is equivalent in the two cases: the inefficiency arises because the separate decision makers, each of whom acts in exercise of assigned rights, impose external diseconomies on others who hold similar rights. The crucial difference is linked to the right to exclude: while in the commons situation no one has the right to exclude, thereby giving rise to overutilization and depletion, with the anticommons situation, too many parties possess the right to exclude, giving rise to under-utilization. The familiar tragedy of commons takes the form of overusage and emerges because separate persons are assigned rights of usage, the exercise of which creates interdependencies that remain outside the explicit calculus of the choice makers; by contrast, in a tragedy of the anticommons, a resource is prone to underuse because multiple owners each have a right to exclude others from a scarce resource and no one has an effective privilege of use. In both commons and anticommons cases, rights of use and rights of exclusion have nonconforming boundaries: in formers the right to use stretches beyond the effective right to exclude others, conversely, in latters,

¹⁵ M.A. HELLER, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 *Harv. L. Rev.* 621 (1998); M.A. HELLER – R.S. EISENBERG, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 *Science* 698 (1998).

¹⁶ F.I. MICHELMAN, *Property, Utility and Fairness: Comments on the Ethical Foundations of Just Compensation Law*, 80 *Harv. L. Rev.* 1165 (1982).

¹⁷ J.M. BUCHANAN – Y.J. YOON, *Symmetric Tragedies: Commons and Anticommons*, 43 *J. Law & Econ.* 1 (2000).

the co-owners' right of use is compressed by an overshadowing right of exclusion held by other co-owners¹⁸.

One of the examples used by Heller to demonstrate the tragedy of the underuse is the ill-conceived attempt to privatize property rights in post-1989 Moscow store spaces: some storefronts remain empty while numerous kiosks occupy the streets because initial endowments are created as disaggregated rights rather than as coherent bundles of rights that represent full ownership, thus any potential user must secure the agreement or permission of several agents, each of whom may exercise a right of exclusion¹⁹. Like the transition regime failure to free markets in postsocialist economies, the privatization of biomedical research offers both promises and risks: Heller and Rebecca Eisenberg have suggested that, instead of spurring investments, the proliferation of fragmented and overlapping intellectual property rights (IPRs) in biomedical research is another stark example of anticommons property in which there is a situation of underutilization of scarce resources and lower innovation because too many owners can block each other²⁰. The privatization mechanism should be more carefully deployed to sustain both upstream research and downstream product development: indeed, current examples uphold how -either due to the creation of too many concurrent fragments of IPRs in potential future products or due to the permission granted to too many upstream patent owners to stack licenses on top of the future discoveries of downstream users- proliferation of patent rights in basic biomedical research may lead paradoxically to fewer useful pharmaceutical products.

¹⁸ F. PARISI – B. DEPOORTER – N. SCHULZ, *Duality in Property: Commons and Anticommons*, George Mason University School of Law, Law and Economics Research Paper n. 32 (2000), in <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=224844>.

¹⁹ M.A. HELLER, *supra* note 15: in a typical Moscow storefront, one owner may be endowed initially with the right to sell, another to receive sale revenue, and still others to lease, receive lease revenue, occupy, and determine use; each owner can block the others from using the space as a storefront, therefore no one can set up shop without collecting the consent of all of the other owners. Another example provided by Heller regards old regime 'komunalkas', communal apartments in which several families have some private space but share common areas such as kitchen and bathroom.

²⁰ M.A. HELLER – R.S. EISENBERG, *supra* note 15. See also A.K. RAI – R.S. EISENBERG, *The Public and the Private in Biopharmaceutical Research*, paper presented at the "Conference on the Public Domain", Duke Law School, Durham, North Carolina, November 9-11, 2001, in <<http://www.law.duke.edu/pd/papers.html>>; M.A. LEMLEY – D.N. BURK, *Biotechnology's Uncertainty Principle*, UC Berkeley Public Law Research Paper n. 125 (2002), in <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=303619>.

The aim of this paper is to examine the economic theory of resource utilization and the antitrust concerns about the emergence of collective rights organizations. The article proceeds in other four parts. The next one discusses the implications of the different the economic justification between tangible and intellectual property, showing the effects of the misconception about their equivalence; the third section offers an analysis of the relationship between patent proliferation, bottlenecks and innovation, discussing the threat that, with cumulative innovation and multiple blocking patents, patent rights can have the perverse effect of stifling innovation; the fourth paragraph sets forth the special case of patent pools as the ‘purest method’ to solve the complements problem that arises when multiple patent holders can potentially block a given product; the last part gives a state of the art and future perspectives of patent pools’ antitrust evaluation through recent cases issued by US agencies.

2. Commodification and information technology: the way of collective organizations.

This is my land, this is your land. The metaphor of property as thing-ownership still exercises a grip on the popular imagination: few social understandings are more deeply intuited and less considered in developed market economies than core private property rights²¹. According to the view commonly attributed to William Blackstone, property involves the physical ownership of things and the right of property is “that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe”. The problem with this metaphor is that it does not help identify boundaries of complex governance arrangements and modern intangible property²².

²¹ M.A. HELLER, *supra* note 15, at 660.

²² As noted by W.J. GORDON, *Intellectual Property*, chapter 28 of *The Oxford Handbook of Legal Studies*, Oxford University Press, edited by Peter Cane and Mark Tushnet (2003) at 618-619: “the conventional label for the field has become ‘Intellectual Property’, but the label is not fully accurate. One difficulty is that the label presumes that a ‘thing’ exists that can be owned. However, the ‘thing’ around which rights are organized in IP—the intangible product—is simply a conceptual construct. ... The ‘property’ portion of the ‘intellectual property’ label has caused practical as well as conceptual difficulties. Too many courts have assumed that all things called ‘property’ should be treated similarly, ignoring the important physical, institutional, and statutory

Indeed, even if both tangible and intangible property grant to the owner the right to exclude others, their economic justification is substantially different: while the former has the characteristic of excludability –the possession of a physical thing is necessarily exclusive-, the latter must be analysed in terms of public goods, that is the benefits are nonexcludable (others cannot be excluded from consuming it), the consumption is nonrivalrous (consumption by one person does not leave any less of the good to be consumed by others). The production of public goods is subject to market failure: potential producers are uncertain whether they will benefit from the good enough to justify their labours and, at the same time, they would prefer to free ride off the labours of others. The outcome is that, due to a collective action problem, public goods are likely to be underproduced relative to social need. Information products and inventions exhibit these characteristics²³: they require huge investment of resources but are hard to control; for whether they consist of a molecule or a machine, others may become imitators and everyone can use the idea without diminishing its value. The patent system is an example of the government intervention trying to modify individual incentives and overcome these externalities able to discourage innovation and diminish progress²⁴: granting excludability for patented information products is a way to provide an incentive for productive investment, limiting free riding and spillover benefits. Based on the insights of the utilitarian philosophical theory, the economic rationale for IP protection –and the basic

differences that distinguish intellectual ‘property’ from the tangible kind”. See M. BODRIN – D. LEVINE, *The Case against Intellectual Property*, CEPR Discussion Paper n. 3273 (2002), in <<http://www.cepr.org>> arguing that, while economic efficiency and common sense argue that ideas should be protected and available for sale -just like any other commodity-, in the case of IPRs, this has led to misconceptions and abuses: current legislation confuses the protection of property rights on objects in which ideas are embodied with the attribution of monopoly power on the idea itself and with restrictions on the usage of such goods on the part of the buyers.

²³ Not surprisingly, it has been generally argued that economic efficiency requires government support for innovative and creative activity: K.J. ARROW, *Economic Welfare and the Allocation of Resources for Invention*, in NBER, *The Rate and Direction of Inventive Activity: Economic and Social Factors*, Princeton, 1962. For a dissenting opinion arguing that government action on any kind is unnecessary to stimulate such activity, see S. BREYER, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 *Harv. L. Rev.* 281 (1970), and J. HUGHES *The Philosophy of Intellectual Property*, 77 *Georgetown L. J.* 287 (1988).

²⁴ As the US Supreme Court explained in *Mazer v. Stein*, 347 US 201 (1954): “the economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that it is the best way to advance public welfare through the talents of authors and inventors in ‘Science and useful Arts’. Sacrificial days devoted to such creative activities deserve rewards commensurate with the services rendered”.

foundation for providing a statutory right to exclude others' access to the product- is that firms will engage in the optimal amount of innovative activity if they are able to capture the returns from their works²⁵.

To put it simply, the traditional economic justification for tangible property does not fit intellectual property: “intellectual property is fundamentally about incentives to invent and create”²⁶. Further, as we will see later on, for some commentators the misconception about the equivalence of intellectual and tangible property is the key problem in analyzing the tension between IPRs and antitrust²⁷. Such confusion is quite evident looking at the *Antitrust Guidelines for the Licensing of Intellectual Property* (hereinafter ‘IP Guidelines’) issued jointly by the U.S. Department of Justice (DoJ) and Federal Trade Commission (Ftc) in 1995, whereas we read that “for the purpose of antitrust analysis, the Agencies regard intellectual property as being essentially comparable to any other form of property. ... That is not to say that IP is in all respects the same as any other form of property. IP has important characteristics, such as ease of misappropriation, that distinguish it from many other forms of property” but “these characteristics can be taken into account by standard antitrust analysis, however, and do not require the application of fundamentally different principles”²⁸. The matter could

²⁵ S.M. BESEN – L.J. RASKID, *An Introduction to the Law and Economics of Intellectual Property*, 5 *J. Econ. Persp.* 3 (1991). But see C. LONG, *Patent Signals*, 69 *U. Chi. L. Rev.* 625, 627 (2002) challenging “the traditional assumption that exclusivity is the alpha and the omega of the private value of patent rights” and exploring the hypothesis that firms may obtain patents for reasons other than capturing rents in product markets. The Author builds on the finance and corporate law literature to provide a new general framework for analyzing the function and effect of IPRs, suggesting that patents may serve - rather than as a mechanism for privatizing information- as a means of publicizing information and reducing informational asymmetries between patentees and observers: the simple view, which relies on the assumption that disclosing information represents a loss to the patentee, would fail to contemplate that patentees might actually benefit from the information disclosure, even if they were to receive no protection in return.

²⁶ H. HOVENKAMP – M.D. JANIS – M.A. LEMLEY, *IP and Antitrust*, Aspen Law & Business, New York, 2001, at 1.2.

²⁷ J. LANGENFELD, *Intellectual Property and Antitrust: Steps Toward Striking a Balance*, 52 *Case W. Res. L. Rev.* 91 (2001). Matters that involve IP and antitrust can be exceedingly complex, both legally and factually, and how recognized by T.J. MURIS, *Competition and Intellectual Property Policy: The Way Ahead*, remarks before American Bar Association, Antitrust Section Fall Forum, Washington DC, November 15, 2001, in <<http://www.ftc.gov/speeches/muris/intellectual.htm>> : “in important respects, the issues involve concepts of property rights”.

²⁸ (§ 2.0 – 2.1). See also R.J. GILBERT – W.K. TOM, *Is Innovation King at the Antitrust Agencies? The intellectual Property Guidelines Five Years Later*, 69 *Antitrust L. J.* 43, 47 (2001), highlighting at least three aspects in which intellectual property differs from tangible property: i) a patent grants the owner a power of exclusion that, in some respects, exceeds the powers that attach to tangible property (for instance, the owner of a factory can prevent someone from trespassing on

not be more timely, since the DoJ Antitrust Division and Ftc recently concluded a months-long series of hearings on “Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy” in order to improve the understanding of the antitrust/IP interface and of how their policies may affect innovation and consumer welfare²⁹.

Heller and Eisenberg’s article is a good starting point to look at some questions about what things do we want to ‘propertize’ or ‘thingify’ and how many IPRs we want to confer: the increasing importance of intangible property and the development of new technologies, most notably digital technology and the decoding of genetic structure, urge an analysis of the complex relationship between intellectual property protection and innovation. If IPRs are said to solve the problem of ‘appropriability’, it remains to ask: how much is enough?³⁰ As illustrated before, there is a point where too many property rights owned by too many parties creates a legal ‘smog’, that is an anticommons: where Hardin’s tragedy of resource overuse is due by a lack of property rights, Heller’s tragedy of underuse is caused by too fine of their delineation. The tragedy is that the discrepancy between the rights of use and the rights of exclusion held by the various owners produces welfare losses: rational individuals, acting separately, may collectively waste the resource by underconsuming it compared with a social optimum. In response to these concerns, some commentators argue that patents should be protected by a liability rule instead of a property rule: while an entitlement enjoys the protection of a property rule if the law condones its surrender only through voluntary exchange, an entitlement has the lesser protection of a liability rule if it can be lost lawfully to anyone willing to pay

his ground, but cannot prevent someone from building another factory); ii) the boundaries of intellectual property defy accurate survey to a much greater extent than with tangible property; iii) the statutory language governing use of the property differs from one form of property to another, giving rise to a variety of interpretive questions.

²⁹ The Ftc and the DoJ held hearings from February through November 2002, which involved more than 300 panelists, including business representatives, organizations and leading scholars in antitrust and patent law: testimonies and comments are available at <<http://www.ftc.gov/opp/intellect/index.htm>>. See the report recently published by FEDERAL TRADE COMMISSION, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, October 2003, available at the website above cited.

³⁰ R.M. BRUNELL, *Appropriability in Antitrust: How Much is Enough?* 69 *Antitrust L. J.* 1 (2001).

some court-determined compensation³¹. The major beneficial effect of mechanism of the liability rules is the cut of transaction costs, since the holder of such an entitlement is only entitled to damages caused by infringement.

The trend of vesting individual property right protection in an increasingly broader scope of resources is particularly current in the intellectual property law: several areas of IP are gradually shifting away from a commons regime toward a private property regime³². Commentators have begun noting the increasing private control of what previously had been intellectual commons property: the information that used to be free is now being privatised and restricted³³. Not surprisingly, someone talks about ‘digital’ anticommons stating that thinking of cyberspace as a place -and its consequent legal propretization- is leading us to a tragedy³⁴: the goal should be to restore the commons in internet and go back in time, before the arrival of settlers erecting ‘no trespassing’ signs, when

³¹ See G. CALABRESI - A.D. MELAMED, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 *Harv. L. Rev.* 1089 (1972); J.L. COLEMAN – J. KRAUS, *Rethinking the Theory of Legal Rights*, 95 *Yale L. J.* 1335 (1986); I. AYRES – P. KLEMPERER, *Limiting Patentees’ Market Power Without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies*, 97 *Mich. L. Rev.* 985 (1999).

³² “I have the very strong impression that people who hold intellectual property rights have much the same attitude about the public domain that South Asian villagers once had about the jungle: like the jungle and its beasts, the public domain threatens to overrun them at every turn. Try as they might to cultivate their little ownings, their patents and copyrights expire, their secrets get found out, their trademarks come into general usage, and all these erstwhile possessions return the wild of the public domain, where the savage creatures indiscriminately gobble up everything”: C. ROSE, *Romans, Roads, And Romantic Creators: Traditions of Public Property in The Information Age*, paper presented at the “Conference on the Public Domain”, Duke Law School, Durham, North Carolina, November 9-11, 2001, in <<http://www.law.duke.edu/pd/papers.html>>. For an ideological point of view, see K. AOKI, *Neocolonialism, Anticommons Property, and Biopiracy in the (Not-So-Brave) New World Order of International Intellectual Property Protection*, 6 *Ind. J. Global Leg. Stud.* 11 (1998), dealing with the emerging political economy of international intellectual property and the neoliberal vision.

³³ P.A. DAVID, *A Tragedy of the Public Knowledge Commons? Global Science, Intellectual Property and the Digital Technology Boomerang*, paper prepared for presentation to the World Bank’s Annual Bank Conference on Development Economics, held in Paris, June 26-28, 2000, in <http://www.worldbank.org/research/abcde/eu_2000/pdf/files/david.pdf>; J.H. REICHMAN - J.A. FRANKLIN, *Privately Legislated Intellectual Property Rights: Reconciling Freedom of Contract with Public Good Uses of Information*, 147 *U. Pa. L. Rev.* 875 (1999).

³⁴ D. HUNTER, *Cyberspace as Place, and the Tragedy of the Digital Anticommons*, 91 *Calif. L. Rev.* 439 (2003): “we stand at the fork between two possible futures of intellectual endeavor. Down one road lies a future of completely propretized and privatized ownership of intellectual activity. Down the other road is a future where the interests of society at large is fostered, which at times leads to private ownership of intellectual activity, and other times demands that some public intellectual space be kept in commons for all”. See also M.A. LEMLEY, *Place and Cyberspace*, *ibid.* 521.

cyberspace was thought to be the modern equivalent of the western frontier, an endless expanse of space, open and free³⁵.

The transition from commons to privatization, while greatly beneficial for the creation of private incentives for research, generates a spiral of overlapping IPRs in the hands of different owners, with the unintended consequence to obstacle future research: the tragedy of the anticommons refers, indeed, to the obstacles arisen from the proliferation of exclusion rights and to their effects when a user needs access to multiple patented inputs to create a single product. The tragedy of the anticommons is a result of property fragmentation³⁶. Richard Posner first recognized the costs of excessive fragmentation, providing an application in the property law of servitudes: “one reason is that having too many sticks in the bundle of rights that is property increases the costs of transferring property”³⁷. By itself, private ownership of resources as well as the appearance of anticommons property is not necessarily problematic for the efficient use of resources. In theory, in a world of costless transactions, people could always avoid commons or anticommons tragedies by trading their rights: according to the Coase theorem, if the rights are freely transferable and transaction costs are zero, an inefficient initial partitioning of property rights will not prevent an efficient final use of the resources. Economic analysis, however, has highlighted the

³⁵ See Berkam Center for Internet and Society planning session entitled “Open Code / Open Content / Open Law: Building a Digital Commons”, Harvard University, May 20, 1999; Y. BENKLER, *Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment*, 11 *Harv. J. L. & Tech.* 287 (1998).

³⁶ M.H. HELLER, *The Boundaries of Private Property*, 108 *Yale L. J.* 1163, 1165 (1999): “the danger with fragmentation is that it may operate as a one-way ratchet: because of high transaction costs, strategic behaviors, and cognitive biases, people may find it easier to divide property than to recombine it”. However, Heller develops the idea of a gradient of property rights regime, where commons and anticommons are just the extreme parts, while in between is the realm of private property, that is the right mixture of use and exclusion: according to him, there is an hidden boundary principle which has historically kept property within the realm of private property, preventing it from becoming too bundle and too fragmented.

³⁷ R.A. POSNER, *Economic Analysis of Law*, Aspen Law & Business (5th ed.), 1998, at 76. The origin of property fragmentation may result either from ontological sources due to the fact that the creation of intellectual property is by its nature decentralized, or from rational choices. See also F. PARISI – B. DEPOORTER – N. SCHULZ, *Fragmentation in Property: Towards a General Model*, George Mason University School of Law, Law and Economics Working Papers Series n. 3 (2002), in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=300681. Further, Francesco Parisi has highlighted the specific role played by the law of entropy which leads towards increasing fragmentation [F. PARISI, *Entropy in Property*, 50 *Am. J. Comp. L.* 595, 596 (2002)]: the term refers to the second law of thermodynamics, according to which every process that can occur spontaneously will go in one direction only and will result in a release of energy that cannot be recaptured, so that the amount of entropy, or lost energy, in the universe will continually increase.

difficulties associated with balancing economic efficiency with the realities of high transaction costs: avoiding a tragedy of the anticommons requires to overcome transaction costs holdouts and rent-seeking, which may prevent economically justified conversion from taking place³⁸.

A classic anticommons situation is well-explained through the reasoning of the *New York Times v. Tasini* case recently decided by the United States Supreme Court³⁹: a group of freelance writers argued that the New York Times and NEXIS were violating their copyright privileges by selling their works to electronic database services, without having previously acquired their permission and thereby without allowing them to share in the profits. The courts that heard the case responded differently. The District Court for the Southern District of New York found in favor of the publishers, stating that licensing articles to an electronic database was simply revision of the original work allowed by the Section 201 of the 1976 Copyright Act⁴⁰. The Court of Appeals for the Second Circuit, instead, reversed the lower court decision rejecting the argument that placement in a database constituted a revision⁴¹: the majority of the Supreme Court upheld, holding that the publishers were not covered by the Section 201 because articles in databases could be retrieved individually, divorced from the collective work in which they were published.

By recognizing to each author the complete control over the copyright for the work published in the New York Times, ultimately the decision requires the publishers to track down every author and negotiate usage rights. The anticommons application is evident but the Supreme Court did not face the problem⁴²: asymmetric transaction costs make impossible the retroactive

³⁸ M.A. HELLER, *supra* note 15, at 662: both theorists and practitioners assume that the key to creating private property is to define rights clearly, enforce contracts predictably, and let the market sort out entitlements; but the experience of anticommons property in transition suggests that the content of property bundles, and not just the clarity of property rights, matters more than we have realized.

³⁹ *New York Times Co. v. Tasini*, 533 U.S. 483 (2001). For a comment F. PARISI - C. SEVCENKO, *Lessons from the Anticommons: The Economics of New York Times Co. v. Tasini*, 90 *Ky. L. J.* 295 (2001/2002).

⁴⁰ 972 F. Supp. 804 (S.D.N.Y. 1997).

⁴¹ 206 F.3d 161 (2d Cir. 1999)

⁴² In his dissent, Justice Stevens echoed the fair use doctrine (codified in 17 U.S.C. § 107 allowing fair use and reproduction of copyrighted works for purposes such as criticism, comment, news

compensation to the authors for the use of their work, the publishers are unable and unwilling to negotiate with each one for the rights, therefore the likely practical outcome will be the inefficient use of the property, that is the limited availability of the information to the general public⁴³.

Absent a way to coordinate the copyright owners, a possible solution is the creation of a clearinghouse responsible for identifying and enforcing the rights of the scattered freelance writers: starting from the intuition that the key issue is the cost of integrating disparate rights and, thus, avoiding tragedy requires overcoming transaction costs, strategic behaviours and cognitive biases of participants, this proposal is based on the idea that the success would be more likely within ‘close-knit’ communities⁴⁴. Robert Merges has been one of the early commentators suggesting that the presence of high transaction costs does not halt exchanges but encourages both producers and users to invest in institutions that lower the cost of certain types of exchanges⁴⁵: the frequency of contracting in many markets for IPRs gives rise to a myriad of institutions designed to regularize technology transactions⁴⁶. Rather than relying on compulsory licensing as a way to reduce transaction costs, Merges underlines the workability of a number of formal and informal mechanisms developed by rightholders who deal with each other on a recurring basis in the intellectual property field that have operated successfully bringing these costs down: the lesson learned in different industries is that privately established collective rights organizations (CROs), as a result of ‘repeat-play’ games, will often emerge to break the transactional bottleneck⁴⁷. Instead of compulsory licensing, which is based on property rules, CROs are the outcome of ‘contracting into liability rules’.

reporting, teaching, scholarship and research), stating that the user and purpose must be the determining factors: it is the readers and researchers of the future who will bear the costs of the cited decision.

⁴³ On this issue see A. BARTOW, *Electrifying Copyright Norms and Making Cyberspace More Like a Book*, 48 *Villanova L. Rev.* 13 (2003).

⁴⁴ For the concept of close-knit societies see R. ELLICKSON, *supra* note 12.

⁴⁵ R.P. MERGES, *Of Property Rules, Coase, and Intellectual Property*, 94 *Colum. L. Rev.* 2655 (1994).

⁴⁶ *Id.* at 2669-2670: “the history of collective rights organizations ... supports the main theoretical point raised earlier: that a property rule for IPRs can be transformed into a voluntary liability rule, in the form of an effective institution to carry out IPR transactions”.

⁴⁷ R.P. MERGES, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 *Calif. L. Rev.* 1293 (1996).

One example –particularly relevant for the *Tasini* case- is given by performance rights organizations (PROs) operating in the music industry, such as the American Society of Composers, Authors, and Publishers (ASCAP) and Broadcast Music Inc. (BMI), which have been very successful in collecting hundreds of millions of dollars in licensing revenues annually for their membership⁴⁸. These institutions provide a key administrative service for music users, who might otherwise need to deal directly with songwriters and composers to obtain the rights to perform copyrighted music⁴⁹: PROs act as transactions agents for licensing material, monitoring performances and collecting royalties on behalf of their members or affiliates⁵⁰. Another example of an IPR-based collective rights organization is the emergence of patent pools –that is, an arrangement among multiple patent holders to aggregate their patents making them available to each member of the pool- in several industries, such as automobile, aircraft manufacturing, video technology, pharmaceutical and

⁴⁸ As M.A. EINHORN, *Intellectual Property and Antitrust: Music Performing Rights in Broadcasting*, 26 *Colum. J. L. & Arts* 349 (2002) reveals at note 9, the U.S. Solicitor General in 1967 made the case for centralized licensing: “the extraordinary number of users spread across the land, the ease with which a performance may be broadcast, the sheer volume of copyrighted compositions, the enormous quantity of separate performances each year, the impracticality of negotiating individual licenses for each composition, and the ephemeral nature of each performance all combine to create unique market conditions for performance rights to recorded music. If this market is to function at all, there must be . . . some kind of central licensing agency by which copyright holders may offer their works in a common pool to all who wish to use them” [Memorandum of the United States as Amicus Curiae on Petition for Writ of Certiorari in the Supreme Court of the United States at 10-11, *K-91, Inc. v. Gershwin Publishing Corp.*, 389 US 1045 (1968) (No. 67-147), denying cert. to 372 F.2d 1 (9th Cir. 1967)].

⁴⁹ See C.A. KUKKONEN, *The Use of a Patent Licensing Center as an Intermediary for Facilitating the Licensing of Commercially Viable, Unused Patents*, 3 *Va. J.L. & Tech.* 10 (1998), citing A. BARTOW, *Inventors of the World, Unite! A Call for Collective Action by Employee-Inventors*, 37 *Santa Clara L. Rev.* 673 (1997) who proposes a collective that would allow inventors to authorize it to “negotiate patent licenses with entities wishing to use or manufacture members' inventions and to administer these licenses. The collective would retain a portion of the licensing fees to cover its costs, pay its employees, and fund legal work, such as defending the validity of members' patents and bringing infringement actions against any entity that misappropriates a member's intellectual property”.

⁵⁰ In *Broadcast Music Inc. v. Columbia Broadcasting Sys.*, 441 US 1 (1979) the Supreme Court, applying a rule of reason approach, rejected the argument that the licensing arrangement constituted an illegal horizontal price-fixing and stated, instead, that a careful study of the music industry's needs suggested how the price-fixing of BMI's blanket license could have procompetitive benefits: due to the high transaction costs, in the absence of a BMI, most of music licensing arrangements that now take place, would not have occurred.

agricultural biotechnology, whether licenses under multiple patent rights have been necessary to develop new products⁵¹.

Expanding the intuition of Heller and Eisenberg, the granting of IPRs over biological organisms supports the threat of the anticommons rising questions around the definition of what is patentable and the mechanism to exchange patent rights: if common aspects are divided into multiple overlapping or mutually blocking patents, the value of the economic benefits that would otherwise arise is diminished. For these reasons, in a sector such as the agricultural biotechnology where firms appear to have consolidated to streamline access to patented technologies⁵², it has been suggested the creation of clearinghouse mechanism as a means of lowering transaction costs, able to realize customised licenses and multi-patent technology systems available to researchers⁵³. A clearinghouse could provide upstream technology aggregation, bundling complementary patents from different holders; it would have the capacity to identify relevant intellectual property in specified technology environments, verify its availability and how they could be accessed; it could establish prices or pricing indicators, facilitate negotiations, offer solutions for arbitration of disputes and monitoring of compliance.

All these mechanisms show what brings individual owners together to resolve relational bottlenecks: their basic economic rationale is that they significantly reduce the transaction costs of exchanging rights when compared to a series of one-shot licensing deals. In sum, “these case studies uncover two distinct advantages of CROs: expert tailoring and reduced political economy

⁵¹ R.P. MERGES, *Institutions for Intellectual Property Transactions: The Case of Patent Pools*, Berkeley Center for Law and Technology (1999), in <http://www.law.berkeley.edu/institutes/bclt/pubs/merges/>.

⁵² G. GRAFF – G. RAUSSER – A. SMALL, *Agricultural Biotechnology's Complementary Intellectual Assets*, forthcoming in *85 Review of Economics and Statistics* (2003) and available at http://papers.ssrn.com/sol3/delivery.cfm/SSRN_ID280107_code010816600.pdf?abstractid=280107.

⁵³ See C. NOTTENBURG – P.G. PARDEY – B.D. WRIGHT, *Accessing other's people technology for non-profit research*, 46 *Australian Journal of Agricultural and Resource Economics* 389 (2002) and G. GRAFF – D. ZILBERMAN, *Towards an Intellectual Property Clearinghouse for Agricultural Biotechnology*, 3 *IP Strategy Today* 1 (2001). See also G. GRAFF, *The Sources of Biological Innovation in Agriculture: Comparative Advantages of Public, Entrepreneurial, and Corporate R&D*, prepared for the ICABR conference “Agricultural Biotechnologies: New Avenues for Production, Consumption and Technology Transfer”, Ravello, Italy, July 11-14, 2002, in <http://are.berkeley.edu/~ggraff/Graff-Sources-dissertation-version.pdf>.

problems”⁵⁴. This is exactly what separates CROs from compulsory licensing schemes making the former more flexible over time: “in a CRO, knowledgeable industry participants set the rules of exchange. These rules are not likely to be uniform, one-size-fits-all terms ... they often vary according to the broad features of the rights. Individual works covered by discrete IPRs are assigned to categories based on the members' knowledge and experience. Through this expert tailoring, CROs produce an intermediate level of contract detail, reflecting not only collective industry expertise but also the need for efficiency in carrying out a high volume of transactions”⁵⁵.

3. Climbing the shoulders of giants: about flood, thicket and innovation.

The link between IP and innovation is a choke point: according to the mainstream economics, the presence of strong intellectual property rights spurs innovation, which then leads to fiercer competition, higher economic growth and increasing benefits for consumers. Since private producers have an incentive to invest in innovation only if they receive an appropriate return, the objective of intellectual property protection is to build up incentives that maximize the difference between the value of the invention and the social cost of its creation.

For as long as laws have aimed at protecting IP, disputes have raged over which works to protect, for how long and to what extent. This issue has come increased attention and is now particularly burning due to the growing importance of IPRs and the great proliferation of patents claims: examples concern all the segments of the present economy and include products as computer software, internet services, biotechnology and genetic research. A decisive support in this sense has come U.S. Supreme Court 1980 decision, which, without defining the boundaries of the area, allowed patents for “anything under the sun that is made by man”, thereby opening the universe of patentable subject matter to living organisms⁵⁶. It is sufficient to look at the statistics to understand the point: while

⁵⁴ R.P. MERGES, *supra* note 47, at 1295.

⁵⁵ *Id.* at 1295-1296.

⁵⁶ *Diamond v. Chakrabarty*, 447 US 303, 309 (1980). See R.P. MERGES – G.H. REYNOLDS, *The Proper Scope of the Copyright and Patent Power*, 37 *Harv. J. on Legis.* 45 (2000) arguing that there are limits on the power to create and extend intellectual property interests: such limits are ‘internal’ in the sense that they are the result of the constitutional provision, the Copyright and

in 1980 the United States Patent and Trademark Office (USPTO) issued roughly 66,000 patents, twenty years later the number had increased more than two and a half times to over 175,000⁵⁷.

Commentators have suggested many explanations for what has been defined as a flood, that is a dramatic jump in the number of patents filed covering a specific class of inventions during an interval of a few years: some have suggested that the USPTO has been granting many questionable patents without adequate review⁵⁸ -mostly because much of the recent increases in filings have been for ‘business methods’ such as ‘one click’ ordering, rather than the traditional product and process⁵⁹-, some have relied upon the dimension of patent length and breadth⁶⁰, some have proposed new systems for specialized industrial

Patent Clause of the American Constitution which grants the power “to promote the Progress of Science and useful Arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries”.

⁵⁷ See USPTO, *U.S. Patent Statistics*, at <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/apat.pdf>.

⁵⁸ C. SHAPIRO, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, in <http://haas.berkeley.edu/~shapiro/thicket.pdf>; M.J. MEURER, *Business Method Patents and Patent Floods*, Boston University, School of Law, Working Paper n. 2 (2002), in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=311087. See also R.P. MERGES, *The Uninvited Guest: Patent on Wall Street*, UC Berkeley Public Law Research Paper n. 126 (2003), in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=410900; B.H. HALL, *Business Method Patents, Innovation, and Policy*, NBER Working Paper n. W9717 (2003), in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=410644. See J. LANGENFELD, *supra* note 27 stating that there needs also to be a review of the USPTO’s procedures: the rapid increase in patent filings (in 2000, the USPTO received over 293,000 applications) makes unclear whether the USPTO can effectively process this massive number. On the need of processual clarity as the primary goal to achieve, see R.M.T. IWASAKA, *From Chakrabarty to Chimeras: The Growing Need for Evolutionary Biology in Patent Law*, 109 *Yale L. J.* 1505 (2000) offering a test to evaluate plant and animal patents. But see M.A. LEMLEY, *Rational Ignorance at the Patent Office*, 95 *Nw. U. L. Rev.* 1495 (2001) arguing that, even if the PTO doesn’t do a very detailed job of examining patents, we probably don’t want it to: it is ‘rationally ignorant’ of the objective validity of patents because it is too costly for the PTO to discover those facts. For the PTO to gather all the information it needs to make real validity decisions would take an enormous investment of time and resources: those decisions can be made much more efficiently in litigation, because only a tiny percentage of patents are ever litigated or even licensed to others. For a different point of view, see S. GHOSH – J.P. KESAN, *What Do Patents Purchase? In Search of Optimal Ignorance in the Patent Office*, University of Illinois, Law & Economics Research Paper n. 7 (2003), in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=410545.

⁵⁹ See J.R. ALLISON – M.A. LEMLEY, *Who’s Patenting What? An Empirical Exploration of Patent Prosecution*, 53 *Vand. L. Rev.* 2099 (2000).

⁶⁰ Compare R.J. GILBERT – C. SHAPIRO, *Optimal Patent Length and Breadth*, 21 *Rand J. Econ.* 106 (1990) suggesting that optimal patent length may be infinite if breadth can be adjusted accordingly, with N.T. GALLINI, *Patent Policy and Costly Imitation*, 23 *Rand J. Econ.* 52 (1992) making the opposite claim that optimal policy consists of broad patents with a lifespan adjusted to achieve the desired reward.

circumstances⁶¹, someone else have challenged the basic existence of the patent system and the exclusivity assumption of patents⁶².

Regardless the debate about pros and cons of IP protection or the reason underlying patent proliferation, it remains to consider whether there are implications for innovation and competition. As Carl Shapiro has underlined, “even while a consensus has emerged that innovation is the main driver of economic growth, we are witnessing somewhat of a backlash against the patent system as it is currently operating”⁶³: researches show companies increasingly inclined to seek patents, a sort of growing ‘propensity to patent’, which covers products or processes already being widely used, as well as an increase in the practice of defensive patenting⁶⁴. Parchomovsky revealed that the patent race – and the related model elaborated by the game theory, describing a competition to achieve the market dominance that come with the patent grant- is more complex than sport contests and firms often face the dilemma of ‘publish or perish’⁶⁵: trying to win is not always the profit-maximizing strategy, rather efforts often are aimed to prevent others from winning the race.

It has been highlighted how patent floods can exacerbate social costs concerning high licensing and litigation costs, exclusionary misuse of patents and a retarding effect on diffusion and cumulative innovation: because of the

⁶¹ J.H. REICHMAN, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 *Colum. L. Rev.* 2432 (1994); P. SAMUELSON – R. DAVIS – M.D. KAPOR – J.H. REICHMAN, *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 *Colum. L. Rev.* 2308 (1994); L.C. THURLOW, *Needed: A New System of Intellectual Property Rights*, (Sept.-Oct) *Harv. Bus. Rev.* 95 (1997).

⁶² J.S. LEIBOVITZ, *Inventing a Nonexclusive Patent System*, 111 *Yale L. J.* 2251, 2255 (2002): “The question may sound paradoxical to some - after all, isn't exclusivity the defining attribute of a patent? I propose a patent system that, instead of granting exclusive property rights to the first inventor of a new technology, protects him against free-riding competitors, but not against competitors who independently develop the same technology”.

⁶³ C. SHAPIRO, *supra* note 58.

⁶⁴ See also J.H. BARTON, *Antitrust Treatment of Oligopolies with Mutually Blocking Patent Portfolios*, 69 *Antitrust L. J.* 851 (2002) describing the growing phenomenon of the ‘defensive’ use of IPRs among oligopolists (each holds a substantial patent portfolio, significant components of which are infringed by each of its competitors): the most serious issue arises from the possibility that the oligopolists will exercise their IPRs to prevent entry into the oligopoly; in this context, the motivation to obtain patents becomes one of building a defensive portfolio and firms may well seek to obtain more patents on an existing research base rather than conduct more research.

⁶⁵ G. PARCHOMOVSKY, *Publish or Perish*, 98 *Mich. L. Rev.* 926 (2000) explores the welfare implications of the strategy of preemptive publication in patent races, that is the ability to adversely affect the patentability of rivals' inventions through publication: a firm will choose to publish its research results whenever it believes that its competitors are likely to beat it to the patent application.

likelihood of near simultaneous invention and multiple patent applications covering the same invention, some observers believe that this patent explosion could injure competition by making it more difficult for rival inventors to sell competing products. For a variety of reasons, society cannot rely on pioneers to license efficiently to would-be improvers the right to compete with them⁶⁶. The basic idea is the Heller-Eisenberg's anathema that granting too many property rights of too small a scale can preclude effective exploitation of economic resources, too great a division of rights can impede effective use of technologies and a law encouraging competition to improve innovation must take care to allocate rights between the parties. This is particularly true in industries where innovation is cumulative, whereas granting strong IP rights to initial innovators restricts the options available to improvers.

Michael Carrier has recently summarized the obstacles arising when multiple patented inputs are necessary to make up a product or access to earlier generations of products is required for innovation, using the notion of 'intergenerational' and 'intragenerational' bottlenecks⁶⁷: the former occurs in presence of cumulative innovation, that is in cases of products build on their generational predecessors, whereas the pioneer may generate a bottleneck by refusing to license its product, which is necessary for the subsequent innovation; the latter refers to situation in which one product contains multiple patented components and, therefore, a refusal to license by just one of the rightholders will prevent the entire invention. With cumulative innovation and multiple blocking patents, patent rights can have the perverse effect of stifling, not encouraging, innovation: thus, "the law should attempt at the margin to favor a competitive

⁶⁶ R.S. EISENBERG, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 *U. Chi. L. Rev.* 1017, 1072-73 (1989): "the risk that the parties will be unable to agree on terms for a license is greatest when subsequent researchers want to use prior inventions to make further progress in the same field in competition with the patent holder, especially if the research threatens to render the patented invention technologically obsolete".

⁶⁷ M.A. CARRIER, *Resolving the Patent-Antitrust Paradox Through Tripartite Innovation*, forthcoming in *Vanderbilt L. Rev.* and available at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=380880>

environment for improvements, rather than an environment dominated by the pioneer firm’⁶⁸.

The central role of cumulative innovation in the scientific method is clearly explained through the metaphor coined by Isaac Newton: each scientist ‘stands on the shoulders of giants’ to reach new heights. The impact of potential bottlenecks in cumulative innovation occurs in several industries –from aircraft to software- and regards mainly two contexts: it involves the basic upstream research, which has no commercial value by itself but is the building block for downstream applications, and the sequences of products (known as ‘quality ladders’), each of which is an incremental improvement of its predecessor⁶⁹. The breadth of patent protection is a key consideration in the incentives to innovate, but the optimal one is absolutely unclear since a stronger protection of the initial invention hurts the ‘follow on’ innovators⁷⁰: if inventions are built on others’ discoveries drawing a series of blocks piled on top of each other, what happens whether, “in order to scale the pyramid and place a new block on the top, a researcher must gain the permission of each person who previously placed a block in the pyramid?”⁷¹

⁶⁸ R.P. MERGES – R.R. NELSON, *On the Complex Economics of Patent Scope*, 90 *Colum. L. Rev.* 839, 844 (1990). Authors analyzes the question of how patent scope decisions influence the development of a technology, both in the sense of an individual invention and of a future line of improvements extending from it, suggesting that it should be not presumed that granting broad scope to an initial inventor induces more effective development and future invention.

⁶⁹ S. SCOTCHMER, *Cumulative Innovation in Theory and Practice*, GSPP Working Paper n. 240 (1999), in <http://socrates.berkeley.edu/~scotch/>. The cumulative problem has at least four manifestations: later products can be (i) improvements of previous products, (ii) cost reductions for producing earlier products, (iii) applications of earlier basic technologies, or (iv) enabling technologies such as research tools.

⁷⁰ S. SCOTCHMER, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 *J. Econ. Perspectives* 29, 37 (1991): “there are no simple conclusions to draw about the optimal breadth of patents. It is not necessarily optimal to protect the first innovation so broadly that every derivative or second generation product infringes”. See also S. SCOTCHMER - T. O'DONOGHUE - J.F. THISSE, *Patent Breadth, Patent Life, and the Pace of Technological Improvement*, 7 *J. Econ. and Management Strategy* 1 (1998); S. SCOTCHMER, *Protecting Early Innovators: Should Second-Generation Products be Patentable?*, 27 *Rand J. Econ.* 322 (1996); J. GREEN - S. SCOTCHMER, *On the Division of Profit Between Sequential Innovators*, 26 *Rand J. Econ.* 20 (1995).

⁷¹ C. SHAPIRO, *supra* note 58. S. SCOTCHMER, *supra* note 69, pointed out how ‘stronger patents’ do not necessarily mean ‘stronger protection’: “strong patent rights for a sequential innovator can weaken the rights (and incentives to innovate) of subsequent innovators, whose inventions, even if patentable, are made to infringe prior patents. Since an innovator may be both in the position of buying licenses on prior technologies and licensing his own technology, it is not obvious under a ‘strengthening’ of patent rights whether he loses more in his capacity as licensee than he gains in his capacity as licensor”.

The difficulties of acquiring licenses for all patents has the potential to stifle the development and commercialization of new technologies: the bottlenecks arisen in cases of cumulative innovation can block future development supporting an hold-up situation, where the latest product generation is an hostage of its predecessor because the early patent holder has a potential claim against subsequent innovators. We can go back in time to Marconi and Edison to find early examples of the ‘bargaining breakdown’ occurred when rightholders are not able to enter into licenses⁷²: the list of reasons why efficient licensing might not occur includes transaction costs, externalities, strategic behaviour and uncertainty.

However, bottlenecks can occur also within one product generation: if a product is made of different patented inputs, any single rightholder can take it hostage blocking its development and commercialization. This is what Shapiro has defined as patent thicket, “a dense web of overlapping intellectual property rights that a company must hack its way through in order to actually commercialize new technology”⁷³. The problem of overlapping claims is inherent to patent floods and occurs in several industries, including semiconductors, biotechnology, computer software. According to Shapiro, this situation is the classic ‘complements problem’ originally studied by Cournot, analyzing the problem faced by a manufacturer of brass who had to purchase two key inputs, copper and zinc, each controlled by a monopolist discussed the “complements problem”. Cournot demonstrated that (i) the resulting price of brass was higher than would arise if a single firm controlled trade in both copper and zinc, and sold these inputs to a competitive brass industry; (ii) the combined profits of the producers were lower in the presence of complementary monopolies; thus (iii) the outcome is harmful for both producers and consumers.

As recently discussed by Heller and Eisenberg in the biotechnology sector, the same theory applies today when multiple companies control ‘blocking’ patents for a particular product, process, or business method. Blocking patents naturally result from the incremental process of innovation: “two patents are said to block each other when one patentee has a broad patent on an invention and another has a

⁷² R.P. MERGES, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 *Tenn. L. Rev.* 75 (1994).

⁷³ C. SHAPIRO, *supra* note 58.

narrower patent on some improved feature of that invention. The broad patent is said to ‘dominate’ the narrower one. In such a situation, the holder of the narrower (‘subserving’) patent cannot practice her invention without a license from the holder of the dominant patent. At the same time, the holder of the dominant patent cannot practice the particular improved feature claimed in the narrower patent without a license”⁷⁴.

With the rising of patent thickets and blocking patents, sharing of IP is crucial to commercialise new technology and diffuse innovations: IP congestion, produced by the mixture between multiple overlapping patents and powerful transaction costs linked to the complements and hold-up problems, can burden innovation and suggests coordinated solutions. The alternative options proposed for accessing other people's technology take us to the previously discussed Merger’s intuition of collective rights organizations and include cross-licensing agreements, joint ventures, patent pools, standard setting organizations (SSOs) and clearinghouse mechanisms⁷⁵.

4. The case of patent pools.

Patent pools are a natural way in which companies can combine their patents and promote diffusion, solving the ‘complements problem’ that arises

⁷⁴ R.P. MERGES – R.R. NELSON, *supra* note 68, at 860-861. M.A. LEMLEY, *The Economics of Improvement in Intellectual Property Law*, 75 *Tex. L. Rev.* 989, 1009-10 (1997): blocking arises when “the original patent owner can prevent the improver from using his patented technology, but the improver can also prevent the original owner from using the improvement”. For an example see S.C. CARLSON, *Patent Pools and the Antitrust Dilemma*, 16 *Yale J. on Reg.* 359 (1999), describing the situation concerning the Wright brothers’ pioneer patent on the wings of an aircraft: Glenn Curtis and Alexander Graham Bell improved on the Wright brothers’ pioneer invention and received a patent for using a set of wing flaps to stabilize the aircraft; however, the Curtis patent was found to infringe the Wright patent and, similarly, the Wright brothers had no legal right to license the crucial technology of wing flaps for their wings. Thus, the Wright and Curtis patents mutually infringed and blocked one another.

⁷⁵ See L.M. SUNG, *Greater Predictability May Result in Patent Pools*, paper presented before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <<http://www.ftc.gov/opp/intellect/index.htm>> highlighting how the international community has embraced private CROs: for example, patent pooling arrangements represent standard corporate practice in Japan, where companies favor the acquisition of extensive patent portfolios as a defensive measure against litigation and other business conflicts. Patent pools seem to have particular advantage in Japan in view of the traditionally narrower scope of protection granted in their individual patents and the consequentially greater number of patents in a given technology. See also D.S. TAYLOR, *The Sinking of the United States Electronic Industry Within Japanese Patent Pools*, 26 *Geo. Wash. J. Int’l L. & Econ.* 181, 187 (1992): “The keiretsu system of the Japanese electronics industry encourages cartelization and the formation of agreement among competitors”.

when multiple holders can potentially block a given product and thus overcoming obstacles which may interfere with cumulative innovation across multiple product generations. Rather, according to Shapiro, pools are the “purest solution” to the intellectual property bottleneck.

The term has been used to describe different arrangements in which patent owners have combined their patents, however the essence of all pools is the mutual agreement among owners to waive their respective exclusive patent rights. This outcome can be achieved also through cross-licensing, another effective method to cut through the patent thicket which, like pools, is a mutual exchange of patent rights⁷⁶: however while the term cross-licensing often refers to a bilateral exchange of licenses, we usually refer to patent pool when multiple patent holders assign or license their rights to a central entity, which in turn exploits the collective rights by licensing and/or manufacturing⁷⁷. Besides the great diversity in organizational forms and contractual governance provisions, both tailored to the technologies at hand -ranging from huge industry-wide institutions with dozens of members and hundreds of patents (so called ‘mega-pools’, arisen at the beginning of the last century in the automobile and aircraft industries⁷⁸) to simple multilateral contracts-, pools share the common characteristics of (i) providing a regularized transactional mechanism in place of the statutory property rule which requires an individual bargain for each transaction and (ii) establishing a method for valuing the patents and dividing up the royalty stream generated through licensing revenues⁷⁹. Pools typically contain restrictions on those who join the

⁷⁶ Standard setting organizations behave also like patent pools in certain respects, since they may ameliorate the problems of overlapping IPRs by requiring licensing on reasonable and nondiscriminatory terms. For the differences between patent pools and standard setting organizations see M.A. LEMLEY, *Intellectual Property Rights and Standard-Setting Organizations*, 90 *Calif. L. Rev.* 1889 (2002): first, unlike patent pools, SSOs tend to be organized around technical outcomes (their goal is foremost to design a standard for the industry to use, not to worry about licensing IPRs); second, in SSOs IP rules tend to be set *ex ante*, while patent pools more often allocate their rights *ex post*; third, interface SSOs aren't distributed randomly across industries, but they tend to be concentrated in network industries like software, Internet, telecommunications and semiconductors, that is where patents seem to create the most difficulties because they are quite easy to obtain and subject to less scrutiny than those in industries like pharmaceuticals and biotechnology.

⁷⁷ R.P. MERGES, *supra* note 47, at 1340.

⁷⁸ See G.L. BITTLINGMAYER, *Property Rights, Progress, and the Aircraft Patent Agreement*, 31 *J. L. & Econ.* 227 (1988).

⁷⁹ R.P. MERGES, *supra* note 51. According to J. LERNER – M. STROJWAS – J. TIROLE, *Cooperative Marketing Agreements Between Competitors: Evidence from Patent Pools*, Harvard NOM

pool, the most common one being a royalty restriction, that is an obligation to pay a fee for the grant of immunity under the pooled patents: pools may contain provisions which directly regulate the sale of products made using the licensed patents, such as restrictions on the price, territory of sale or customers to which the products can be sold; sometimes members who contribute patents to the pool must pay license fees for access to all pooled patents and, usually, the pool agreements add other types of restrictions, such as those on how the patented inventions can be practiced, the location where the patents can be practiced or the types of products that can be made using the patents; pools also differ in the restrictions they place on the contributing patent members' ability to license their patents outside the pool (sometimes outside licensing is precluded, sometimes it is merely limited by a requirement that the patent owner receive the consent of other pool members).

Before analyzing the effects of patent pooling, it is necessary to clear the meaning of the patents' relationship described as blocking, complementary or competing. According to IP Guidelines, the problem of blocking patents arises when "the use of one item of intellectual property requires access to another", thus "an item of intellectual property 'blocks' another when the second cannot be practiced without using the first"⁸⁰. Complementary patents result when different inventors independently patent different components of a larger invention and are said to be complementing each other in the sense that the use of one makes the use of the other more valuable: they are those patents covering technologies that are useless absent a license to a separate patented product and whose value increases when combined with that separate patented invention. The term competing patents, instead, describes patents over products or processes that are viewed as market substitutes. However, it is worth noting that the distinctions among the categories of patents are unclear and thus the labels could be sometimes misleading: the lines of demarcation "are very narrow", since "in many instances,

Research Paper n. 25 (2003), in <http://ssrn.com/abstract=399260> , an empirical analysis suggests that: (a) pools involving substitute patents are unlikely to allow pool members to license patents independently; (b) independent licensing is more frequently allowed when the number of members in the pool grows; (c) larger pools are more likely to have centralized control of litigation; (d) third party licensing is more common in larger pools.

⁸⁰ § 2.3.

a mere shift of focus or frame of reference will result in a different categorization for the same patents”⁸¹. The characterization of the economic relationship among pooled patents is crucial mostly to the antitrust analysis. Indeed pooling typically can achieve great efficiencies when patents are either blocking or complementary because in those cases it is able to address the tragedy of the anticommons by aggregating patents and reducing the transaction costs needed to acquire licenses (so called ‘one stop shop’). In contrast, pools that include competing or rival patents rather eliminate competition and can lead to higher prices through collusive price fixing⁸².

The main reason why patent pools are thought as a growing need is their ability to create an efficient mechanism for obtaining rights to a patented technology: without a pool, a company would have to obtain licenses separately from each holder and not only this would require time and resources, but it also supports the temptation for some owners to hold out on licensing their patent. However, although the clearing of blocking patents and the reduction of transaction costs are the primary pro-competitive effects of patent pools, commentators have identified several other benefits⁸³. First of all, pools mitigate the other negative effect of patent floods by avoiding uncertainty in the scope of IPRs and litigation costs: in addition, small businesses, which cannot usually

⁸¹ G. GOLLER, *Competing, Complementary and Blocking Patents: Their Role in Determining Antitrust Violations in the Areas of Cross-Licensing, Patent Pooling and Package Licensing*, 50 *J. Pat. & Trademark Off. Soc.* 723, 726 (1968). See also M.A. LEMLEY, *supra* note 74, at 1010 talking about a ‘partially’ blocking patents as a possible other category, arising where “a claim on an improvement might prevent the original inventor from using that improvement only in a certain way or in combination with some but not all other products”. H. HOVENKAMP – M.D. JANIS – M.A. LEMLEY, *supra* note 26, at 34.8, urge caution in the use of labels because they are problematic in many respect: “the labels incorrectly imply that the rights in any given patent are to be treated as a monolith. In reality, . . . most patents contain multiple claims”; see also I. SIMMONS – P. LYNCH – T.H. FRANK, “*I know it when I see it*”: *Defining and Demonstrating ‘Blocking Patents’*, 16 *Antitrust* 48, 49 (2002), suggesting the following definition: “A patent is blocking if circumventing it (1) is not commercially practicable, or (2) will not produce a commercially viable product”.

⁸² See L. KAPLOW, *The Patent-Antitrust Intersection: A Reappraisal*, 97 *Harv L. Rev.* 1813, 1867-68 (1984): “The problem of patent accumulation, the aggregation of several or numerous patents under single ownership or control, is conceptually indistinguishable from the merger problem under antitrust law. . . . A pool of competing patents can be more readily analogized to a loose association than to a horizontal merger. This, of course, depends upon one’s evaluation of the pool’s efficiency-creating potential. A pool of competing patents is difficult to distinguish from the cartel in this respect.”

⁸³ A short list of both pro-competitive and harmful effects is drawn by S.C. CARLSON, *supra* note 74, at 379, and R.B. ANDEWELT, *Analysis of Patent Pools under the Antitrust Laws*, 53 *Antitrust L. J.* 611 (1984).

endure those costs, are more likely to survive if they are free from legal suits. Pools are also a means of promoting network externalities and the rapid development of technologies otherwise blocked by patent disputes, in this sense their role in today's economy seems strictly related to the increasing cost of research and development⁸⁴; further, they enable to share the risks and benefits of further research and development by distributing royalties among members who have invested resources to produce successful inventions, increasing the likelihood they will recover some, if not all, of costs of R&D efforts. Finally, pooling provides an institutionalized exchange of technical information, thus mitigating spillover effects by ensuring that each member is both a producer and recipient of each others' information.

Critics have identified some potential anti-competitive effects as well, foremost underlining the risk that, rather than being a way to cut through a patent thicket, pools might actually serve merely to orchestrate collusion, either including terms that would normally violate antitrust rules against price fixing or enabling a wide share of informations⁸⁵. Beside the risk to eliminate competition by encouraging collusion and price fixing, other reasons why critics feel patent pools should not be encouraged are that pools can inflate the costs of competitively priced goods and shield invalid patents: the former argument is based on the assumption that while certain patents may be considered as blocking, they actually cover competitive substitutes and that, for this way, pooling will

⁸⁴ But see D. LIN, *Research Versus Development: Patent Pooling, Innovation and Standardization in the Software Industry*, 1 *J. Marshall Rev. Intell. Prop. L.* 274 (2002) stating that patent pools have the potential to reduce the level of research and invention in new technologies that can compete with an incumbent standard: the Author focuses on the effect of patent pooling on highly standardized industries, in particular the software industry, and suggests that, while patent pooling arrangements may lead to more efficient development of standardized software, they will also likely lead to a further retardation of research and invention in the standards market by increasing the incentive to create standards-compliant software.

⁸⁵ M.J. SCHALLOP, *The IPR Paradox: Leveraging Intellectual Property Rights to Encourage Interoperability in the Network Computing Age*, 28 *AIPLA Q. J.* 195 (2000) suggests that patent pooling arrangements should be distinguished under antitrust law from other contractual safe harbor mechanisms, such as standard setting efforts and open source or community source licensing: while pools only address the licensing of patent rights for implementing a defined and already existing standard, standard setting efforts attempt to address IPR issues before and during the standard setting process, open source licenses IPRs in the software technology, which themselves represent the *de facto* or *de jure* standard. Further, patent pooling arrangements typically seek to exploit patent rights through a royalty based licensing program: in contrast, open source and community source initiatives do not attempt to license explicit patents, nor do they usually attempt to set up a cross-licensing of such patents for a royalty, rather they either license certain patent rights royalty free or require that licensees agree to license any essential IPR for derivative works.

expand monopoly pricing; the latter is built on the suspicion that companies who fear their patents will be invalidated in court are eager to settle by creating a patent pool, forcing, in turn, others to pay royalties on technology that would have been part of the public domain if the patents were litigated in court.

As recognized by USPTO in a white paper released few years ago, the biotechnology industry gives a good example of the benefits coming from the pooling of patents to overcome the problem of access to a specific technology for the research and development of commercial products⁸⁶. It is sufficient to look through the summary and the initial pages to read something familiar: “one of the biggest public concerns voiced against the granting of patents ... to inventions in biotechnology, specifically inventions based on genetic information, is the potential lack of reasonable access to that technology. ... Of present concern to the public is the removal of valuable research resources from the public domain. ... Many feel that by allowing genetic information to be patented, researchers will no longer have free access to the information and materials necessary to perform biological research. ... if a single patent holder has a proprietary position on a large number of nucleic acids, they may be in a position to ‘hold hostage’ future research and development efforts”. On the other side, no single company, however, has the resources to develop any significant fraction of the genetic information present in an organism. Therefore, the end result is that patent pools can be a “win-win situation”, serving the interests of both the public and private industry, providing for greater innovation and spurring research and development: “the public would be served by having ready access with streamlined licensing conditions to a greater amount of proprietary subject matter; patent holders would be served by greater access to licenses of proprietary subject matter of other patent holders, the generation of affordable pre-packaged patent ‘stacks’ that could be easily licensed, and an additional revenue source for inventions that might not otherwise be developed”.

If so, in the final analysis, the test should be whether competition is better with the pool than without: the question that should be addressed is not whether to permit or forbid the formation of patent pools, but rather how to balance the

⁸⁶ USPTO, *Patent Pools: a Solution to the Problem of Access in Biotechnology Patents?*, in <http://www.uspto.gov/web/offices/pac/dapp/opla/patentpool.pdf>

measures necessary to facilitate formation and use of pools with guidelines intended to minimize any harm to competition or consumer welfare, identifying those practices that advance the undeniable pro-competitive aspects of pool licensing without causing countervailing competitive harm⁸⁷.

5. Antitrust and IP: so far, so close?

The intersection of antitrust and intellectual property law has been a source of perpetual confusion and controversy, dominating the relevant literature for so long to gain the epithet of the ‘rhetoric’ of collision and conflict⁸⁸. Many observers contend this tension between antitrust and intellectual property arises out of their basic principles: simply stated, although they share the common purpose of promoting innovation and enhancing consumer welfare, their methods seem often conflicting, since the patent system is based on exclusion, while antitrust law focuses on competition. IP laws increase invention and innovation by offering rights to exclude, therefore preventing competition in the sale of works covered by IPRs; antitrust laws foster competition, sometimes through the condemnation of such exclusion, on the assumption that free market will ensure efficient allocation of resources. In short, the reason why the intersection of the patent and antitrust laws has been described as a formidable paradox is due to the fact that, under IP law, competition is explicitly and consciously restricted as a means of improving social welfare⁸⁹.

According to Kaplow, “although the conflict between the patent statute and the antitrust laws has long been thought troublesome, it is in fact even more deepseated than is generally perceived”, and, in evaluating the implications of a sort of black-or-white approach, it could be useful to consider the extreme doctrinal regimes because the thinking that patent law and antitrust work toward opposite purposes produces the effect that courts and agencies must find which

⁸⁷ G.R. BEENEY, *Pro-competitive aspects of Intellectual Property Pools: a Proposal for Safe Harbor Provisions*, testimony before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <http://www.ftc.gov/opp/intellect/index.htm>.

⁸⁸ M.D. JANIS, *Transition in IP and Antitrust*, *Antitrust Bulletin* 253 (2002).

⁸⁹ M.A. CARRIER, *Unraveling the Patent-Antitrust Paradox*, 150 *U. Pa. L. Rev.* 761 (2002).

one takes precedence⁹⁰: if (1) antitrust laws reign supreme, no privilege is accorded to patentees and a patentee's practice is deemed illegal if it violates any aspect of antitrust law; if (2) patent statute reigns supreme, the patentee has an absolute privilege to violate antitrust laws. However, an assessment of the overlap between antitrust and IP in which there are two separate worlds –IPRs grant monopolies, antitrust aims to eliminate them- is clearly oversimplified: IPRs “do not *ipso facto* confer monopoly power. ... there is a vast difference between exclusive right and the sort of economic monopoly that is the concern of antitrust law. ... even where a patented product is successful in the marketplace, it normally competes for the attention of consumers with many other products, some themselves protected by intellectual property rights. ... Further, ... it is too facile to say that antitrust law forbids monopoly”⁹¹.

Today, many commentators describe as ‘outdated’ the adversarial approach, asserting that IP and antitrust share a complementary overarching vision⁹². Looking through US legislation and case law of over a century, it is easy to see the ongoing evolution in the understanding of this complex relationship that keeps someone to say that it has been replaced the pattern of weak patent law and strong antitrust law with a pattern of strong patent law and weak antitrust law⁹³. Indeed, even if, since early the Supreme Court seemed to recognize the possible co-existence between antitrust and patent laws, until the 1990s it has been encouraged the traditional dichotomy based on the presumption that a patent not

⁹⁰ See L. KAPLOW, *supra* note 82, at 1813.

⁹¹ H. HOVENKAMP – M.D. JANIS – M.A. LEMLEY, *supra* note 26, at 1-11.

⁹² S.F. ANTHONY, *Antitrust and Intellectual Property Law: From Adversaries to Partners*, 28 *A.I.P.L.A. Q. J.* 1 (2000). See also R.H. PATE, *Antitrust and Intellectual Property*, remarks before American Intellectual Property Law Association, 2003 Mid-Winter Institute, Marco Island, Florida, January 24, 2003 in <<http://www.usdoj.gov/atr/public/speeches/>>, suggesting that this tension is overstated; J. FARRELL, *Thoughts on Antitrust and Innovation*, remarks before the National Economists’ Club, Washington DC, January 25, 2001, in <<http://www.usdoj.gov/atr/public/speeches/>> arguing that “there is much less tension than meets the careless eye”; E.T. SULLIVAN, *The Confluence of Antitrust and Intellectual Property at the New Century*, 1 *Minn. Intell. Prop. Rev.* 1 (2000); W. TOM – J. NEWBERG, *Antitrust and Intellectual Property: From Separate Spheres to Unified Field*, 66 *Antitrust L. J.* 167 (1997); but J. LANGENFELD, *supra* note 27, suggesting that recent decisions on issues such as the unilateral refusal to license highlight the tension between IP and antitrust.

⁹³ J.H. BARTON, *Patents and Antitrust: a Rethinking in Light of Patent Breadth and Sequential Innovation*, 65 *Antitrust L. J.* 449 (1997) talks, in particular, about the traditional antipathy shown by antitrust policies to licensing; on this issue, see also J.B. KOBAK, *Running the Gauntlet: Antitrust and Intellectual Property Pitfalls on the Two Sides of the Atlantic*, 64 *Antitrust L. J.* 341 (1996).

only conferred exclusive rights to one product, but also assured monopoly power in a relevant market, regardless of available substitutes⁹⁴. The outcome was that IPRs were subject to stringent scrutiny under antitrust laws and this trend culminated in the 1970s with a government policy called the “Nine No-No’s”, that is the implementation of formalistic rules that prohibited certain licensing arrangements and other agreements implicating IPRs without regard to the actual competitive effects of such conduct⁹⁵. The introduction of economic analysis led to the understanding that the “Nine No-No’s” could condemn potentially pro-competitive conduct and, thus, to the abandonment of almost all of these per se rules, in favour of a more careful examination of the likely competitive effects of certain arrangements.

The new approach supported by antitrust agencies -and ratified by IP Guidelines- now recognizes the need for an integrated approach that takes into account how antitrust and IP law are complementary since they are both aimed to “encourage innovation, industry and competition”⁹⁶. As recently pointed out by

⁹⁴ This historical perspective is inspired by S.F. ANTHONY, *supra* note 92.

⁹⁵ The policy was first articulated in a speech by a DOJ official: B.B. WILSON, *Patent and Know-How License Agreements: Field of Use, Territorial, Price and Quantity Restrictions*, remarks before the Fourth New England Antitrust Conference, November 6, 1970. The list included: 1) the grant back patented improvements to the licensee's original technology; 2) the setting of royalty payments in amounts unrelated to the sales volume of the patented product; 3) tying of unpatented supplies; 4) post-sale restrictions on resale by purchasers of patented products; 5) tie-outs; 6) licensee veto power over the licensor's grant of future licenses; 7) mandatory package licensing; 8) restrictions on sales of unpatented products made by a patented process; and 9) specifying the prices a licensee could charge upon resale of licensed products.

⁹⁶ *Atari Games Corp. v. Nintendo of America Inc.*, 897 F.2d 1572, 1576 (Fed. Cir. 1990), citing *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 876-77, (Fed. Cir. 1985). See E.G. BIESTER, *An Overview of the IP-Antitrust Intersection: Reevaluating the 1995 Antitrust Guidelines for the Licensing of Intellectual Property*, 16 *Antitrust* 8 (2002). The challenge to search new rules on the road of IP-antitrust intersection is not foreign to courts which have recently considered a number of cutting-edge issues that require a trade-off between antitrust principles and patent rights. According to P.M. BOYLE – P.M. LISTER - J. CLAYTON EVERETT, *Antitrust Law at the Federal Circuit: Red Light or Green Light at the IP-Antitrust Intersection?*, 69 *Antitrust L. J.* 739 (2002), the most dramatic is the Federal Circuit's decision in *In re Independent Service Organizations Antitrust Litigation (Xerox)* 203 F.3d 1322 (Fed. Cir. 2000): *Xerox* has fuelled the traditional debate over the proper balance between an IP owner's right to exclude and the antitrust law's prohibition against exclusionary conduct, holding that IPRs owners do not violate antitrust laws merely by refusing to license their IP or to sell patented products, thus resolving this conflict in favor of strong IPRs. Many commentators have had a strong reaction to *Xerox*, criticizing the holding [R. KATZ – A.J. SAFER, *Should One Patent Court Be Making Antitrust Law for the Whole Country?* 69 *Antitrust L. J.* 687 (2002)] or endorsing it [J. GLEKLEN, *Antitrust Liability for Unilateral Refusals to License Intellectual Property: Xerox and its Critics*, paper presented before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <<http://www.ftc.gov/opp/intellec/020501gleklen.pdf>>; P.E. AREEDA – H. HOVENKAMP, *Antitrust Law*, Aspen Publishers 2001, 114-16].

McGowan, “IP risks focusing too much on incentives in the abstract and too little on effects of grants, antitrust risks focusing too much on *ex post* effects and too little on incentives”⁹⁷. This has been translated by the Guidelines into three basic principles: antitrust authorities apply the same general antitrust principles to conduct involving IP as to conduct involving any other form of property, recognizing, however, that former has important characteristics that distinguish it; they do not presume that IP creates market power in the antitrust context; and, finally, they recognize that IP licensing is often pro-competitive because it allows firms to combine complementary inputs.

Throughout the century several solutions have been proposed to the patent-antitrust conflict⁹⁸. The courts' most popular one is centered on the scope of the patent: patentee's actions within the scope are immune from antitrust scrutiny, while those outside are invalid. In reality, the test simply solves the conflict by elevating patent over antitrust and avoids to answer the question of exactly what conduct falls within the scope⁹⁹. A second proposal looks to the markets affected by the IP grant, arguing that if the owner's activity occurs in the same antitrust market as that contemplated by the intellectual property, then the action should be lawful, but if the act occurs in a second market, it should not be lawful. In this case, the concerns are related both to the uncertainty of market definition and the fact that the multiple markets test is an imperfect proxy because patents could be mapped into more than one antitrust market. A third test focuses on the intent of the IP owner but, by this way, it does not take into account that the purpose of competition is to defeat rivals. Baxter suggests a ‘comparability’ approach providing that “a patentee is entitled to extract monopoly income by restricting utilization of his invention” as long as the restriction is confined “as narrowly and specifically as the technology of his situation and the practicalities of

⁹⁷ D. MCGOWAN, *Enforcement Issues Regarding Pooling and Cross-Licensing*, testimony before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <<http://www.ftc.gov/opp/intellect/index.htm>>

⁹⁸ The following fast summary of the different proposals is taken by M.A. CARRIER, *supra* note 89.

⁹⁹ On the dramatic change of law made by the Federal Circuit restricting patent scope, see G. SOBEL, *Scope and Competition: Is the Federal Circuit's Approach Correct?*, 7 *Va. J. L. & Tech.* 3 (2002).

administration permit”¹⁰⁰. Bowman supports a ‘competitive superiority’ test allowing a patentee to utilize a restrictive practice if the reward to the patentee measures “the patented product's competitive superiority over substitutes”¹⁰¹. Kaplow, instead, proposes a test that should examine the ratio between the reward the patentee receives when permitted to use a particular restrictive practice and the monopoly loss that results from such exploitation of the patent, thus trying to resolve the conflict between patent and antitrust policies through the common denominator of the economic welfare loss: because reward is assumed to induce inventive activity and to produce social benefits, the ratio would reflect a relationship between social benefit and social cost¹⁰². Finally, Carrier offers a different paradigm suggesting an innovation-centered rebuttable presumption that courts can apply in analyzing monopolists’ patent-based actions: he introduces a justification based on tripartite innovation –recalling the three temporal stages of innovation, that is the creation of the product, the recovery of the investment incurred and the circumvention of patent bottlenecks- that firms can offer in defense of the challenged activity, specifically showing that it is ‘reasonably necessary to attain tripartite innovation’¹⁰³.

Some of the proposals share the common tribute to the role of innovation that, since the Schumpeter’s ideas of a ‘creative destruction’ as the prime driver of the competitive process and the likelihood that it may occur more in monopolistic than in competitive markets¹⁰⁴, is clearly at the intersection of antitrust and IP economics. The innovation is the right field where measure the supposed tensions between IP and antitrust laws: simply put, due to the overriding importance of innovation for economic growth, the main justifications for the antitrust immunity should be linked to the promotion of innovation, such

¹⁰⁰ W.F. BAXTER, *Legal Restrictions on Exploitation of the Patent Monopoly: An Economic Analysis*, 76 *Yale L. J.* 267, 313 (1966).

¹⁰¹ W. BOWMAN, *Patent and Antitrust Law: A Legal and Economic Appraisal*, University of Chicago Press, 1973, at x.

¹⁰² L. KAPLOW, *supra* note 82.

¹⁰³ M.A. CARRIER, *supra* notes 67 and 89.

¹⁰⁴ See also A.K. RAI, *Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust*, 16 *Berkeley Tech. L. J.* 813 (2001) engaging the question of whether concentration or competition is the more appropriate market structure for the sequential process that is biopharmaceutical innovation and arguing that, despite the attractions of concentration as a means of appropriating the value of a lengthy and expensive R&D process, a role for competition needs to be preserved.

as those limiting free-riding, encouraging dealer investment, allowing a new product to be developed, fostering market penetration and quality. Properly understood antitrust and IP both seek to promote innovation and enhance consumer welfare or, as reminded by Bowman, “in terms of the economic goals sought, the supposed opposition ... is lacking. Both ... have a common central economic goal: to maximize wealth by producing what consumers want at the lowest cost. ... In achieving this goal under either antitrust or patent law the detriment to be avoided is output restriction”¹⁰⁵. Therefore, the innovation is the cornerstone in balancing the social benefit of providing incentives for invention and the social cost of granting a limited monopoly, because this task is not simply one of a static balance between competitive markets and intellectual property incentives, but it must reflect the dynamic character of technological advance¹⁰⁶. For this reason, patent pools should be considered an aspect of managing the intersection between IP and antitrust: pooling is a clear example in which the individual monopoly created by patents is substituted by a different system consolidating IPRs into a central and independent entity, in harmony with the needs of a specific industry. Pooling may enhance static and dynamic efficiency by integrating complementary technologies, reducing transaction costs, clearing blocking positions and avoiding costly infringement litigation; moreover, the combination of complements promises the economic benefits of vertical integration, particularly the elimination of successive monopolies (so called ‘double marginalization’).

The main concern regards the risk that antitrust enforcement may discourage innovation. Gilbert and Tom held that, although its role has become increasingly important, innovation is not quite ‘king’ at the antitrust agencies¹⁰⁷: agencies have not formally articulated their view on how a concern about innovation alters their approach to enforcement, in a nutshell innovation seems

¹⁰⁵ W. BOWMAN, *supra* note 101. See also C. SHAPIRO, *Competition Policy and Innovation*, OECD Working paper n. 11 (2002), in <<http://www.oecd.org/sti/working-papers>>.

¹⁰⁶ See J.D. PUTNAM, *The Regulation of Patent Pools*, testimony before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <<http://www.ftc.gov/opp/intellect/index.htm>>, suggesting a normative test for IP protection from antitrust enforcement, so called ‘ARNII’, “anticipated to be reasonably necessary to induce investment”, that is, at the time of investment, was the conduct under review anticipated to be reasonably necessary to induce investment?

¹⁰⁷ R.J. GILBERT – W.K. TOM, *supra* note 28.

often cited but rarely decisive. As patents become so important in the information-based economy, the significance of the conflict between the IP and antitrust laws can only increase and “the competition community has an affirmative obligation to participate in this review”¹⁰⁸: the issue has never been so pressing and the major challenge of the next decade is to identify the policies that will allow a market economy to thrive in the context of the intellectual property revolution¹⁰⁹. More narrowly, the main question concerns the role of established antitrust principles to the growing high-tech sector of the economy: in short, “can, and should, laws designed to manage the emergence of industrial and natural resource monopolies in the late 19th and early 20th Centuries be applied to the technology and intellectual property giants of the 21st Century?”¹¹⁰

6. Pooling in the shade of antitrust.

In the evaluation of patent pools, the concern with innovation holds at least two dimensions to be considered: the encouragement of initial inventive innovation and follow-on or sequential one. A review of competition case law analysing patent pooling arrangements reflects, on the one side, the troublesome antitrust/IP relationship and offers, on the other, significant perspectives on how antitrust policy can facilitate or impede innovation¹¹¹.

¹⁰⁸ H. GREENE, *The Role of the Competition Community in the Patent Law Discourse*, 69 *Antitrust L. J.* 841, 842 (2002).

¹⁰⁹ R. PITOFSKY, *Antitrust and intellectual property: unresolved issues at the heart of the New Economy*, 16 *Berkeley Tech. L.J.* 535 (2001). See also L.R. COHEN – R.G. NOLL, *Intellectual Property, Antitrust and the New Economy*, 62 *U. Pitt. L. Rev.* 453 (2001); D. MCGOWAN, *Networks and Intention in Antitrust and Intellectual Property*, 24 *Iowa J. Corp. L.* 485 (1999); R.D. ANDERSON – N.T. GALLINI, *Competition Policy and Intellectual Property Rights in the Knowledge-Based Economy*, University of Calgary Press, 1998.

¹¹⁰ R. PITOFSKY, *Challenges of the New Economy: Issues at the Intersection of Antitrust and Intellectual Property*, remarks before American Antitrust Institute Conference: “An Agenda for Antitrust in the 21st Century”, National Press Club, Washington DC, June 15, 2000, in <<http://www.ftc.gov/speeches/pitofsky/000615speech.htm>>. See also T.R. BEARD – D.L. KASERMAN, *Patent thickets, cross-licensing, and antitrust*, *Antitrust Bulletin* 345, 346 (2002) asking: “are we sufficiently knowledgeable about the underlying determinants and market effects of technological change and the various contractual arrangements associated with it to be able to fashion policies that will have the intended effects?”

¹¹¹ Helpful are the contributes of R.J. GILBERT, *Antitrust for Patent Pools: A Century of Policy Evolution*, unpublished working paper, University of California at Berkeley (2002), in <http://elsa.berkeley.edu/users/gilbert/wp/patent_pools100302.pdf>; H. HOVENKAMP – M.D. JANIS – M.A. LEMLEY, *supra* note 26; J.A. NEWBERG, *Antitrust, Patent Pools, and the Management of Uncertainty*, 3 *Atlantic L. J.* 1 (2000); S.C. CARLSON, *supra* note 74; R.B. ANDEWELT, *supra* note 83.

In its first decision applying the Sherman Act, *Bement v. National Harrow Co.*, the US Supreme Court shown support towards patent pools stating, on the basis freedom of contract's doctrine, the prevalence of patent law over antitrust concerns¹¹²: “the general rule is absolute freedom in the use or sale of rights under the patent laws ... The fact that the conditions in the contracts keep up the monopoly or fix prices does not render them illegal”¹¹³.

In *Bement*, the technology at stake was a farming implement called a ‘float spring tooth harrow’: the pool, built up after the settlement of several lawsuits for patent infringement, included 85 patents assigned to the newco National Harrow Company, an holding formed by a growing number of manufacturers. In exchange for assigning their patents to the pool, the firms received shares in the National Harrow and a license to manufacture and sell float spring tooth harrows: in particular, the agreement provided that members were (i) obliged to pay a one-dollar royalty for each harrow sold, (ii) required to adhere to a price schedule set by the pool, and (iii) obligated to manufacture and sell only the type of harrow they had been manufacturing at the time they entered into the pool. The dispute arose when Bement, one of the members, violated the provisions regarding patent rights and royalties, by selling products below the price fixed in the schedule, and National Harrow sued for breach of contract. Bement argued that the contract was void because it violated the Sherman Act but, holding for National Harrow, the Court reasoned that, although the pool perpetuated monopoly pricing, such a result was justified by “the nature of the property dealt in”, therefore pooling is “a legitimate and desirable result in itself”¹¹⁴: the Court, indeed, reasoned that patents confers a monopoly that is not the same as considered in antitrust analysis of market power, but it is rather a bundle of exclusionary rights granted in exchange for the benefits of inventive activity. However, the reasoning turns around mostly on the principle of the absolute freedom of contract, while it seems to fail in analysing the economic relationship among the pooled patents and relevant market or markets affected by the pooling arrangement¹¹⁵.

¹¹² 186 U.S. 70 (1902).

¹¹³ *Id.* at 91.

¹¹⁴ *Id.* at 93.

¹¹⁵ J.A. NEWBERG, *supra* note 111. The relevant markets were a ‘technology’ one for patents covering the manufacture of float spring tooth harrows and a ‘goods’ one for the harrows: the

The immunity under the freedom of contract rule ended few years later in *Standard Sanitary* when the Supreme Court began to evaluate pooling's provisions as antitrust violations¹¹⁶. The Court upheld the break-up of a pool of patents relating to an enameling process for sanitary ironware, that brought together 85% of manufacturers and 90% of their jobbers, on the assumption that the pooling arrangement “transcended what was necessary to protect the use of the patent”¹¹⁷ and members “subjected themselves to certain rules and regulations, among others not to sell their product to the jobbers except at a price fixed not by trade and competitive conditions but by the decision of the committee”¹¹⁸.

The following Supreme Court antitrust decision on pooling –also know as the ‘Cracking Patents’- has been defined a seminal case: *Standard Oil*, indeed, has been often cited as the first decision in which the Court both supported an analysis of patent pools under the rule of reason and recognized their procompetitive benefits in resolving blocking relationships¹¹⁹. By the early ‘20s four companies emerged as leading patent holders in cracking processes for producing gasoline from crude oil and, in hopes of avoiding future litigation, the firms entered into a series of cross-licensing agreements which provided each both the right to use each others' patents and the right to license others under all the pooled patents: the sole restriction was to share in some fixed proportion the royalties received. While the Justice Department sued the pool members charging a horizontal price-fixing conspiracy, the Supreme Court dismissed the complaint developing a market power test to determine whether a pool of competing patents could violate antitrust law: “if combining patent owners effectively dominate an industry, that power to fix and maintain royalties is tantamount to the power to fix prices. Where domination exists, a pooling of competing process patents ... is

National Harrow patent pool appears to have been a cartel arrangement that combined substantially all of the patented technologies for the manufacture of a product for which there were no close substitutes and, thus, its anticompetitive effects were probably not appreciably different from the anticompetitive effects of most other agreements among competitors exercising market power. Thus, according to the Author, National Harrow pool's anticompetitive effects were likely to outweigh benefits: in absence of the pool, in the technology market the holders might have competed for manufacturer licensees, while in the downstream goods market harrow manufacturers would have been free to compete on price and to improve their products.

¹¹⁶ *U.S. v. Standard Sanitari Manufacturing Co.*, 220 US 20 (1912).

¹¹⁷ *Id.* at 48.

¹¹⁸ *Id.* at 47.

¹¹⁹ *U.S. v. Standard Oil Co.*, 283 US 163 (1931).

beyond the privileges conferred by the patents and constitutes a violation of Sherman Act”¹²⁰.

The Court based its holding that the pooled patents did not dominate the industry on its interpretation of market concentration data, noting that pool members enjoyed for only 55% of all cracked gasoline capacity and 26% of the total gasoline produced¹²¹. Furthermore, the Court pointed out the procompetitive benefits of the pools, whether they provide a way to settle conflicting patent claims or to solve blocking situations: “an interchange of patent rights and a division of royalties according to the value attributed by the parties to their respective claims is frequently necessary if technical advancement is not to be blocked by threatened litigation”¹²² and “a patent may be rendered quite useless, or ‘blocked’, by another unexpired patent which covers a vitally related feature of the manufacturing process. Unless some agreement can be reached, the parties are hampered and exposed to litigation”¹²³.

The Supreme Court applied the market power test set forth in *Standard Oil* also in *Hartford-Empire*, but with a different outcome¹²⁴. The case involved a pool created through successive cross-licensing arrangements among all the major glassware manufacturers and formed by a portfolio of over 600 patents, so a lot to produce 94% of the entire glass containers manufactured in United States. The Court found that, even if the pool served also to solve outstanding patent conflicts, its main purpose was to control the market: “by cooperative arrangements and binding agreements, the appellant corporations, over a period of years, regulated and suppressed competition in the use of glassmaking machinery and employed their joint position to allocate fields of manufacture and to maintain prices of

¹²⁰ *Id.* at 174.

¹²¹ For a critical point of view, see J.A. NEWBERG, *supra* note 111: “in this case, however, the Court, like the drunk who searches for his lost keys only under the light of the street lamp, looked in the wrong place for anticompetitive effects and found none. ... The Court’s actual conclusion that the Cracking Patent pool members lacked market power may or may not have been correct. But it was almost certainly based on a competitive analysis of the wrong market”. Indeed, although three of the four members were refiners as well as patent holders, the pool was not in the business of selling gasoline but in the business of selling the right to use cracking technology: thus, it was appropriate to look for market power and anticompetitive effects in the technology market. See also J.A. NEWBERG, *Antitrust for the Economy of Ideas: The Logic of Technology Markets*, 14 *Harv. J. L. & Tech.* 83 (2001).

¹²² 283 US 163, 171 (1931).

¹²³ *Id.* at n. 5.

¹²⁴ *U.S. v. Hartford-Empire Co.*, 323 U.S. 386 (1945).

unpatented glassware”¹²⁵. However, although the Supreme Court upheld the district court’s holding on the antitrust violation, it rejected the proposed remedy: instead of the break-up, the Court adopted a regulatory approach leaving the pool intact and ordering the members to grant licenses at a reasonable royalty without discrimination or restriction.

“If *Standard Oil* is the competing patents case that is always cited for what it says about blocking patents, *United States v. Line Materials Co.*¹²⁶, is the blocking patents case that is rarely cited for what it says about blocking patents”¹²⁷. In *Line Materials*, the Supreme Court reviewed a cross-licensing arrangement between two manufacturers of electrical equipment: Southern States Equipment Corporation held a patent covering a dropout fuse with a complicated and expensive mechanism to break electric circuits when the current becomes excessive, while Line Materials Company patented a simpler and less expensive version, that could not be used without infringing the previous patent. Although the acknowledge of the blocking situation –and, therefore, the essentiality of the cross-licensing to make it impossible for “the public or the patentees [to] obtain the full benefit of the efficiency and economy of the inventions”¹²⁸-, the Court stated that the arrangement was per se unlawful because included price maintenance provisions, thus realizing a price-fixing violation: according to its reasoning, there was no immunity from the antitrust laws since “the possession of a valid patent or patents does not give the patentee any exemption from the provisions of the Sherman Act beyond the limits of the patent monopoly” and such an arrangement was outside the patent monopoly¹²⁹. The Court focused only on the classification of the horizontal price restraint and refused to give any weight to efficiency arguments. In doing so, the Court distinguished its *General Electric* decision merely on the ground that licensing of a single patent, rather than cross-licenses of patents, was involved¹³⁰; but the distinction from *General Electric* seems unsound: blocking patents are not substitutes for each other, since

¹²⁵ *Id.* at 406.

¹²⁶ 333 US 287 (1948).

¹²⁷ J.A. NEWBERG, *supra* note 111.

¹²⁸ *Id.* at 291.

¹²⁹ *Id.* at 308.

¹³⁰ *U.S. v. General Electric Co.*, 272 US 476 (1926).

you needed a license under the first patent to practice the second one, the relationship between the patents is not horizontal or competitive¹³¹.

The iron hand against the price-fixing also characterized the invalidation of a licensing arrangement in *U.S. Gypsum*¹³² and of a patent pool in *New Wrinkle*¹³³, on the assumption that there was no material difference between price-fixing in the cross-licensing context and price-fixing in the patent pool context.

The hostile attitude toward patent licensing culminated, at the end of the '60s, in the black list of the "Nine No-No's" practices, that ratified the per se antitrust violation approach, leaving no rooms for efficiency considerations, on the bias of a supposed market power held by the patent owner. It took over twenty years to reverse that policy with the release of the IP Guidelines –upheld by the *Antitrust Guidelines for Collaborations Among Competitors*, issued five years later¹³⁴- and the application of a rule of reason analysis, able to balance the anticompetitive effects and procompetitive benefits, even if already at the beginnings of the '80s antitrust authorities recognized that those rules were "overinclusive and contain[ed] at least some element of economic irrationality"¹³⁵. Today, the common understanding is well summarized by the words of Joel Klein: "I should make clear at the outset that I would expect that by far most cross-licenses and pools are, on balance, procompetitive. That means that, at bottom, they help sellers provide consumers with better products and services at lower prices because of benefits ranging from cost savings --due to more efficient production technologies--to improved product quality-- resulting from combining complementary inventions. ... Our principal concern is whether the patents or their owners are using the arrangement to blunt competition that would otherwise take place --a rather-switch-than-fight strategy, if you will. And so when we look at one of these arrangements, we generally analyze the following particulars,

¹³¹ R.B. ANDEWELT, *supra* note 83.

¹³² *U.S. v. U.S. Gypsum Co.*, 333 US 364 (1948).

¹³³ *U.S. v. New Wrinkle*, 342 US 371 (1952). The Court relied on the anticompetitive purpose and effect: "an arrangement was made between patent holders to pool their patents and fix prices on the products for themselves and their licensees. The purpose and result plainly violate the Sherman Act" (at 380).

¹³⁴ Available at <<http://www.ftc.gov/os/2000/04/ftcdojguidelines.pdf>>

¹³⁵ A.B. LIPSKY, *Special Considerations Concerning International Patent and Know-How Licensing and Joint Research and Development Activities: Current Antitrust Division Views on Patent Licensing Practices*, 50 *Antitrust L. J.* 515 (1981).

which have been common to our competitive analysis from the very beginning. They include the relationship of the intellectual property rights being combined; the nature of the markets in which those rights, and the goods or services in which they're used, compete; the extent to which the pool controls access to those rights; the openness of the pool to outsiders; and the extent to which the cross-license controls the terms on which future innovations in the field will reach the market”¹³⁶.

The issuance of the 1995 IP Guidelines has marked the beginning of a new approach for antitrust authorities, which showed a more permissive attitude toward patent pools and cross-licensing arrangements¹³⁷. The Guidelines expressly recognize that they can have important procompetitive benefits “by integrating complementary technologies, reducing transaction costs, clearing blocking positions, and avoiding costly infringement litigation”, further, “by promoting the dissemination of technology”, they “are often procompetitive”¹³⁸. The Guidelines also specifically address the case of blocking patents stating that “licensing may promote the coordinated development of technologies that are in a blocking relationship”¹³⁹ and adding an example in which assert that patent pools, and associated licensing practices, are lawful when they comprise blocking patents: the Guidelines design a new standards to evaluate the legality of patent pools, supporting an exception for the blocking patents in the sense that patentees may engage in otherwise prohibited practices when the patents involved are blocking.

¹³⁶ J.I. KLEIN, *Cross-licensing and Antitrust Law*, speech before the American Intellectual Property Law Association, San Antonio Marriott Rivercenter, San Antonio, Texas, May 2, 1997, in <<http://www.usdoj.gov/atr/public/speeches/speeches.htm>>

¹³⁷ The Guidelines’ principles can be summarized in three points: the antitrust agencies (1) regard IP as being essentially comparable to any other form of property (§2.1); (2) do not presume that IP creates market power in the antitrust context (§2.2); (3) recognize that licensing combine complementary factors of production and is generally pro-competitive (§2.3). For a critic see J.D. PUTNAM, *supra* note 106; according to him: (1) IP is not like real property because there is no affirmative right to use IP (only a negative right to exclude others from using); (2) presumption of no market power among multiple IP rests on presumption that they are substitutes (§2.2: “there will often be sufficient actual or potential close substitutes”): there is no operating definition of the competitive price level in the context of IP (it cannot be price equals marginal cost, since MC of a license is 0), no operating definition of price and, therefore, no measure of market power, rather it would be necessary a theory to induce *ex ante* investment; (3) presumption of pro-competitive licensing of multiple IPRs rests on presumption that they are complements (§2.3: “licensing may promote the coordinated development of technologies that are in a blocking relationship”).

¹³⁸ § 5.5.

¹³⁹ § 2.3.

However, pooling arrangements can have anticompetitive effects in certain circumstances¹⁴⁰: in particular whether (i) collective price or output restraints do not contribute to an efficient integration of economic activity (“when cross-licensing or pooling arrangements are mechanisms to accomplish naked price fixing or market division, they are subject to challenge under the per se rule”); (ii) settlement agreements combine IP assets of horizontal competitors and have the effect of diminishing competition; (iii) in case of exclusion of competitors, the excluded firms cannot effectively compete in the relevant market and the pool participants collectively possess market power; (iv) pooling arrangements deter research and development, thus retarding innovation.

7. The European perspective.

As underlined before, our analysis is focussed on the American experience, certainly not because European Union is not involved, but mostly because the other side of the Atlantic usually comes earlier and has been developed a less dogmatic approach. The case of patent pools does not seem to overturn the tradition. Until the ‘90s, the common approach of Commission and Court toward IPRs can be described as hostile: they perceived such rights as restricting production and raising prices for the goods at issue, IPRs were seen as both barriers to entry and as a method of threat the common market integration. In short, just a view of the cathedral with no real evaluation of risks limiting incentives to make investment and the adverse impact on innovation.

It is impossible to recall here the various doctrines developed by European courts and institutions to prevent the use of IPRs to partition the market¹⁴¹; for our needs, it is sufficient to remind that in 1996 the Commission adopted a block exemption for the transfer of technology agreements under Article 81(3) of the Treaty¹⁴², which include licensing of pure patents, pure know-how, or both, even if there were ancillary provisions relating to trademarks or other IPRs (hereinafter

¹⁴⁰ § 5.5.

¹⁴¹ For a fast review, see V. KORAH, *The Interface Between Intellectual Property and Antitrust: The European Experience*, 69 *Antitrust L. J.* 801 (2002).

¹⁴² Collecting societies are evaluated as undertakings within the meaning of Article 81(1) of the Treaty because they participate in the commercial exchange of services and are engaged in the exercise of economic activities: an arrangement entered into by the collecting societies is therefore an agreement between undertakings within the meaning of Article 81(1).

the ‘TTBE’)¹⁴³. Article 5 expressly excludes from the benefit of the block exemption the following types of licensing arrangements: (a) “agreements between members of a patent or know-how pool which relate to the pooled technologies”, except where the parties are subject to no territorial restriction with regard to the manufacture, use or putting on the market of the licensed products or to the use of the pooled technologies; b) cross-licensing arrangements between parties which are “competitors in relation to the products” covered by the licences, except where the parties are subject to no territorial restriction with regard to the manufacture, use or putting on the market of the licensed products or to the use of the licensed technologies.

It is worth noting, however, that article 12 requires the Commission to draw up a report on the operation of the TTBE and to consider whether any changes may be desirable: this report has been recently published including the comments received by third parties, such as industries, associations and authorities¹⁴⁴. Most comments indicated that both the nature and types of licensing arrangements have considerably evolved during recent years, in particular, emphasising how more joint collaborative efforts and more complex licensing arrangements are now required in order to keep pace with the greater complexity of new technologies: thus, the TTBE seems increasingly inadequate to reflect the complexity of modern licensing arrangements, as well as to the uncertainty and ambiguities surrounding the interpretation of certain provisions, since it only covers bilateral licence agreements, while a significant number of more complex arrangements, such as licensing programmes, multilateral pools and licence packages fall outside its scope. The report observed that package-licensing programmes, technology pools and cross-licensing have become more frequent, in view of the proliferation of blocking patents, the creation of new industry standards and the advantages of complementary skills owned by other companies or public research organisations; further, it recognized that multiparty licences,

¹⁴³ Commission Regulation 240/96 on the Application of Article 85(3) to Certain Categories of Technology Transfer Agreements, 1996 O.J. (L 31) 2.

¹⁴⁴ Available at <http://europa.eu.int/comm/competition/antitrust/technology_transfer/en.pdf>. See also CHARLES RIVER ASSOCIATES Ltd., *Report on Multiparty Licensing*, April 22, 2003, prepared for the European Commission and available at <http://europa.eu.int/comm/competition/antitrust/legislation/multiparty_licensing.pdf>

including multilateral pools, may be pro-competitive and efficiency-enhancing when they involve non-competing undertakings, in particular, whether they allow the parties to bring together complementary inputs, reduce transaction costs, clear blocking positions and avoid costly infringement litigation.

Several critics have been levelled against the TTBE, firstly, on the ground that it is unjustified the application of different rules to cross-licensing and bilateral pools and the more severe treatment of the latter¹⁴⁵: in fact, the TTBE covers bilateral technology pools between non-competitors only if the parties are not subject to territorial restrictions, while cross-licensing between non-competitors is exempted even if the parties grant each other exclusive territories. Secondly, cross-licensing and pooling arrangements between competitors are covered by the TTBE if the parties are not subject to any territorial restrictions with regard to the manufacture, use or putting on the market of the licensed products or pooled technologies: in this respect, it has been observed that by establishing this rule the TTBE puts the emphasis on one specific concern (sharing of geographic markets) while it neglects other possible anti-competitive effects (co-ordination of price/output decisions), as well as possible efficiencies (e.g. solving blocking positions).

The report seemed to acknowledge the demand of an in-depth review of the Regulation and the future will tell us if it is still a long way from Chicago to Brussels. However, it is worth underlining that, in the conclusive remarks, the main concern was merely to put the TTBE in line with the reforms concerning vertical and horizontal agreements: not surprisingly, indeed, the options suggested for the future reform went on the same walk of a strong reliance on market definition through the use of dominance thresholds, which are just a way to introduce a presumption of illegality based solely on market share tests, rather than to go through a deeper analysis by balancing procompetitive benefits and anticompetitive harms.

¹⁴⁵ On the need to treat cross-licenses and pools as equivalent for antitrust analysis because their economic analysis is based on similar tools, see P. GRINDLEY, *IP, Cross-licensing and Patent Pool*, testimony before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <<http://www.ftc.gov/opp/intellect/index.htm>>

Good news come from a Commission's decision clearing one-stop agreements for the licensing of TV and radio music via the Internet. In *IFPI* (International Federation of the Phonographic Industry) - the first decision by the Commission concerning the collective management and licensing of copyright for the purposes of commercial exploitation of musical works on the Internet- the Commission granted an antitrust exemption to a system of simulcasting, which is intended to facilitate the creation of a new category of copyright licence with a multi-territorial scope, taking into consideration the global reach of the Internet¹⁴⁶: under this mechanism, broadcasters can get a single one-stop shop licence from royalty collecting agencies to cover Internet broadcasts across most of the 18-nation European Economic Area (EEA), which groups the 15 EU states plus Norway, Iceland and Liechtenstein - but the agreement also includes societies from Central and Eastern Europe, Asia, South America, Australia and New Zealand-, replacing the old system where they need to secure a license from each national copyright administration and collecting societies. According to the Commission, insofar as the agreement –which not involves authors' rights, which will be collected by different agencies- creates a new product that could not be realistically built up without some cooperation among collecting societies, it will benefit both consumers and rights-holders, also boosting competition among the societies that collect the royalties on behalf of the music industry notably in terms of the fees they charge: consumers will be able to access their favourite radio and TV music programmes from anywhere in the world and, at the same time, the system ensures that the rights-holders will be properly paid.

The real turning point in the European experience comes up with the recent communication published by the Commission proposing new safe harbour for the licensing of patents and know-how as the result of the previous report adopted for the evaluation of TTBE. The new approach will come into force in May –the same date as EU enlargement and the introduction of the modernised competition law regime- and is carried out by a draft Regulation and related

¹⁴⁶ Commission decision of 8 october 2002, case no Comp/C2/38.014, in OJ L 107, 30 april 2003, 58.

Guidelines setting out principles for the assessment of technology transfer agreements under Article 81¹⁴⁷.

The Guidelines set out the Commission's views on agreements establishing technology pools, showing how they have been influenced by the American experience. "The competitive risks and the efficiency enhancing potential of technology pools depend to large extent on the relationship between the pooled technologies and their relationship with technologies outside the pool"¹⁴⁸. For this reason it is necessary to make distinctions between technological complements and substitutes, and between essential and non-essential technologies: as a general rule, the Commission considers the inclusion of substitute technologies in a pool as a violation of article 81, whereas, if a pool is composed only of technologies that are essential and therefore complements, the creation of the pool will fall outside irrespective of the market position of the parties¹⁴⁹.

However, cannot be avoided important concerns, mostly arising from some difficulties in the interpretation of the text. Significant is the paragraph 211: "from a legal point of view, two technologies are also complements when they are in a two-way blocking positions. *However, as a general rule the Commission will not consider that the creation of a pool is required to unblock the blocking positions. ... the parties can solve the blocking position by granting a cross license or concluding a non-assertion agreement that allows them both to exploit their respective technologies independently. The Commission will therefore treat technology pools comprising blocking patents in the same way as technology pools comprising substitutes*".

¹⁴⁷ The draft texts are published in OJ C 235, 1 october 2003, 10, and are also available in <http://europa.eu.int/comm/competition/general_info/consultation.html>. It is worth noting that pools are regulated only by the Guidelines, whereas the draft Regulation applies to provisions contained into licensing agreements between the pool and third party licensees.

¹⁴⁸ § 207.

¹⁴⁹ § 213. Since the way in which a pool is created and organised provide assurances to the effect that the arrangement is pro-competitive, in the assessment of a pool the Commission will, *inter alia*, take into account the following factors: a) the extent to which independent experts are involved and how they are selected; b) the arrangements for exchanging sensitive information among the parties; c) the dispute resolution mechanism; d) where the pool has a strong position on the market, royalties and other licensing terms should be non discriminatori and licenses should be non exclusive; e) licensors and licensees must be free to develop competing products and standards and must be free to license outside the pool; f) grant back obligations should be non exclusive and limited to developments that are essential to the use of the pooled technologies.

The confusion is evident. The Guidelines states at the same time that blocking patents are complements, but will be considered as substitutes, on the wrong assumption that the creation of a pool is not required to unblock the blocking positions. In addition, the reasoning is surprising: saying that the parties can solve the blocking position by granting a cross license or concluding a non-assertion agreement, the Commission shows to have not understand the difference between cross licensing and patent pools.

8. The challenge of technology pools.

The antitrust policy towards patent pools is driven today by three U.S. Department of Justice Business Review Letters (hereinafter ‘Letters’) regarding a MPEG and two DVD patent pools, which moreover reveals the link with the issue of standard setting¹⁵⁰: the first was proposed by eight electronics firms and Columbia University and concerned a video data storage compression standard; the second and the third were respectively proposed by Philips-Sony-Pioneer and Toshiba-Time Warner-Hitachi-JVC-Matsushita-Mitsubishi, and both involved a pool of patents necessary to comply with the standards for the production of DVDs and DVD players. A fourth important case was managed by the Federal Trade Commission and regarded a pool of patents related to photorefractive keratectomy (PRK), a form of eye surgery used to correct vision disorders. In addition, other insights come from the recent antitrust clearance granted by both U.S. DoJ and European Commission to a third generation (3G) mobile patent platform.

In forming a patent pool, the proposed approach seems to show up a strong accordance with the economic theory insights valuing as a key point the distinction between blocking or essential patents, which properly belong in the

¹⁵⁰ See D.G. RAYMOND, *Benefits and Risks of Patent Pooling for Standard-Setting Organizations*, 16 *Antitrust* 41 (2002). According to J.J. KULBASKI, *Comments On Patent Pools and Standards*, testimony before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <<http://www.ftc.gov/opp/intellect/index.htm>>, patent pools are not necessarily well suited for all areas of technology: they are very well suited to those technologies where there exists a well-defined standard, because where there is not a standard or other document defining what is required to implement a compliant product, it may become challenging to determine what patents should be included in the patent pool (i.e., essential patents). See also M. DOLMANS, *Standards for Standards*, 26 *Fordham Int'l L. J.* 163 (2002) discussing the application of European competition law to standardization activities and associated IPRs policies and licensing arrangements.

pool, and substitute or rival patents, which may need to remain separate: the inclusion of truly complementary patents in a pool is desirable and pro-competitive, but assembly of substitute or rival patents in a pool can eliminate competition and lead to elevated license fees. This leads to some key analytical issues in examining patent pools: (i) the relationship of the patents to each other (are the patents substitutes or complements?¹⁵¹); (ii) the relationship of the members to each other; (iii) the degree of exclusivity (is pool license available to all? Alternatives to licensing through the pool?); (iv) the potential effect on licensee innovation¹⁵².

MPEG-2

The MPEG-2 patent pool has been described as a successful model and an example of how pools should be organized to meet the antitrust policy requirements. MPEG stands for Motion Picture Entertainment Group and is a protocol for compressing and transmitting digitalized audio and video signals: while the first generation of the technology was useful only for storage on video CDs, the MPEG-2 shows an increased compression power allowing considerable savings in the amount of data, thus becoming eligible as a standard for DVD, cable, satellite and broadcast television. Originally the pool was created by nine companies (Fujitsu, General Instrument, Lucent, Matsushita, Mitsubishi, Philips, Scientific-Atlanta, Sony, and Columbia University) which owned 27 patents that were –most, but not all- essential for the MPEG-2 Technology.

Under the agreement, the patent holders licensed their MPEG-2 patents to MPEG LA, a limited liability company operating as an agent, which offered a package license of the patent portfolio to third parties whose products and services implemented the MPEG-2 standard and was also responsible for collecting royalties, which were distributed according to a per-patent formula.

¹⁵¹ See J. LERNER – J. TIROLE, *Efficient Patent Pools*, NBER Working Paper n. 9135 (2002), in <<http://www.nber.org/papers/w9175>>. The Authors analyze the strategic incentives to form a pool in the presence of current and future innovations that either compete with or are complements to the patents in the pool: they build a model that allows the full range between the two polar cases of perfectly substitutable and perfectly complementary patents, noting that, except in the two polar cases, whether patents are substitutes or complements depends on the level of licensing fees.

¹⁵² C.J. KELLY, *Patent Pools and Antitrust Enforcement*, testimony before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <<http://www.ftc.gov/opp/intellect/index.htm>>

The structure showed the following characteristics: (i) the pool included only complementary patents, each of which was deemed essential to compliance with the standard; (ii) licenses were nonexclusive, since each covered patent would remain available on individual basis from its individual licensor; (iii) the group would employ an independent expert to determine whether a patent was essential and could be included in the pool; (iv) an equal access would be guaranteed, since the portfolio would be offered on the same terms and conditions to all licensees; (v) a grantback provision required the licensee to grant any of the portfolio licensees a nonexclusive license, on fair and reasonable terms, on any essential patent it had the right to license; (vi) another provision, called partial termination, allowed individual member to ‘opt out’ of the pool with respect to a single licensee if he brought a lawsuit or other proceeding against the licensor for infringement of a licensee patent and if he refused to grant the licensor a license under that patent on fair and reasonable terms and conditions.

On June 26, 1997, the DoJ approved the proposal of the MPEG-2 pool with a Letter by Joel Klein, which is still now one of the most cited reference for the antitrust analysis criteria of pooling¹⁵³. A starting point is an inquiry into the validity of the patents and their relationship to each other: “a licensing scheme premised on invalid or expired intellectual property rights will not withstand antitrust scrutiny. And a patent pool that aggregates competitive technologies and sets a single price for them would raise serious competitive concerns. On the other hand, a combination of complementary intellectual property rights, especially ones that block the application for which they are jointly licensed, can be an efficient and procompetitive method of disseminating those rights to would-be users”.

Therefore, the main critical aspect is the finding of essentiality since only essential patents are eligible for inclusion in the pool: the pooling agreement’s definition of ‘essential’ was noteworthy in that it required that there be no technical alternative to each patent included in the pool and that the pooled patent be useful for MPEG products only in conjunction with each other. Klein also praised the use of an independent expert: “the continuing role of an independent

¹⁵³ U.S. Department of Justice, Antitrust Division, Business Review Letter, June 26, 1997, at <<http://www.usdoj.gov/atr/public/busreview/1170.htm>>

expert to assess essentiality is an especially effective guarantor that the Portfolio patents are complements, not substitutes”; furthermore, the royalties allocation method seemed to create financial incentive to exclude non-essential patents.

About the possible anticompetitive effects of the contemplated agreement, the concerns regard the (i) effect on rivals, (ii) facilitation of collusion and (iii) effect on innovation. In these respects, the DoJ stated there were no significant exclusionary features, since “maverick competitors and upstart industries will have access to the Portfolio on the same terms as all other licensees. The Portfolio license’s ‘most-favored-nation’ clause ensures further against any attempt to discriminate on royalty rates”. No evidence also that the pool was able to facilitate collusion among licensors or licensees in any market, in particular it appeared unlikely that the royalty rates could be used as a device to coordinate the prices of the downstream products, since they were a tiny fraction of the products’ prices. In addition, the pool did not seem likely to inhibit further innovation: members remained free to license outside the standard; licensees were not unreasonably inhibited, since the grantback provision was limited to essential patents, not covering the implementation of the standard or the improvements on the essential patents themselves; finally, the right of partial termination would be of particular concern only whether it was designed to benefit all portfolio licensees –thus functioning as a compulsory grantback-, but in the MPEG case it protected only the licensors.

In short, the pool provided “significant cost savings to Licensors and licensees alike, substantially reducing the time and expense that would otherwise be required to disseminate the rights to each MPEG-2 Essential Patent to each would-be licensee. Moreover, the proposed agreements that will govern the licensing arrangement have features designed to enhance the usual procompetitive effects and mitigate potential anticompetitive dangers”.

DVD

On December 16, 1998, and June 10, 1999, the DoJ cleared two proposals by electronics firms to jointly license patents necessary to make discs and players

that comply with the DVD-Video and DVD-ROM standards¹⁵⁴: the first included 95 disc patents and 116 player patents owned by three firms (Philips, Sony and Pioneer), the second included 29 disc patents and 22 player patents owned by six firms (Toshiba, Time Warner, Hitachi, JVC, Matsushita and Mitsubishi).

The two Letters issued for the DVD pools were quite similar to the MPEG's one, mostly because, as with MPEG-2, the pools grew out of industry standard-setting organizations, again only essential patents were included and an independent expert would be employed to ensure the essentiality; however, the presence of two groups and two separate pools highlighted a main difference, that was the emergence of two-stop shopping, instead of one. Nevertheless DoJ stated that the efficiencies outweighed any risks of competitive harms, recognizing how pools would anyway reduce transaction costs by allowing firms which wanted to manufacture DVD equipment to deal with two pools, instead of the nine different companies that formed them.

In the first pool, on the basis of bilateral agreements with Sony and Pioneer, Philips served as joint licensor and was obliged to grant licenses on essential patents to all interested third parties, in this respect a most favourable condition clause would entitle the licensee to the benefit of any lower royalty Philips granted to another licensee under similar conditions: anyway all three licensors remained free to licence their essential patents independently of the portfolio license. Some concerns arose from the evaluation of essentiality: (i) the agreement established as a criteria for eligible patents the concept of "necessity as a practical matter", which appeared susceptible to subjective interpretation; (ii) the independent expert to hire would be retained by Philips, thus raising scepticism that this structure would ensure a disinterested review of the essentiality. Together with the hiring of an independent expert, the pool employed other technique –just seen in the MPEG case- for limiting strategic behaviour: in particular, a grantback provision obliging licensees to make available to all the members an essential patent at a fair and reasonable royalty; the right granted to Philips, as joint licensor, to terminate a license relates to the grantback obligation;

¹⁵⁴ U.S. Department of Justice, Antitrust Division, Business Review Letter, December 16, 1998, at <<http://www.usdoj.gov/atr/public/busreview/2121.htm>>, and June 10, 1999, at <<http://www.usdoj.gov/atr/public/busreview/2485.htm>>

finally and differently from MPEG-2, royalties were allocated on negotiated basis with a confidential allocation formula among the members.

DoJ concluded that it was reasonable to expect that pool would combine complements, therefore facilitating the licensing of DVD technology, making it available to consumers more quickly and encouraging competition among products, even if the mechanism of expert essentiality evaluation was less independent than MPEG-2 and there were less economic incentive to eject non-essential patents. DoJ also noted that the agreed royalty was sufficient small relative to the total costs of manufacture that it was unlikely to enable collusion and the scope of the grantback was commensurate with that of the pool, covering only essential patents: the provision was “so narrow” that it should not create any disincentive among licensees to innovate, moreover it could limit holdout’s ability to extract a supracompetitive toll from licensees and lower licensees’ costs in assembling the patent rights essential to compliance with the standard.

In the second pool, Toshiba acted as joint licensor and committed to license other members and third parties to make, use and sell DVD products under their present and future essential patents. Let me underline the differences from the previous pooling agreement: (i) patents were defined as essential, and thus eligible for the pool, if they were “necessarily infringed” or there were “no realistic alternative” to them; (ii) the expert would not have an economic affiliation with the members, his compensation would be at the standard hourly rates and each licensor would bear the cost of the review of its patents; (iii) members were obligated to offer patents independently of the pool, including for non-standard applications; (iv) royalties were allocated on per-patent basis and adjusted for age (each licensor’s share was a function of the number of its patents that were infringed and newer patents were weighted more heavily than older ones). Clearing the proposal at issue, DoJ pointed out that, although the reference to the concept of ‘realistic alternative’ for the essentiality introduced a degree of subjectivity into patents’ selection process, it appeared likely that the pool would combine only complementary patents; further, the expert’s independence was more robust than in the Philips pool and the royalty allocation formula gave the

licensors an incentive both to introduce new essential patents in the pool and to eject non-essential ones.

VISX - Summit

In contrast to the DoJ approval of the previous three patent pools, on March 24, 1998, the Federal Trade Commission issued a complaint charging Summit Technology and VISX, the only two firms that market lasers to perform a new, and increasingly popular, vision correcting eye surgery, photorefractive keratectomy (PRK), with price-fixing conspiracy¹⁵⁵.

According to the Commission, the potential demand for PRK is vast, the market is large and growing, since there are approximately 140 million people in the United States with vision problems. In the '80s, several firms began research and development of excimer lasers suitable for use in PRK but the fight to develop and commercialize this revolutionary surgical procedure technology has frequently flowed into litigation; by the '90s, Summit Technology and VISX took the lead patenting various aspects of the industry, classifiable for simplicity as 'method' patents covering the surgical methods used to perform PRK, and 'apparatus' patents which covered the excimer laser hardware. To avoid possible reciprocal infringements, in June of 1992 they announced the formation of a patent pool, called Pillar Point Partnership (PPP), to which assign their PRK and PRK-related patents. According to the pooling agreement, each of the partners would be permitted to sub-license the patent portfolio to purchasers of their respective lasers and the participants were required to pay a \$250 per-procedure fee (PPF) into the pool each time a PRK procedure was performed: the fee would be distributed back to the partners, 45% to Summit and 55% to VISX, reflecting the fact that VISX had contributed a broader patent portfolio to the pool. Moreover, by the terms of a 'single-firm veto' provision, PPP was authorized to license any or all of the pooled patents to third-party licensees, but no third-party licenses could be entered into unless both Summit and VISX agreed, and, at the same time, Summit or VISX could not license unilaterally to third parties any of the patents they had contributed to the pool.

¹⁵⁵ The documents related to the different phases of Ftc enforcement action are available at <<http://www.ftc.gov/os/adjpro/d9286/index.htm>>

The Ftc challenged the pool characterizing it as “price fixing under the guise of a patent cross- licensing arrangement”: according to the Commission, both Summit and VISX conspired to restrain commerce and created or maintained a monopoly by raising or fixing prices that physicians must pay to perform PRK procedures; raising the cost or preventing entry into the sale or leasing of PRK equipment; and by depriving consumers of the benefits of competition in the sale and leasing of PRK equipment. The pooling agreement, indeed, eliminated ongoing competition between Summit and VISX that otherwise would have existed; further, its exclusive nature restricted other firms’ access to PRK technology and, finally, the fee provisions worked as a price floor raising significantly the prices that consumers paid for PRK procedures. While recognizing the pool reduced the uncertainty and expense associated with patent litigation, the Ftc reasoned that Summit and VISX could have entered “simple licenses or cross-licenses that did not dictate prices to users or restrict entry,” and “patent infringement would not have precluded either firm from coming to market”.

“Instead of competing with each other, the firms placed their competing patents in a patent pool and share the proceeds each and every time a Summit or VISX laser is used”: the Ftc followed the same principles employed by the DoJ, namely to permit the assembly of complements or essential patents, but not rival ones, into a pool. Thus, the principal issue was whether the two firms would have competed to supply laser vision correction technology absent a license between them: Summit and VISX “could have and would have competed” with one another in the sale or lease of PRK equipment by using their respective patents, licensing them, or both, even “in the absence of” the pooling agreement; they also “would have engaged in competition” with each other in connection with the licensing of technology related to PRK. In addition, the Ftc charged that VISX fraudulently acquired a key patent from the federal patent office, withholding highly material “prior art” that could prove that the claimed invention was not patentable because it was already known to others in the field.

In August 1998, these allegations were settled through a consent order that barred continuation of the pooling arrangement: Summit and VISX would be

prohibited from agreeing to fix the prices they charge for the use of their PRK lasers and patents -including the PPF- and from agreeing to restrict each other's sale or licensing of their PRK lasers and patents; they also would have to give notice of the orders to anyone who requested a license to use any of the pooled patents; moreover, customers who incurred an obligation to pay a PPF during the existence of the pool could stop using the lasers without penalty or continuing obligation.

Although the reasoning was consistent with the economic theory and the analysis was supported by evidence, both the companies involved and some commentators have argued that a pooling agreement is often open to a sort of *Rashomon* views, that is other equally valid interpretations about patents relationship which may yield a different legal outcome¹⁵⁶. We have already underlined that, in the realm of technology licensing, it is not an easy task to define the characteristics of patents relationship: in the Summit-VISX case, looking at the uncertain claims of the patents, the pool maybe considered as necessary and procompetitive because of mutual blocking patents; simply put, if VISX was supposed to have market power and all other firms needed a license, then the VISX patent was a blocking patent, i.e. a complement rather than a substitute. The point is well-explained by Newberg: “the prospects for the Summit/VISX pool turn substantially upon uncertain judgments regarding the scope and validity of the pooled patents. If the Court looked at the Summit pool and saw the resolution of a blocking relationship, the arrangement could be analyzed under the rule of reason following *Standard Oil* or condemned under the *per se* rule following *Line Materials*. If the Court saw an agreement among competitors, comprising 100% of the market, it would be hardpressed to find the single-firm veto and the per procedure fee, on balance, procompetitive. Still, nothing in the case law or current enforcement policy adequately addresses

¹⁵⁶ J.A. NEWBERG, *supra* note 111. See also J.D. PUTNAM, *supra* note 106, and M.H. MORSE, *Cross-Licensing and Patent Pools*, testimony before DoJ-Ftc Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, in <<http://www.ftc.gov/opp/intellect/index.htm>>. Anyway, according to W.J. BAER, *Antitrust Enforcement and High Technology Markets*, remarks before American Bar Association, Sections of Business Law, Litigation, and Tort and Insurance Practice, San Francisco, California, November 12, 1998, <<http://www.ftc.gov/speeches/speech1.htm>>, the *Summit* case shows that it would be a mistake to conclude that antitrust should stay out of the way because the relationship involved intellectual property.

Summit/VISX's *Rashomon* problem; the uncertain economic relationships among technology rights"¹⁵⁷.

3G

On November 2002, following the Japan Fair Trade Commission's earlier approval, the European Commission and the U.S. DoJ have granted clearance of the 3G Patent Platform that is aimed at giving the third generation mobile industry better access to patents¹⁵⁸: the positive approval clears the way to establish five licensing and evaluation structures encompassing the five 3G radio interface technologies defined by the International Telecommunication Union, IMT-2000 framework, the global body responsible for ratifying third generation mobile standards¹⁵⁹.

The principal licensing problems for new technologies are the identification of those patents that are essential for the firm's products or services and the necessity of negotiating with the numerous essential patent holders: the uncertainty about the time involved and the total cost of acquiring licenses prevents a substantial number of companies from implementing new technology and becoming competitors in the relevant industry. If companies can limit the time involved and the negotiating costs, and be assured of fair, reasonable and non-discriminatory royalty rates for the patents necessary to implement the new technology, it is likely that the market will be more competitive. The Platform – including some 19 telecommunications companies, both operators and equipment

¹⁵⁷ J.A. NEWBERG, *supra* note 111. J.D. PUTNAM, *supra* note 106, has highlighted that, after the consent decree which dissolved the pool, VISX's royalty has remained unchanged and both VISX and Summit sued Nidek, a third entrant.

¹⁵⁸ U.S. Department of Justice, Antitrust Division, Business Review Letter, November 12, 2002, at <<http://www.usdoj.gov/atr/public/busreview/200455.htm>>; European Commission, press release IP/02/1651, November 12, 2002, at <http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/02/1651/0/AGED&lg=EN&display=>>

¹⁵⁹ While the industry originally sought a single 3G technical standard, the work under the International Telecommunications Union auspices finally resulted in a third generation standard with five different radio interfaces, which determine how a signal travels over the air from a user's handset to an operator's terrestrial network. The five are: CDMA-2000 (IMT – Multicarrier); W-CDMA (IMT – Direct Spread); TD-CDMA (IMT – Time Code); TDMA-EDGE (IMT – Single Carrier); DECT (Digital Enhanced Cordless Telecommunications, IMT – Frequency Time).

makers¹⁶⁰- is designed to solve some of the patent licensing problems presented by multiple companies owning hundreds of patents essential for the technologies' implementation, by offering services for evaluating, certifying and licensing patents that are technologically essential for the manufacture and operation of 3G mobile communication systems: indeed, it has been estimated that several hundred different patents, among several thousand publicly claimed as essential, will actually be determined to be essential patents in implementing 3G standards, and that probably in excess of 150 firms will be involved in producing 3G compliant products. "The creation of patent platforms for third generation wireless telecommunications technologies can achieve substantial efficiencies in identifying essential patents, reduce hold-up problems that can occur in negotiations with individual licensors, and aid in the rapid introduction of 3G wireless services", commented Charles James, DoJ Antitrust Division head.

As with a patent pool, the analysis addresses (1) whether the proposed Patent Platform is likely to integrate complements and (2) if so, whether the resulting competitive benefits are likely to be outweighed by competitive harm posed by any other aspect of the Platform. The case is interesting because it allows an exception to the strictly complementary rule: as the DoJ noted, "there is however, publicly available evidence that several of the five 3G radio interface technologies have been competing with each other for adoption by wireless system operators and could continue to be the basis for competition among operators once 3G wireless services are on the market. There is a reasonable possibility that the five 3G radio interface technologies will continue to be substitutes for each other, and we would expect the owners of intellectual property rights essential to these technologies to compete, including through price, to persuade operators to adopt their technology".

The main competitive concerns were: (i) that the Platform, originally designed to work across all five radio interface technologies, would restrict competition by restricting royalty rates on patents and (ii) that the Platform would

¹⁶⁰ Alcatel, Cegetel, Electronics and Telecommunications Research Institute Korea (ETRI), France Telecom, Fujitsi, Royal KPN N.V., LG Information and Communications, Matsushita, Mitsubishi Electric, NEC, NTT DoCoMo, Robert Bosch GmbH, Samsung Electronics, Siemens AG, SK Telecom, Sonera Corporation, Sony and Telecom Italia Mobile.

allow the exercise of monopsony power by licensees to lower royalty rates. In order to safeguard competition between potentially competing essential patents for 3G different technologies, the parties have agreed to modify the initial structure of the agreements: the modifications involved the separation of the original proposal's single patent platform into five largely independent platforms, one for each competing 3G wireless technology; the elimination of licensee action within a specific platform on the royalty rate and the maximum cumulative royalty rate; the inclusion of only the essential patents related to a single 3G technology and the avoidance of any improper licensee control; in addition, licensors and licensees would remain free to negotiate independently to license 3G technology rather than using standardised platform arrangements. In short, if a licensor wishes to join one of the five platforms and submits its patents for evaluation of their essentiality to the 3G standards, it is required to make all of its essential patents available under the relevant platform standard licensing terms to licensees that want to avail themselves of those terms. In turn, licensees who accept a standard license agreement from a licensor are required to submit all of their 3G-related patents for evaluation of essentiality, and to make them available under the platform terms if they are found to be essential. But this grant-back obligation is specific to the individual platform concerned and not related to the other four. The licensee is obliged to pay the licensor a royalty based on a standard percentage rate applied to the licensee's net sales of licensed products, but the mechanism does not provide for uniform levels of royalties across the five platforms, so that actual royalties are free to vary based on the decisions of the licensors who are members of each platform.

The DoJ Business Review Letter noted the differences from prior patent pooling arrangements that bundled all complementary patents whether the licensees wanted the full bundle or not, and concluded: “[I]t appears likely that the Platform arrangements described are not likely to impede competition and could offer some integrative efficiencies for users of the various 3G interface standards... The proposed arrangement is likely to facilitate the availability of complementary patent rights related to each of the five 3G standards, and could lower search and transaction costs for manufacturers and service providers who

need access to these patent rights in order to provide 3G products and services”. At the same time, given the significant number of essential patents that will remain outside of the arrangement, the European Commission concluded that it appears unlikely that the notified agreements will be capable of restricting the competitive offer of 3G mobile technologies and 3G services to consumers.

To sum up, the review of the case law sets forth a detailed guidelines, a sort of road map to minimize antitrust concerns, according to: (i) the patents in the pool must be valid and not expired; (ii) complementarity drives the outcome, most of the patents must be complements and therefore essential: for this reason, the pooling agreement must provide a robust and objective criterion for the definition of essentiality, further an independent expert should be used to determine whether a patent is essential to complement technologies in the pool; (iii) about the risk of foreclosing competition in related markets, especially by disadvantaging competitors in downstream product markets, (a) the members must not collude on prices outside the scope of the pool, moreover (b) it is necessary to ensure royalties are small relative to the total cost of manufacturing downstream products, (c) to license on a nondiscriminatory basis to all interested person; (d) competitively sensitive information of licensees should not be available to personnel of licensors who are responsible for competing with one or more licensees; (e) finally, although a pool need not to be open to all who would like to join, exclusivity provision should be avoided when excluded firms cannot effectively compete in the relevant products market and the pool members collectively possess market power; (iv) regarding the effect on innovation and the concerns related to standard-dependent industries, the ability to license outside the pool is very important, thus (a) both licensors and licensees should be free to develop competing products and standards, (b) grantback provisions should be nonexclusive, limited to the scope of the license grant, and should permit a licensee to collect a reasonable royalty for any license it grants.

9. Conclusion.

According to the literature, the basic foundation for IP protection is that granting excludability is a way to enhance innovation, providing an incentive for

productive investment, limiting free riding and spillover benefits. At the same time, the growing importance of intangible property and the development of new technologies come together with the current trend of covering by IP protection an increasingly broader area of resources: what makes essentially new the so-called information technology era is its dependence on products and services that are the embodiment of ideas. If a large amount of society's wealth is tied up in intangible assets, the central goal is to provide an economic tool for promoting public access to new technologies and the central concern regards how many IPRs we want to confer. Heller and Eisenberg showed up that the transition from commons to privatization generates a situation in which too many property rights are owned by too many parties, a spiral of overlapping IPRs in the hands of different owners, with the consequence to obstruct future innovation: the tragedy of the anticommons describes the fear that the patent right to exclude will cause technologies to be underused.

The need to coordinate various owners, overcoming transaction costs, strategic behaviours and cognitive biases, supports the rising diffusion of collective rights organizations, a myriad of formal and informal institutions designed to regularize technology transactions and break relational bottlenecks: they include the patent pooling, that is the arrangement among multiple patent holders to aggregate their patents making them available to each member.

Even if pooling may enhance static and dynamic efficiency by integrating complementary technologies, reducing transaction costs, clearing blocking positions and avoiding costly infringement litigation, at the same time it may be a way to conspire to suppress competition. Thus, antitrust authorities have come closer to a rule of reason analysis, namely a balanced approach able to weigh procompetitive benefits and anticompetitive effects, by addressing whether the proposed licensing program is likely to integrate complementary rights and, if so, whether the result competitive benefits are likely to be outweighed by competitive harms posed by other aspects of the program.

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