MIPLC Studies 10

Monica Armillotta

Technology Pooling Licensing Agreements: Promoting Patent Access Through Collaborative IP Mechanisms

Nomos

MIPLC Munich Intellectual Property Law Center Augsburg München Washington DC

MIPLC Studies
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Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available in the Internet at http://dnb.d-nb.de .

Zugl.: München, Univ., Diss., 2010

ISBN 978-3-8329-5976-0

D 19

1. Auflage 2010

Dedication

To My Love

&

To My Angel

Acknowledgements

My fondest thanks are for my supervisor, Prof. Dr. Dres. h.c. Joseph Straus, for having believed in me by offering me the chance of attaining a doctoral degree, in the first place, and for dedicating his time and experience into reviewing my work, which has greatly benefited from his comprehensive and constructive suggestions.

I would also like to convey my sincerest thanks both to Prof. Dr. Michael Lehmann, for his appreciative second report, and Prof. Dr. Dr. h.c. mult. Gerhard Schricker, for having attended to my oral exam.

I also owe my deepest thanks to the Munich Intellectual Property Law Center (MIPLC) for providing me with a scholarship award to sustain my doctoral research endeavours. In fact prior to pursuing my Ph.D, I had the good fortune of attending the MIPLC's LL.M. program, which moved me into exploring more in depth the challenging domains of IP and competition law.

In the context of the MIPLC, I would like to dedicate a very special note of thanks to Prof. Martin J. Adelman and Honourable Chief Judge Randall R. Rader, for their inspiring feedback on the US patent law's system and their lasting friendly support all along my academic and professional endeavours.

I would also like to express my true gratitude to the Max Planck Institute for Intellectual Property, Competition and Tax Law for offering exceptional research facilities and for the friendly support I have always received during my stay, and to the Law Faculty of the Ludwig-Maximilians-Universität München (LMU), for welcoming me in their doctoral program. I felt truly privileged to be part of such a great and stimulating academic environment.

Furthermore I would like to express my sincerest gratitude to the editors of the MIPLC Book Series for the honour of having retained my work for publication, as well as to the Nomos's staff, for the extremely cooperative technical and substantial support.

A particular thanks goes also to my friend and colleague Dr. Kristina Janušauskaitė for all her good and practical advices on the journey we shared towards our doctoral degree.

Finally my most deeply felt gratitude goes to my best friend and companion, for his endless patience, encouragement and selfless support all along the way. It is with his love and dedication that this work has been accomplished.

August 2010
Monica Armillotta

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Acronyms and Abbreviations

3G	3rd Generation of mobile phone standards
3G3P	Third Generation Patent Platform Partnership
AACC	American Association for Clinical Chemistry
AG	Aktiengesellschaft
AIDS	Acquired Immunodeficiency Syndrome
AIPPI	American Intellectual Property Association
AIPPI	International Association for the Protection of Industrial Property
ANSI	American National Standards Institute
APS	Advanced Photographic System
Art.	Article
ASCAP	American Society of Composers, Authors and Publishers
AT&T	American Telephone and Telegraph
Aug.	August
B2B	Business-to-Business
B2C	Business-to-Consumer
BBF	BioBricks Foundation
BCCA	British Columbia Cancer Agency
BCH	Biosafety Clearing-House
BGH	Bundesgerichtshof (German Federal Supreme Court)
BIOS	Biological Innovation for Open Society
BiOS	Biological Open Source
Biotech.	Biotechnology
BNI	Bernhardt-Nocht institute
CAFC	Court of Appeals for the Federal Circuit
CAMBIA	Centre for the Application of Molecular Biology to International Agriculture
CASRIP	Center for Advanced Study & Research on Intellectual Property
CBD	Convention on Biological Diversity
CC	Creative Commons
CD	Compact Disc
CDC	Centres for Disease Control and Prevention
CEMI	Chair of Economics and Management of Innovation
CEO	Chief Executive Officer
Cf.	Confer, compare
CIER	Centrum Voor Intellectueel Eigendomsrecht

CISAC	International Confederation of Societies of Authors and Composers
Co.	Company
COM	Communities
Contra	In contrast, in opposition
Corp.	Corporation
CPTech	Consumer Project on Technology
Dec.	December
DG	Directorate-General
DNA	Deoxyribonucleic Acid
DOE	Department of Energy
DOJ	Department of Justice
Dr.	Doctor
DRCSC	Development Research Communication & Services Centre
DRUID	Danish research Unit for Industrial Dynamics
DVD	Digital Versatile Disc
EC	European Commission
EC Treaty	Treaty Establishing the European Community
ECN	European Competition Network
ECR	European Commission Review
ed.	Edition
EEA	European Economic Area
EEC	European Economic Community
EG	Europäische Gemeinschaft
EIA	Electronic Industries Alliance
EICTA	European Information & Communications Technology Industry Association
EMC	Erasmus Medical Centre
EPC	European Patent Convention
EPO	European Patent Office
Esq.	Esquire
et al.	et alii, and others
et seq.	et sequens, and following
ETH	Swiss Federal Institute of Technology
ETSI	European Telecommunications Standards Institute
EU	European Union
EUPACO	European Patent Conference
FAO	Food and Agriculture Organization
Feb.	February
fn.	Footnote
FRAND	Fair, Reasonable And Non-Discriminatory
FTC	Federal Trade Commission

GAAC	German-American Academic Council Foundation
GBS	Global Bio-Collecting Society
GM	Genetically Modified
GmbH	Gesellschaft mit beschränkter Haftung
GMO	Genetically Modified Organisms
GPL	General Public License
GRUR	Gewerblicher Rechtsschutz und Urheberrecht
HA	Hemaglutinin
HapMap	Haplotype Map
HGP	Human Genome Project
HIV	Human Immunodeficiency Virus
HKU	Hong Kong University
HNPCC	Hereditary Non-Polyposis Colorectal Cancer
HUGO	Human Genome Organization
i.a.	inter alia, among other
i.e.	id est, that is, namely
IBM	International Business Machines Corporation
ICABR	International Consortium on Agricultural Biotechnology Research
ICTSD	International Centre for Trade and Sustainable Development
id.	idem, the same
IEC	International Electro-technical Commission
IEC	International Engineering Consortium
IEEE	Institute of Electrical and Electronics Engineers
IEEE-SA	Institute of Electrical and Electronics Engineers Standards Association
IET	Institution of Engineering and Technology
IIC	International Review of Intellectual Property and Competition Law
IIP	Institute of Intellectual Property
IMT	International Mobile Telecommunications
Inc.	Incorporated
IP	Intellectual Property
IP Guidelines	Antitrust Guidelines for the Licensing of Intellectual Property
IPLA	Intellectual Property Lawyers Association
IPR	Intellectual Property Rights
IRRI	International Rice Research Institute
ISAAA	International Service for the Acquisition of Agri-biotech Applications
ISO	International Organization for Standardization
IT	Information Technology
ITU	International Telecommunication Union
IUPAC	International Union of Pure and Applied Chemistry

JAMA	Journal of the American Medical Association
Jan.	January
JASRAC	Japanese Society for Rights of Authors, Composers and Publishers
JPO	Japanese Patent Office
L	Legal
LA	Licensing Agency
lett.	letter
LLP	Limited Liability Partnership
LSU	Louisiana State University
MAA	Manufacturers Airplane Association
MIP	Managing Intellectual Property
MIT	Massachusetts Institute of Technology
MMR	Mismatch-Repair
MPEG	Moving Picture Experts Group
MPEG LA	Moving Picture Experts Group Licensing Administrator
MPI	Max Planck Institute
Mr.	Mister
MTA	Material Transfer Agreement
NA	Neuraminidase
NCAs	National Competition Authorities
NGOs	Non-Governmental Organizations
NHGRI	National Human Genome Research Institute
NICs	National Influenza Centres
NIH	National Institutes of Health
no.	Number
Nov.	November
NY	New York
Oct.	October
OECD	Organisation for Economic Co-operation and Development
OGC	Open Geospatial Consortium
OIE	World Organization for Animal Health
OIN	Open Invention Network
OJ	Official Journal
p.	Page
P2P	Peer-to-Peer
para.	Paragraph
PCT	Patent Cooperation Treaty
PIPRA	Public Intellectual Property Resource for Agriculture
PLC	Public Limited Company
PP	Patent Pool
Prof.	Professor

R&D	Research and Development
RAM	Random Access Memory
RAND	Reasonable And Non-Discriminatory
RCA	Radio Corporation of America
Reg.	Regulation
Rep.	Report
RETMA	Radio Electronics Television Manufacturers Association
RF	Royalty-Free
RMA	Radio Manufacturers Association
ROM	Read-Only Memory
SARS	Severe Acute Respiratory Syndrome
Sect.	Section
Sept.	September
SIPPI	Science and Intellectual Property in the Public Interest
SIRC	Social Issues Research Centre
SLA	Standard License Agreement
SMEs	Small and Medium Size Enterprises
SNPs	Single Nucleotide Polymorphisms
SSO	Standard-Setting Organization
STS	Science and Technology in Society
supra	see above
TGA	Therapeutic Goods Administration
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
TTBE	Technology Transfer Block Exemption
TTBER	Technology Transfer Block Exemption Regulation
UCSF	University of California at San Francisco
UIS	UNESCO Institute for Statistics
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund
US	United States
USA	United States of America
USC	United States Code
USD	United States Dollars
USPTO	United States Patent and Trademark Office
v.	versus, against
VAD	Vitamin A Deficiency
VCR	Videocassette Recorders

vol.	Volume
W3C	World Wide Web Consortium
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Chapter 1 Introduction: Putting Patent Pools into Perspective

Patent pools are essentially agreements where different patent holders "pool" together, i.e. assemble, their respective technologies in order to license them as a unique "package" to third parties.[1] Nowadays, in response to the globalisation of technologies and more severe conditions of competition, resulting in a faster pace of innovation also at an international level, technology pools have increasingly gained relevance as successful cooperative IP licensing models.[2]

Reflecting the importance won by such practices, the purpose of this contribution is to outline the defining features and the strategic considerations underlying the establishment of patent pools, both in a legal and empirical context, in order to identify the best conditions for such cooperative practices to prosper in a competitive setting, with a view to cultivating innovation.

In this respect, attention will be brought both to the internal organizational framework adopted, with regard to the particular nature of the technologies involved, and on the legislative treatment that patent pools have been reserved in different jurisdictions, with particular attention to the EU and US systems,[3] in a global perspective.

In fact, there are many questions still to be answered, and correspondingly many new fields of application in which the successful implementation of patent pools still needs to be explored. However, within the scope of this research project, the present contribution hopes to shed at least some light on and raise interest in such collaborative IP mechanisms and their goal to promote technology access.

1 Taking the European system as our standpoint and referring to the legislative interpretation adopted by the Commission Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements, Technology pools are defined as: "arrangements whereby two or more parties assemble a package of technology which is licensed not only to contributors to the pool but also to third parties", in O.J. C 101, 27/04/2004.

2 For a contextual analysis picturing patent pools in a wider policy context, see also: Ullrich H., "Patent Pools – Policy and Problems", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 139 *et seq.*

3 The legal and empirical analysis of patent pools within the Japanese system, on the other hand, has constituted the theme of a separate dissertation by this author, pursuant to a research invitation program sponsored by the Japanese Patent Office (JPO) at the Institute of Intellectual Property (IIP) in Tokyo, between May and August 2008. In this respect, see: Armillotta M., "Japanese Guidelines on Standardization and Patent Pools Arrangements: Practical and Legal Considerations under the Current Antimonopoly Act – A Global Perspective", Institute of Intellectual Property, Book Series, October 2008.

A. Promoting Patent Access through Collaborative IP Mechanisms: Encountered Problems and Desired Outcomes

I. Finding a Way Through the "Patent Thicket"

This study deals primarily with patent pools, as a type of collaborative IP model, to show how and under which conditions - bearing in mind antitrust concerns in the framework of the main western systems under consideration - collective licensing schemes could be effectively implemented to promote access to patented technologies, eventually fostering scientific and economic progress. Therefore, our practical aim is to illustrate how patent rights can be exploited to forge sustainable partnerships, extracting value from collaboration and sharing.

In these premises, in order to justify the relevance of this contribution it is important to outline the actual problem to be dealt with, as that will provide the starting platform on which to build a constructive solution, as supported and further developed at the core of this dissertation. In fact, we believe that every problem, if not isolated, but instead considered in its concrete context, can be seen as an input for improvement.

Now, the observation of our economic and social environment leads us to a factual evidence: nowadays technologies have become more and more complex. Indeed, competitive pressure for interoperability, increased functionality and improved product performance are to a great extent driven by a growing consumers' demand.[4] From the side of the consumers to the one of the producers, this pressure leads to an urgent need for different patents, which are typically held by multiple right holders and which are simultaneously needed in order to develop new products based on complex technologies.

Under a legal angle, we can assist in these latest years in a big "explosion" of patent awards, reflecting a more widespread recognition of the fundamental importance intellectual property rights have assumed in our "knowledge-based society". From an international perspective, the strong increasing trend recently registered in patent applications follows the establishment of the World Trade Organization (WTO) in 1995 and the simultaneous coming into force of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS),[5] which made a more exten-

4 The economic pressure to resolve blocking patent positions and extract value from patents is thoroughly analyzed by Haller M. and Palim M., "The Rise and Rise of Patent Pools", Intellectual Asset Management Magazine, October/November 2005, Issue 14, p. 9 *et seq*.

5 The Agreement on Trade-related Aspects of Intellectual Property Rights (hereinafter TRIPS) has been concluded under the general umbrella of the WTO Agreement, establishing the World Trade Organization, adopted at Marrakech in April 1994 (hereinafter WTO). The TRIPS constitutes indeed Annex 1 C of the WTO. Within part. II of TRIPs, on the "Standards Concerning the Availability, Scope and Use of Intellectual Property Rights", Section 5 is dedicated to "Patents". A full version of the TRIPS is available at: http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm

sive protection of IP rights an actual, although still expensive, possibility.[6] Besides, the increasing stream of applicants to patent offices is also a result of the unleashed creative potential of great nations, such as China, India, Russia and also Japan, which has been long restrained under the former regimes.[7]

Indeed, empirical data point to a growing confidence also in Japan's and China's economies, with Japanese inventors filing more than twice as many patent applications in 2005 as their US colleagues, and with China ranking as the fourth biggest patenting nation in the world. In fact, in 2005 statistics from the World Intellectual Property Organization (WIPO) revealed a significant yearly increase in patent applications world-wide, in particular accounting for 32.9% in China, 14.8% in the Republic of Korea, 9.5% in the United States, 6.8% in Russia and 4.1% in the European Patent Office, to quote just some telling figures.[8]

The most extreme case is represented by China, registering, within the time-span from 1995 to 2005, a 834% increment for domestic filings and 819% for non-domestic ones. Besides, the statistics for Japan were also symptomatic: whereas the rise in residents' applications was constant at about 1% per year, the surge of filings from abroad by 69% is representative of the domestic impact pursuant to the abolishment of the former trade barriers with the outside and the corresponding opening of the Japanese market.[9]

Just to illustrate this figures with some concrete numbers:[10] Japanese inventors applied for 300,623 patents in 2005 compared to 149,936 patents filed by US applicants. China topped the 32,521 patents submitted by tech-heavy South Korea with 40,821 applications. Japan and the US are in fact the two top countries, followed by Germany, where 47,651 patents were submitted. China is fourth-ranked, followed by South Korea in fifth place. Next come Russian inventors with 17,384 submitted patents, then French inventors with 11,394 patents and the UK with 10,378 patents. Taiwan is in ninth place with 4,973 patents filed, followed by Italy with 3,724 patents.[11]

6 For an engaged discussion on the impact of TRIPS on competition, see: Drexl J., "Intellectual Property and Competition: Sketching a Competition-Oriented Reform of TRIPS", In: Bakardjieva Engelbrekt, Antonina / Ulf Bernitz, Bengt Domej, Annette Kur, Per Jonas Nordell ed.: Festkrift Marianne Levin. Stockholm, Norstedts Juridik, 2008, p. 261 *et seq.*

7 The current scenario of the rise in patent applications, and its deeper underling economic and legal grounds, has been effectively depicted, most recently, by: Straus J., "Is There a Global Warming of Patents", The Journal of World Intellectual Property, vol. 11, no. 1, p. 58 *et seq.*

8 See: World Intellectual Property Organization (hereinafter WIPO), "Patent Report - Statistics on Worldwide Patent Activities", Geneva 2007, figure B. 3, p. 12, available at: http://www.wipo.int/freepublications/en/patents/931/wipo_pub_931.pdf

9 Such figures are reported and commented in: Straus J., *supra*, fn. 7, p. 59-60.

10 From: "Patent fever grabs Japanese and Chinese inventors", Managing Intellectual Property Magazine, Weekly News - January 2006.

11 For a supporting analytical background, see: UNESCO Institute for Statistics (UIS), "What do Biometric Indicators Tell Us About World Scientific Output?", UIS Bulletin on Science and Technology Statistics, Sept. 2005, vol. 2, p. 1 *et seq.*

This "rush" to secure patent grants entails that it has become increasingly hard to innovate without infringing on prior IP rights detained by different holders, given the presence of partly overlapping patents, thereby figuratively treading on each other's feet. This scenario has been stigmatised in the patent literature as the one of the so-called "blocking patents", leading to the compelling metaphor of a "patent thicket".[12] The ensuing problem that needs to be faced is that, as might be expected, when confronted with litigation companies or, even more, individuals are more "vulnerable", thus being more likely to accept and conclude less favourable and, depending on the other party's "force of persuasion", even quite inequitable deals. This is due to the threat of the alternative of having to face litigation,[13] which would lead on a lengthy and costly path with an uncertain end.

Alongside the registered proliferation of IP rights, another discernable trend in IP has been the expansion of licensing activities. In this respect, it has been reported that the growth of royalties and revenues from patent licenses collected worldwide amounted to almost 80 billion US dollars in the year 2000 alone, about eight times higher than the respective figure registered in 1983.[14] Confirming the same tendency, substantial licensing statistic were reported also in a subsequent study based on a survey of about 500 firms that concluded licenses in the US and Canada in 2004: in total, more than 14 billion US dollars of in-licensing revenues were accounted.[15] As far as Europe is concerned, similarly notable figures were registered: statistical results showed that on average 10% of all patents were licensed by their holders.[16]

In this respect, looking at the current dynamics of our market, a wide-ranging survey conducted in 2006 with executives across Europe revealed that companies are becoming more aware of the strategic importance of their IP rights. The identified challenge for undertakings is therefore to align their business and patent licensing tactics more closely. As it has been determined, this involves the recognized need of building stronger IP portfolios in order to gain business and technological edge, by collaborating with other firms so that innovative processes may reach the market in a more piercing way.[17]

12 Shapiro C., "Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standards-Setting", University of California at Berkeley, March 2001, available at: http://www.haas.berkeley.edu/~shapiro/thicket.pdf

13 For an interesting overview on the scenario of patent litigation in Europe, see: Straus J., "Patent Litigation in Europe - A Glimmer of Hope? Present Status and Future Perspectives", Washington University Journal of Law and Policy, 2000, p. 403 *et seq*.

14 Athreye S., "Creating Competition? Globalization and the Emergence of New Technology Producers", Research Policy, 2007, vol. 36, p. 209 *et seq*.

15 Razgaitis R., "US / Canadian Licensing in 2004: Survey Results", Les Nouvelles, 2005, vol. 35, p. 145 *et seq*.

16 Giuri P. *et al.*, "Inventors and Invention Processes in Europe", Survey Results, Research Policy, 2007, vol. 36, p. 1107 *et seq*

17 The survey was conducted in September and October 2006 and involved overall 405 senior executives from across Europe. For details, see Tyrrell P., "The Value of Knowledge: European Firms and the Intellectual Property Challenge", Economist Intelligence Unit White Pa-

All these data point to highly profitable "markets for technology",[18] where innovations are traded, thereby opening the way for downstream dissemination of IP. Accordingly, the registered rising trends both in patent registrations and licensing activities are seen as positive indicators of innovative growth, representing driving factors of economic progress. However, the potential for such technology markets is still not fully utilized, since in industrial sectors characterized by particularly dense and scattered IP rights, resulting in "patent thickets", inefficiencies may arise, imposing additional costs and drags on downstream product developments, thereby obstructing the way for innovation.[19]

Within this perspective, this contribution is dedicated to exploring strategic ways in which the encountered costs may be reduced by facilitating access to IP rights, so that markets for technologies can function more efficiently and their actual potential can be unveiled. In this respect, this research is going to focus on voluntary business schemes, operating through free market mechanisms, rather than mandatory regulatory or legal approaches, such as compulsory licensing or research exemptions. In this context, the models considered are going to encompass multiparty IP licensing strategies, such as patent pools and clearinghouses, imprinted to a collaborative, but still pragmatic spirit.

II. The Solution Offered by Collaborative IP Mechanisms: A Brief Overview

1. Patent Pools

Faced with this situation which is occurring ever more often today**,** "prevention" is certainly better than "cure": in this sense, entering a patent pooling agreement – where competitors, i.e. potential infringers, become contributors, i.e. business partners – at an earlier stage would prevent the "collateral effects" of a patent thicket. Indeed, the terms governing a patent pooling licensing agreement are typically beneficial to all participants, providing for free or low-cost access to all pooled technologies and a fair distribution of the third parties' incoming licensing fees. In the end, right owners can win respective blocking positions by bringing their technologies together, while granting each other access, thereby overcoming the impasse of these

per, January 2007, also available at:
http://graphics.eiu.com/files/ad_pdfs/eiu_EuropeIPR_wp.pdf

18 Arora A. *et al.*, "Licensing the Market for Technology", Journal of Economic Behavior and Organization, 2003, vol. 52, p. 277 *et seq.*

19 For an economic study of patent pools and intellectual property clearinghouses, as systems for promoting efficient access to licensable IP and thereby enhancing a market for technology, see: Aoki R., "Promoting Access to Intellectual Property: Patent Pools, Copyright Collectives, and Clearinghouses", R&D Management, March 2008, vol. 38, issue 2, p. 189 *et seq.*

"blocking patents", as a vital step for maintaining and fostering innovation, which ultimately represents the fuel of our economical and social wealth.

The phenomenon of "pooling" multiple technologies together has accordingly become a common practice of business and has attracted increased - though not yet full - attention, also for its legal implications, as the omnipresent antitrust scrutiny warns.[20] These kinds of licensing agreements gave birth to those relatively new, above-mentioned entities, known as "Patent Pools", which are gradually gaining recognition – and cautious acceptance – also by public authorities, as proven by the significant recent legislative production in this field, of which we will give due account.

However, in order for these premises to provide "the big picture", it is due to mention that patent pools are not the only kind of collaborative IP mechanisms in place to ensure patent access, even if at present they are certainly the most visible and constitute the central point of this contribution, in consideration of the great economic and legal implications that those types of licensing agreements usually engender.

2. Clearinghouses

Clearinghouses are basically managing entities based on the collecting societies' paradigm, as widely established for copyrights, which have recently gained more and more ground also within the patent domain. Specifically, they operate as intermediate bodies between different patent holders and interested third parties to promote future negotiations, according to the scope of their constitutional mandate more or less proactively. In fact, as will be further outlined,[21] the simplest "information clearinghouse" model has already been enhanced on the premises of facilitating access and exchange of relevant data concerning specifically targeted technological sectors, ultimately in order to foster a more direct collaboration among the concerned patent holders.Overall, all the collaborative IP mechanisms that are under consideration here share the common aim of facilitating third parties' access to use a given technology, which once it is patented typically happens by way of licensing. In fact, while on the one hand it is undisputed that a patent is mainly a "negative" right, i.e. the right to exclude others from making, using and exploiting the invention, on the other hand it is believed that the effective value of a patent relies on its "positive" content, i.e. its ability to be employed in the marketplace by competitive

20 For an outlook on patent pools' antitrust issues, see i.a.: Ullrich H., "Patentgemeinschaften", In: Fuchs, A. et al. ‚Wirtschafts- und Privatrecht im Spannungsfeld von Privatautonomie, Wettbewerb und Regulierung - Festschrift für Ulrich Immenga zum 70. Geburtstag. München, 2004, p. 403 *et seq*.

21 For a more detailed overview on clearinghouses, see further: Part V of this contribution on "The Alternative Approach of Clearinghouses: Distinctive Features and Applications in Biotechnology".

operators. Indeed, by allocating his exclusive rights, the patent owner can cash in his own IP by granting licenses on convenient terms.

A smart licensing strategy represents in fact a sustainable way to extract value from patents and is often a more profitable alternative than exploiting the invention alone, since by way of licensing a much wider public can be targeted; besides, that may well facilitate the technology's effective implementation also outside the patentor's main area of activity, where the latter would otherwise not be able to invest relying on his own resources alone.

Therefore, by granting each other licenses, the right holders are likely to speed up technology adoption both by effectively reducing uncertainties regarding respective rights allocation and by avoiding the costly and time-consuming way of litigation thereby preventing even more costly damages to business relationships and reputation often arising from asserting one's patent directly. Indeed, these considerations constitute the basis for the establishment of patent pools, on which, due to the compelling relevance assumed by this phenomenon, we will mainly concentrate our analysis in the first place.

B. Patent Pools as Business Models and Comparison with Alternative Sharing Solutions

Patent pools could be placed at halfway, quite as a "hybrid", between arm's length contracting and full integration, i.e. joint ventures, which have been at the centre of antitrust censorship and calls for a more extensive overall regulation, beyond otherwise fragmental and non-exhaustive approaches, for the benefit of legal certainty and eventually economic efficiency.[22] In fact, patent pools might well represent a viable solution to redress the problem, generally outlined above, of overlapping intellectual property rights, i.e. the so-called "patent thickets", where inventors find it difficult to commercialise new innovations without stepping into each others' feet.

Indeed, the choice of adopting a patent pool model has not only proven to be a viable one, but also to constitute an extremely successful business: a quite recent estimate suggests that in the year 2001 in the United States the revenues generated from sales of devices based in whole or in part on patent pool technologies amounted at least to 100 billion US Dollars.[23]

22 See, in this respect, Lerner J., Strojwas M., Tirole J., "The Design of Patent Pools: The Determinants of Licensing Rules", November 2005, p. 1 *et seq.*, available at: http://www.people.hbs.edu/jlerner/PatPoolEmpiricalPaper.pdf

23 Clarkson G., "Objective Identification of Patent Thickets: A Network Analytic Approach", 2003, p. 7 *et seq.*, available at: http://stiet.si.umich.edu/researchseminar/Fall%202004/Patent%20Thickets%20v3.9.pdf

I. Process Leading to the Establishment of a Patent Pool

While prospective benefits of entering into a technology pooling strategy are very significant, the initial costs of setting up and negotiating a technology pooling agreement may be quite high and must not be underestimated. In fact, all steps in the process of establishing a patent pool, which may be briefly reproduced as follows, involve non-negligible costs:[24]

- A so-called initiator shall monitor the marketplace, possibly with an eye to the new filings at the patent office, in order to signal the upcoming emergence of a "patent thicket" in a given sector. This initiative represents the first necessary step to put the whole mechanism of establishing a patent pool into run.
- Once a particular "patent thicket" has been delimited, the patent and scientific experts shall identify all "essential technologies" within that determined technology field. For the purpose of a patent pool, we call into mind that a technology or a patent is deemed to be "essential" if there are no substitutes for that technology, inside or outside the pool, and the technology in question constitutes a necessary part of the package of technologies for the production of the product or the carrying out of the process to which the pool pertains. This process allows to screen, among all the available technologies, those that will be needed to ensure the pool operational freedom in its activity field, i.e. under the elected technology.
- The next step will be to couple each technology that is identified as "essential" with the corresponding patent holder, who will need to be involved in the pool. This task will be normally carried out by patent experts, who will typically look up at the patent files and database of the relevant granting authority.
- Legal experts will then come into play in setting up an IP working group. They will be responsible, in a first instance, for sending so called "invitation letters" to the identified patent holders to be involved in the pool and, in a second instance, for the setting up of the necessary legal framework to gain a preliminary agreement among the right owners, which will normally be expressed by signing a "letter of intent". This step constitutes the supporting platform on which further negotiations will be carried on and, eventually, a more mature arrangement will accordingly be finalized.
- At this point the targeted patents have not been contributed to the pool yet, since the latter is still to be formally constituted, as the conditions for the accession of the identified right holders have still to be agreed upon by the interested parties. To this purpose, the evaluation of the patents at issue - i.e. the determination of the value to be attached to a given patent, as an "intangible asset" resulting from a combination of financial, business as well as legal factors - plays a fundamen-

24 A pictorial overview of the successive steps in the process of setting up a patent pool, can be found at: Van Overwalle G. *et al.*, "Patent Pools and Diagnostic Testing", TRENDS in Biotechnology, vol. 24, no. 3, 2006, p. 117.

tal role in assessing the "right price" to be paid to the right holder as a consideration for his contribution to the pool, also in terms of subsequent allocation of the corresponding portion of the royalty stream deriving from the third parties' licensing of the pooled technologies. Thus, a well-calibrated patent evaluation will provide the basis for negotiations for the terms and conditions to be agreed on with the interested right holders in view of entering into a technology pool.

- Once a preliminary agreement on the general features of participation into a pool has been reached, a legal expert will be primarily in charge of promoting negotiations to their subsequent stage, which is the eventual establishment of the patent pool consortium itself, for which all terms and conditions have to be finally agreed on by all parties involved, i.e. the patent pool members. The multiparty licensing agreement establishing the consortium is frequently referred to as the "Magna Charta" of the pool, as containing all the essential terms defining the internal collaboration mechanisms and functioning of the newly created entity.
- When the pool is finally established, it may act as a legal person towards third parties and thereby conclude valid licensing contracts through legal representatives. The execution of the patent pooling agreement, over the life of the consortium, will typically involve not only the expertise of numerous licensing attorneys, but also the management and supervision of independent experts in charge of the administration of the pool. The latter provides, as has already been outlined on other occasions, a good recommended guarantee of impartiality and fairness in the operation of the consortium which is mostly well received by competition authorities, thus pending decisively in favour of the pool, in case an antitrust scrutiny occurs.

In order to better understand this relatively new trend in the licensing methods, it may be useful to compare it with more traditional licensing techniques, namely bilateral negotiations.[25]

II. A Step Forward from:

1. Bilateral Negotiations

The key character of bilateral negotiations is their individuality. There is no formal framework and, at the outset, each party shall conduct their patent evaluations independently. Consequently, the two contractual parties directly involved may freely determine, outside any pre-defined scheme, their applicable licensing terms, most importantly those concerning their respectively due royalties and the specific rights

25 Goldstein L., Kearsey B., "Technology Patent Licensing: An International Reference on 21st Century Patent Licensing, Patent Pools and Patent Platforms", ed. Aspatore Books, "A comparison of Licensing Methods", p. 67 *et seq.*

thereby covered. Evidently, this entails higher costs of negotiations, which often involve the individual assessment of highly skilled, independent experts in order to overcome possible divergences arising among the parties, so that the conclusion of the agreement is likely to extend over a longer period. Nevertheless, this is the preferred approach where individualized licensing terms are required, this normally being the case when the underlying technology is quite simple.

A pool represents a step forward when the technologies involved are more complex, and it typically involves the combined contribution of multiple parties. The evaluation of patents deemed to be "essential" within the pool - i.e. covering the patented technologies necessary, in the absence of substitute technologies[26] inside or outside the pool, to carry out the processes or to produce the products to which the pool relates - is typically conducted by an independent person or group expert in the field. The selected patents are licensed within the pool as a package to every licensee, either for free, in consideration for their respective endeavours, or for a standard price. Thus there is normally no flexibility to adapt the licensing terms to individualized circumstances. However, for the same reasons, there is typically a significant saving in transaction costs in the negotiations, both within and outside of the pool, towards third interested licensees. Therefore, the pool may represent a way for licensors to maximize their royalty revenues, while minimizing the necessary costs and efforts during the negotiations, while, in the same time, managing to use essential patents on terms that would allow them to operate effectively.

2. Cross-Licensing Agreements

At this point, this contribution ought to spend still a few more words about some other possible "sharing solutions" for securing access to intellectual property rights. Namely, aside from simple bilateral arrangements, as outlined above, different parties may also enter into cross-licensing agreements, according to which they grant a license to each other for the exploitation of the subject-matter claimed in patents, thus allowing a mutual sharing of the respective rights without a corresponding exchange of license fees, at least up to the equal value of the patents at issue.

The basic difference to patent pools is that those agreements are limited in their scope to the participating parties that simply grant each other rights, without further investing in a common work to commercialise the contributed technology, as a package, to the benefit of third interested licensees operating in the market. In a cross-licensing scheme typically the organisational framework for inter-operation

26 "Substitute Technologies" are defined as such: "When either technology allows the holder to produce the product or carry out the process to which the technologies relate". Conversely: two technologies are considered "Complementary": "When they are both required to produce the product or carry out the process to which the technologies relate", in: Commission Notice - Guidelines on the Application of Article 81 of the EC Treaty to Technology Transfer Agreements, O.J. C 101 , 27 April 2004, Sect. 4 "Technology pools", para. 216.

towards external third parties is thus missing. In other words, simple cross-licensing arrangements between two patent holders, firms or individuals, do not involve any intention of cooperatively engaging in future licensing transactions, but are limited in their scope by the terms of the concluded agreement. Ultimately, cross-licensing solutions, on the one hand, focus merely on reciprocal access to IP rights while patent pools, on the other hand, aim at licensing the contributed technology package to third interested parties, thus taking a step further.

Moreover, although a portfolio cross-license, under which two companies agree to license large blocks of their respective patents to one another, may also provide a partial solution to the problem of overlapping IP rights, removing the need for patent-by-patent licensing, this bilateral licensing scheme is not adequate in case an investor requires licenses to a respective small number of technologies held by a multitude of other firms. In similar cases, patent pools might represent the only suitable solution, as they may generate substantial transaction efficiencies by enabling more right holders to pool their license technologies together and license them, through a joint entity, to third parties.[27] Consequently, pooling agreements, other than cross-licensing, reduce the transaction costs of multiple negotiations, mitigating royalty stacking and hold-up problems[28] that occur when multiple patent holders individually demand royalties from a licensee.[29]

Thus, the greater convenience of one licensing solution as compared to another greatly depends on the concrete business context in which it is deemed to intervene, rather than on merely conceptual legal considerations.

27 US Federal Trade Commission and Department of Justice, "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition" - Chapter 3: "Antitrust Analysis of Portfolio Cross-Licensing Agreements and Patent Pools", Joint Report, April 2007, p. 57 *et seq.*

28 Merges R., "Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations", 84 California Law Review, 1996, vol. 9, p. 1293 *et seq.*: "A hold-out is someone who refuses to agree to a bargain for strategic reasons. For example, if a city government needs to buy five parcels of land from property owners A, B, C, D, and E, E might wait until the other four (A-D) have sold their land. This puts E in the driver's seat in bargaining with the city: E can now charge a very high price—in theory, up to the total amount the city has to spend on the project, minus what was paid to A-D—for his or her land. Since this price will often be more than the average price paid to A-D, and in any event more than the price E could have obtained if he or she were not the last to sell, such a holdout strategy will be rational in many cases". See generally, Calabresi G. *et al.*, "Property Rules, Liability Rules, and Inalienability: One View of the Cathedral", Harvard Law Review, 1972, vol. 1089, p. 1106 *et seq.*

29 Merges R., "Institutions For Intellectual Property Transactions: The Case of Patent Pools", August 1999, in "Expanding the Boundaries of Intellectual Property - Innovation Policy for the Knowledge Society", Oxford University Press, 2001, also available at: http://www.law.berkeley.edu/institutes/bclt/pubs/merges/pools.pdf

C. *Patent Pools and Standards: Endeavors to Promote Access to Standard-Related Patents for Interoperability Purposes*

I. Overlaps and Demarcation between Patent Pools and Standard-Setting Organizations

In order to confute the too often generalized association between patent pools and standard-setting organizations, it shall be observed that, as a matter of fact, the scenario is much more heterogeneous and, while there might certainly be areas of overlaps, the actual demarcations in the scope and range of activities of such practices shall not be overlooked. On the one hand, standardization bodies,[30] i.e. institutions purposefully committed at the development of standards, which can be formally constituted at national, trans-national[31] and international levels,[32] tend to closely cooperate, rather than to fiercely compete with each other, both by seeking to define boundaries between their respective fields of activities and, in principle, by operating in a hierarchical fashion, as far as their geographical scope is concerned. On the other hand, a patent pool does not necessarily have to support a standard at all, or it may even, under some circumstances, encompass partly substitute specifications, thus not necessarily identifying itself with a particular technological solution; then again, different patent pools, each ideally implementing and commercialising one given technology of which it shall detain all rights, may eventually support alternative standards.

1. Interface / Interoperability Standards

So-called "interface or interoperability standards" detail how products, also from different manufacturers, shall interconnect with one another - as opposed to "quality or safety standards", which establish characteristics required for a good to be either

30 In this respect, very clear and illustrative is the presentation from Tirole J., "Pools, Standards and Access to Intellectual Property", Conference on "Guidelines for Merger Remedies - Prospects and Principles", January 2002, available at: http://www.cerna.ensmp.fr/cerna_regulation/Documents/ColloqueMetR/Tirole.pdf

31 In the EU, standards bodies are actually recognized under: Directive 98/34 of June 22, 1998, on "Technical standards and regulations", OJ L 204, July 21, 1998, p. 37 *et seq.*

32 For some instances of international standards organizations, see, *i.a.*:
ANSI - American National Standards Institute (http://www.ansi.org);
IEC - International Electro-technical Commission (http://www.iec.ch);
IEEE - Institute of Electrical and Electronics Engineers (http://www.ieee.org);
ISO - International Organization for Standardization (http://www.iso.org);
ITU - The International Telecommunication Union (http://www.itu.int/net/home/index.aspx);
IUPAC - International Union of Pure and Applied Chemistry (http://www.iupac.org);
OGC - Open Geospatial Consortium (http://www.opengeospatial.org);
W3C - World Wide Web Consortium (http://www.w3.org).

certified or sold in the marketplace. Remaining within the scope of this contribution, "interoperability" can basically be defined as the ability of products or processes to work together in order to fulfil a common task. Said quality may be enabled by ensuring seamless access to the technical information underling an interface standard.[33]

Thus, interoperability, as a target, and open standards, as a means, are the cornerstones of fast growing, complex industries, such as markedly the information and communication technologies' sectors,[34] where the traditional boundaries between distinct products or compounds are becoming increasingly faint. For this reason, it is fundamental to ensure that access to interface specifications is not obstructed by exercising unreasonably high licensing thresholds in relation to other prospectively interested market entrants.

Standards can arise either spontaneously - due to the high degree of market penetration of a particular technical solution, and be consequently followed for convenience (i.e. "de facto" standards) - or as a result of a previous convention, such as a norm or measure pursuing from a consensual procedure, thus legally binding the parties involved (i.e. "de jure" standards).[35] Within the latter case, we may still distinguish between so-called "formal" and "ad-hoc" standards, fundamentally according to the organism leading the process. In brief, "formal" standards, on the one hand, are commonly established by official standardization bodies, typically subjected to some kind of governmental control; "ad-hoc" standards, on the other hand, are set by unofficial industry groups, which purposefully cooperate together within the framework of the particularly initiated standard-setting procedure. Accordingly, while "de facto" standards emerge outside any pre-ordered standardization mechanism, both last-mentioned cases are certainly going to involve particularly pondered decisions about the technologies to be included under the elected specification and the IPR policy to be adopted.

33 For a comprehensive account of the interoperability debate in the software industry, see i.a.: Band J. and Katoh M., "Interfaces on Trial: Intellectual Property and Interoperability in the Global Software Industry", Westview Press, 1995.

34 For a major reference, see the definition adopted by the European Information & Communications Technology Industry Association (EICTA), according to which interoperability is "the ability of two or more networks, systems, devices, applications or components to exchange information between them and to use the information so exchanged", EICTA White Paper on Standardization and Interoperability, Brussels, Nov. 2006, available at: http://www.eicta.org/fileadmin/user_upload/document/document1166544474.pdf

35 For a systematic classification and an economic analysis of the concepts adopted, see: Funk J., "Global Competition Between and Within Standards: the Case of Mobile Phones", Palgrave Macmillan Publisher, January 12, 2002, p. 1 *et seq.*

2. Pivotal Role of Patent Rights and Advantages of Collaborative Settings: Patent Pools Strategies to Overcome "Hold-Up" Problems

Unfortunately, in spite of all efforts for harmonization, there may be a fierce competition among different standards, and consequently their underlying supporting organizations, as many of them may never make it to the marketplace and, in a figurative way, go under before reaching the surface, as just few, dominant standards actually manage to finally become acclaimed as commercially endorsed specifications. This entails a significant waste, in terms of loss of technological solutions and undergone efforts, which is not always justified under purely objective criteria, since there is no merely scientific basis for the success of a particular standard over others, as they may in fact often eventually be selected on conventional grounds, especially within the publicly driven setting of standard-setting organizations.[36]

When a managing entity - either in the form of a standard-setting organization (in the case of "formal" standards) or as elective representative of industry groups (in the case of "ad-hoc" standards), the latter ideally convening into a patent pool - is in charge of the standardization process, the participants are anyway encouraged in the context of orchestrated collaborative endeavours to openly share their knowledge, thereby making their contributions to the development of the standard, strongly relying on the confidence that their technology is protected by IP rights. Such legal coverage represents, on the one hand, a means to overcome the risk of free riding over their own investments and, on the other hand, a promising source of royalty income to recoup the incurred R&D costs.[37]

Indeed, the view is shared that if patent rights did not actually apply to standard contributions at all, innovation in the field would have to rely on trade secrets, which paradoxically would eventually lead to more proprietary, even less open standards.[38]

36 See in this respect the affirmation, supported by empirical evidence, according to which: "Companies should move proactively to have their patented and non-patented technologies incorporated in standards. These recommendations are common regardless of the form of standardization activities whether it is public or private. Standardization activities are political negotiations and not a forum for assessing which technologies excel over others. Therefore, companies should delegate skilled negotiators to participate in such activities. Companies should also provide their employees with educational opportunities to improve their negotiation skills" […] "If the participants in a standardization activity come to recognize a patent pool as a future option, coordination may become easier", in : Yamada H., "International Standardization as a Strategic Tool - Standardization and Patent pools: Using Patent Licensing to Lead the Market", International Engineering Consortium (IEC), Centenary Challenge, 2006, Geneva, respectively in Sect. 6.2 "Taking Advantage of Standardization Activities as Political Negotiations" and Sect. 6.3 "Exploring the Possibility of Forming Patent Pools", also available at: http://www.iecchallenge.org/papers/pdf_iecchallenge/yamada.pdf

37 For a supporting view, see *i.a.*: Yamada H., "Patent Exploitation in the Information and Communications Sector: Using Licensing to Lead the Market", Science and Technology Trends: Quarterly Review, 2006, vol. 19, p. 11 *et seq.*

38 See in this respect, *i.a.*: Frain T., "Patents in Standards and Interoperability", Colloquia on Selected Patent Issues, World Intellectual Property Organization, Geneva, November 29,

Hence, the framework underpinning open standards, as constructed over the delicate balance set by the patent legislator, would collapse and the overall number of initiatives to develop open standards would in the end decrease. Thus, together with the protection, a big deal of incentives would be ultimately lost. In fact, the revaluation of patent rights as catalyst for participation in the regulated context of standard-setting mechanisms offer a more mature standpoint to the ostensible allegation that wants patents and standards as respective antagonists.

Interestingly, it may consequently be deduced that, refuting the common prejudices here, the biggest threat to interoperability in the standards' domain is not actually posed by patent holders who are contributing to the specification, but, on the contrary, rather from owners of relevant technologies who are keeping out of the undergoing standard-setting process.[39] Indeed, non-participating patentees could hamper the benefits of standardization by exercising their exclusive prerogatives over their standard-related specifications, thus "holding-up" practicable access to the standard, not being bound to offer licenses under either reasonable and non-discriminatory (hereinafter RAND) or any other favourable conditions sponsored within the standard-setting body.

In fact, considering the terms constituting the RAND commitment, in principle the "reasonable" prong is supposed to eliminate the risk of monopoly overcharges in the royalty rate, while the "non-discriminatory" part shall protect against the potential of standard-related patent owners stifling downstream competition.[40]

While "hold-up" problems notoriously strike technological sectors more highly characterized by dense patent production, in this respect they become even more critical in case a standardization process is on the way. Among the several studies addressing the issue,[41] an effective solution advanced has been making participation in a standard-setting process subject to the preliminary condition that the relevant

2006, p. 2 *et seq.*, available at:
http://www.wipo.int/export/sites/www/meetings/en/2006/patent_colloquia/11/pdf/frain_paper.pdf

39 On the problem of deficient participation in patent pools, where it has been empirically demonstrated that between half and two-thirds of the eligible firms decide not to join the consortium, as conclusive founding, see more generally: Lerner J. *et al.*, "To Join or Not to Join: Examining Patent Pool Participation and Rent Sharing Rules", January 2008, available through the Social Science Research Network at:
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=945189

40 Nevertheless, it has been argued that the "non-discriminatory" prong of the RAND commitment shall be read narrowly to prohibit only discriminatory licenses to downstream competitor, but not also price differentiation overall, otherwise that would turn into an inflexible obligation to license at identical terms to all potential licensees. See on the point: Crane D., "Patent Pools, RAND Commitments, and the Problematics of Price Discrimination", Cardozo Legal Studies Research Paper, no. 232, April 2008, also available through the Social Science Research Network at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1120071

41 For a thorough analysis of the issue, see, *i.a.*: Shapiro C. *et al.*, "Standard Setting, Patents, and Hold-Up", Antitrust Law Journal, 2007, vol. 74, p. 603 *et seq.*, also available at:
http://faculty.haas.berkeley.edu/shapiro/standards2007.pdf

patent owners agree to join a patent pool for the implementation of the standard, thereby delegating the power to conclude licenses under RAND terms to the pool's administration and, not last, also overcoming the related divergences of interpretation, and the deriving uncertainties, "a priori".[42] For the patent holders involved this is a "trade-off" between giving up their sovereign exclusivity in the determination of maximum royalties and the eventuality that their technology shall not be included in the standard upon refusal of committing to cooperate at an early stage. However, the threat of being excluded from orchestrated standard-setting endeavours at the outset seems compelling enough to choose the way of cooperation instead.

Alternatively, a complementary, "ex post" solution to counter "hold-up" problems, as advocated by this contribution and tailored around the flexibility of patent pooling arrangements, may consist in making the establishment of a patent pool subject to the "suspensive condition" of positively attracting all essential patent holders identified for implementing the pooled technology. In such a case, patent holders that shall not enter the pool will not be able to "free ride" the cooperative efforts undergone by "holding-up" the pool's licensees with the demand of higher royalties for their essential patent, which they would opportunistically keep outside of the pool. Indeed, following the scheme advanced, the pool itself would dissolve shall attempts to include all essential technologies eventually fail, leaving the need to conclude multiple individual licenses as the only, certainly less attractive alternative, where the sum of marginal costs may eventually result in higher total royalties and, consequently, diminished demand for all patentors, which is certainly an overall less convenient alternative than the one of constituting a pool.[43]

II. Boosting Access to Standard-Related Patents for a Competitive Market Integration

Looking now at the overall ramifications of standardized applications on the economy, it is clear that they are gaining momentum in business reality today, and it surely represents a major "bonus" to be endorsing a positively established technical specification, taking into account the significant financial repercussions of the widespread adoption of a standardized solution on the marketplace, translated in terms of royalty income for the patent holders involved, ideally organized in the form of a pooling consortium. Besides, from a wider perspective, standards, if properly devel-

42 Approaching the issue from an economic perspective, said solution has been recently advocated by: Leveque F. and Meniere Y., "Early Commitments Help Patent Pool Formation", Cerna Working Paper, June 2008, also available through the Social Science Research Network at: http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=428080

43 In fact, because of the multiple marginalization costs the demand may fall as the overall price charged may be too high. In simplified exemplificative terms, what happens is that the higher licensing fees demanded by owner A, also diminished the demand for the related technology licensed by owner B, because conveying in higher, less competitive total costs.

oped, play a beneficial role in promoting the efficient dissemination of resources, as has become particularly apparent in hi-tech markets, thereby being advantageous to consumers and to the economy in general.[44]

In order to appreciate the positive effects the adoption of a standard potentially entails, this shall be developed in a truly competitive environment from the outset. Accordingly, as is also true within patent pools, when the choice of technologies to be incorporated into a standard is made in an open and transparent way, on the basis of objective merits and economic convenience, any potential restriction of competition - engendered by the affirmation of a position of market dominance around an aggregation of technologies - is normally outweighed by countervailing economic benefits. In fact, standards have the positive effect of driving economic interpenetration, fostering the developments of new markets of compatible products, providing for improved supply conditions through interoperability and lowering transaction costs, thereby promoting efficiency and convenience for consumers.[45]

1. European Commission: General Policy Concerns and Recently Announced Actions

Moreover, within the frame of the European internal market, standards offer the additional advantage to contribute to the policy objective of market integration within the EU,[46] as the European Commission, issuing a formal Communication on the role of standardization in the framework of European policies and legislation in 2004[47] has recognized. In fact, the Commission had already in the past advocated a general set of recommendations to standard setting bodies for the ways to manage standard-related intellectual property rights in order to fully comply with EU competition rules.[48]

44 For a thorough overwiew and legal analysis on standard-related technology licensing practices, see i.a.: Ullrich H., "Patente, Wettbewerb und Technische Normung", GRUR, 2007, p. 817 *et seq.*

45 On the point, see: Piesiewicz G. and Schellingerhout R., "Intellectual Property Rights in Standard Setting from a Competition Law Perspective", Competition Policy Newsletter, Autumn 2007, no. 3, p. 36 *et seq.*, also available at: http://ec.europa.eu/comm/competition/publications/cpn/cpn2007_3.pdf

46 For a wider, critical overview on the interaction of IP and competition law and the related policy implications within the European Internal Market, see i.a.: Enchelmaier S., "Intellectual Property, the Internal Market and Competition Law", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 405 *et seq.*

47 Commission Communication on the role of European Standardization in the Framework of European Policies and Legislation COM (2004) 674 final, Oct. 18, 2004, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2004:0674:FIN:EN:PDF

48 Commission Communication on IPRs and Standardization, COM 92/445, October 22, 1992.

Indeed, the underlined advantages, inherent in the implementation of standardized specifications for interoperability, may be undermined when a standard encompasses competitive and therefore partly substitute technologies, hence foregoing consumers' choices and alimenting antitrust concerns, such as the risk of collusion disguised beyond the typical collaborative framework of a standard-setting process. Such pitfalls were closely scrutinized by the European Commission, when specifically dealing with the applicability of Art. 81 of the EC Treaty to horizontal cooperation agreements.[49] As a result, under European competition law, standard-setting agreements will be caught by Art. 81, and therefore prohibited, if they "use a standard as a means amongst other parts of a broader restrictive agreement aimed at excluding actual or potential competitors".[50] However, an exemption may be granted based on the prevailing advantages that a standardization process may boost, conditioned upon the double finding that, on the one hand, (1) the standard-setting agreement does not contain restrictions of competition that are not indispensable to achieve its most creditable goals, such as to facilitate the development of integrated products for the benefit of consumers and to overcome inefficient constraints to innovation,[51] and that, on the other hand, (2) access to the standard must be readily available to new market entrants wishing to comply with it.[52]

Besides, the current European Commissioner for Competition Policy, Ms. Neelie Kroes, has ultimately intervened during an official speech in Brussels in June 2008 to announce her will to pursue a more pro-active antitrust enforcement policy in order to enhance European competition. In this respect, she expressly acknowledged the fundamental importance of standards for "interoperability", which in its turn "encourages competition on the merits between technologies from different companies, and helps prevent lock-in".[53] Accordingly, it is maintained that standardization agreements should be based on the merits of the technologies involved and, in this sense, if comparable solutions are available, non-proprietary technologies shall be preferred in order to avoid "lock-in" problems at the outset. For the case that proprietary technologies are nonetheless included in a standard, the European Commissioner supports the view that "ex ante" disclosure shall help those involved make a "properly informed decision" and this is supposed to encompass both (1) the existence of essential patents and (2) the maximum royalty rates demanded, based on the assumption that "both can increase the effectiveness of the standard setting process, lead to more competitive solutions and reduce the risk of later antitrust problems". Finally, it may therefore be assumed for the future that final commitments taken in

49 Commission Notice Guidelines on the Applicability of Art. 81 of the EC Treaty to Horizontal Cooperation Agreements (2001/C 3/02).

50 *Id.*, para. 165.

51 *Id.*, para. 173.

52 *Id.*, para. 169.

53 See the official EC press release: Kroes N., "Being Open About Standards", European Commissioner for Competition Policy, OpenForum Europe, Brussels, June 10, 2008, available at: http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/08/317&format=HTML&aged=0&language=EN&guiLanguage=en

this sense before standard-setting organizations by participating patent holders shall be backed-up by appropriate antitrust enforcement remedies.

2. Overcoming the Perceived Shortcomings in the Patent Regime

Within the scope of this contribution, aimed at exploring collaborative IP mechanisms to ensure access to patented technologies, the current debate around the perceived shortcomings in the current patent regime assumes a special relevance. In practice, actual conflicts between IP rights and standards arise when the implementation of the latter necessitates the use of patented technology, in case a right holder refuses to license on reasonable and non-discriminatory terms.

Fundamentally, the tension between standards and patents, as discussed, is greatly alimented by the polar principles that they allegedly incarnate: the former mostly profiting from an "open", "public" free environment, so that the underlying technologies can be seamlessly spread and widely adopted in the market place, encouraging the diffusion of complying products; the latter being essentially based on a "close", "private" exclusive system, formed around individual exclusionary rights, which could be employed as bargaining tools to reap the highest achievable commercial benefits from licensing negotiations.

Nevertheless, these two seemingly conflicting systems could in fact be reconciled by coordinating their ultimate, common goal of serving, even if at different levels, the public good of innovation,[54] which they both finally do**,** since, as a closer analysis reveals, they are only apparently following antithetical paths. From this perspective, we shall consider possible approaches to overcome the shortcomings detected within the patent regime when it comes to dealing with standard-related technologies in order to afford access for interoperability purposes.[55] The solutions advanced are essentially based either on an "external", legislative intervention, or on what we may consider to be an "internal" self-regulatory action.

a. Debated Opportunity of Legislative Interventions

The legislation intended to amend the gaps left by the current patent system, either intervening directly into the applicable IP regime or, indirectly, by way of anti-

54 On the point, see i.a.: Drexl J., "The Critical Role of Competition Law in Preserving Public Goods in Conflict with Intellectual Property Rights", In: Maskus K. and Reichman J., "International Public Goods and Transfer of Technology Under a Globalized IP Regime", Cambridge University Press, 2005, p. 709 *et seq.*

55 Frain T., "Patents in Standards and Interoperability", Colloquia on Selected Patent Issues, World Intellectual Property Organization, Geneva, November 29, 2006, p. 2 *et seq.*, available at: http://www.wipo.int/export/sites/www/meetings/en/2006/patent_colloquia/11/pdf/frain_paper.pdf

trust remedies, belongs to the first category. The second group encompasses, on the other hand, appropriate IPR policies and recommendations internally adopted by standard-setting bodies, eventually binding for the participating institutions, as well as, following the same paradigm, patent pools, these latter involving a stricter commitment from its members, beyond the need for individual implementation.

The biggest challenge, from a policy standpoint, in case essential patents are underlying a given standard, is to strike the proper balance between, on the one hand, the rightful expectation of a patent holder to recoup the costs undergone for the invention, thus fully benefiting from his exclusive right and the freedom of third parties to develop and, on the other hand, market standard-compliant products, giving end-users the choice between alternative technological solutions, thereby avoiding that consumers are locked into a particular proprietary platform.

aa. From an Antitrust Law Standpoint

In this respect, competition law provides for a system of corrections that is external to the patent domain and traditionally addresses serious situations of misuse of IP rights. Relevant abusive practices have then to be well pre-defined in order to avoid unnecessary interferences, thus the available remedies in this area are eventually quite circumscribed. The mainstream jurisprudential developments on the matter, as openly professed in the US,[56] is to delimit cases of "misuse" only where, broadly speaking, the patent holder detains a position of "dominant supplier" and is abusing it by, for instance, refusing to license, thereby entailing substantial foreclosure on the marketplace. This approach consequently leaves the most recurrent ordinary cases of opportunistic IP exploitation unsolved, which does not appear satisfactory in the actual state.[57] Indeed, if a dominant position is absent, there is traditionally no mechanism, in the current legal regime, to adequately confront situations where, for example, a patent holder may make leverage to block technical standards, using his right to hinder interoperability and gain an exclusive advantage over competitors.

Ultimately, however, as outlined above, some developments have been announced on the European side by the Commission, which is willing to back-up preliminary licensing commitments assumed by patent holders actively participating in a standard-setting process. This is indeed supposed to open the way to a new set of effective antitrust remedies.

56 For a representative, fairly recent reference, see: the US Supreme Court, in "Illinois Tool Works, Inc. v. Independent Ink, Inc.", March 1, 2006, In: 547 U.S. 28, 2006, also available at: http://www.supremecourtus.gov/opinions/05pdf/04-1329.pdf

57 Frain T., *supra*, fn. 55, p. 3-4.

ab. From a Patent Law Standpoint

Aside from competition measures, other remedies may intervene, as anticipated, within the patent domain itself. The span of the solutions available may range from compulsory licensing provisions limited to interoperability purposes - where, as a matter of right, standard-related patents would be available to third parties under RAND terms - to more drastic substantial amendments to the patent regime, such as a narrow-cut exception to the exclusive rights of the patent holder that would allow the free use of the technology's interface, without the need for a license, to the extent that this would be indispensable for the development and sale of interoperable products.

The latter approach may be eventually softened by introducing the additional requirement that, in order for such tailored limited exception to operate, the holder of a patented interface shall be actually engaging in an abusive conduct, by proving the existence of a casual link between the patentee's alleged obstructive behaviour and its potential impact in the marketplace, irregardless of the formal existence of a dominant position as constructed against the background of competition law.

In other words, following a less strictly limited exception approach, an interface-related patent would only become unenforceable if the patentee's refusal to license[58] or excessive royalties' charge would render it either commercially or technically unattractive for prospective licenses to make independent, but interoperable products, thereby markedly impairing competition.[59]

Whereas both above-mentioned solutions, and their variants, would have clear advantages for third parties - which could then legitimately develop and bring to the market novel technologies interoperating with existing proprietary platforms, thus particularly benefiting small and medium size enterprises (SMEs), as well as new market entrants needing access to patented interfaces - on the other hand, they may have a disincentive effect on the affected right holders, eventually impairing their willingness to commit important resources for investments into viable interface technologies. This is particularly obvious in the instance of cutbacks in the patent owners' rights, where no license would be needed for interface specifications; nevertheless, this would also be true for introducing compulsory licenses under RAND terms for interoperability purposes, although the economic revenue here will be certainly lessened, in comparison with the royalties that could be freely negotiated on individual basis, but not annulled.

As far as such legislative solutions are concerned - aside from considerations of commercial convenience that could, as observed, entail the undesired side-effects of

58 On the issue of abuse of a dominant position integrated by a refusal to license, see: Drexl J., "Abuse of Dominance in Licensing and Refusal to License - A More Economic Approach to Competition by Imitation and to Competition by Substitution", In: Ehlermann, Claus Dieter / Isabela Atansiu ed.: Competition Law Annual 2005: The Interaction between Competition Law and IP Law. Oxford, Hart Publishing, 2007, p. 647 *et seq.*

59 Frain T., *supra*, fn. 55, p. 4-5.

diminishing the incentive for substantial innovation investments into interface technologies in the first place - other limitations ought to be recalled. In particular, any formal intervention that might derogate from the exclusive rights conferred upon the patent holder would have to comply with the relevant international treaty obligations, which member states are to fulfil under the Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS).[60]

Specifically, pursuant to Art. 30 of the TRIPS, limited exceptions to patent rights may only be allowed, provided that they do not "unreasonably conflict with a normal exploitation of the patent", nor "unreasonably prejudice the legitimate interests of the patent owner, taking into account legitimate interests of third parties". Such strictly tailored derogations are to be read in combination with the provision of Art. 31 TRIPS, setting up the exceptional conditions under which, basically in order to accomplish purposes of public interest, use without the authorization of the right holder can be permitted, as a basis for the granting of compulsory licenses.[61]

In a wider perspective, such limitations pertaining to the patent regime shall be interpreted and implemented in conjunction with Art. 7 and 8 TRIPS. The former sets out the ultimate objectives underlying the protection and enforcement of IP rights, serving: "to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations". As a well-tailored exception to this general principle, Art. 8 TRIPS allows member states to partially derogate to such IP protection only on the base of conflict with higher-ranking collective interests, such as public health, or in case of serious abuses from the IP holders negatively affecting the market.

Because of the constraining formal boundaries within which derogations to patent rights may only be admissible, as binding for all WTO Member States under the TRIPS Agreement, relevant legislative interventions in the field, designed to amend the gaps left by the current patent system in order to ensure access to standard-related technology for interoperability purposes – as outlined above, either intervening directly into the applicable IP regime, i.e. from a patent law standpoint, or, indirectly, by way of antitrust remedies – ultimately may not prove particularly effective when confronted with such operative limitations.

60 See: Part II "Standards Concerning the Availability, Scope and Use of Intellectual Property Rights", Sect. 5 "Patents" of TRIPS; For a legal appraisal on the discussed implications of TRIPS on patent rights, see i.a.: Janis M., "Minimal Standards for Patent-Related Antitrust Law under TRIPS", In: Maskus K. and Reichman J., "International Public Goods and Transfer of Technology Under A Globalized IP Regime", Cambridge University Press, 2005, p. 774 et seq.

61 For a critical overview on the fundamental impact of TRIPS on patent rights, see in particular: Straus J., "Implications of the TRIPs Agreement in the Field of Patent Law", In: Beier F.-K., Schricker G. (Ed.), "From GATT to TRIPs", IIC Studies, vol. 18, Weinheim, 1996, p. 160 *et seq.*

b. Internal IPR Policies as Self-Regulatory Solutions

For these reasons, we shall eventually also consider alternative approaches, as anticipated in these premises, by turning now to an investigation of the efficacy of self-regulatory solutions, encompassing appropriate IPR policies and recommendations, as internally adopted both by standard-setting bodies, on the one hand, and patent pools, on the other hand, these latter being characterized by an appreciable higher level of inner cohesion and reciprocal commitment.

In order to ensure access to essential standard-related patents by way of self-regulation, it is important that, in the first place, relevant patented technologies can be timely identified through reliable precursory disclosure requirements, and that, in the second place, ensuing licenses are made available on FRAND terms. This complementary pair of principles underlies the developments of commercially sustainable standards, encouraging competitive investments into the implementation of a broad range of interoperable products.

ba. Standard-Setting Bodies' Recommendations

As anticipated, such self-regulations may occur within the collaborative framework of standard-setting bodies,[62] as here, in an attempt to contain the risk of conflicts once a standard is adopted, and thereby ensuring its seamless and broadest possible dissemination in the marketplace afterwards, patent policies regulating the obligations to which the participating entities shall commit are frequently established beforehand.[63] In this respect, many organizations require the parties involved in the standard-setting process to timely disclose information regarding relevant patents and, sometimes, also patent applications, in order to dispose of the relevant facts in the selection procedure.[64] In a second step, shall any relevant technology be

62 In the EU, standards bodies are actually recognized under: Directive 98/34 of June 22, 1998, "Technical standards and regulations", OJ L 204, July 21, 1998, p. 37 *et seq*.

63 For a critical overview, see *i.a.*: Jacobson K., "Revising Standard-Setting Organizations' Patent Policies", Northwestern Journal of Technology and Intellectual Property, Fall 2004, vol. 3, no. 1, p. 43 *et seq*., also available at: http://www.law.northwestern.edu/journals/njtip/v3/n1/3/jakobsen.pdf

64 For a representative instance, see: Art. 4.1, ETSI IPR Policy, Annex 6 of ETSI Rules of Procedure, March 29, 2007, available at: http://www.etsi.org/WebSite/document/Legal/ETSI_IPR-Policy.pdf, requiring that: "[...] each member shall use its reasonable endeavors, in particular during the development of a standard or technical specification where it participates, to inform ETSI of essential IPRs in a timely fashion. In particular, a member submitting a technical proposal for a standard or technical specification shall, on a bona fide basis, draw the attention of ETSI to any of that member's IPR which might be essential if that proposal is adopted".
The European Telecommunications Standards Institute (ETSI) is a recognized European standardization body, which produces globally-applicable standards for Information and Communications Technologies, including fixed, mobile, radio, converged, broadcast and in-

identified, the patentee is required to agree on appropriate licensing conditions, such as that the license must be granted under reasonable and non-discriminatory terms (RAND) or even that the license must be royalty free.[65]

As far as the timely disclosure requirement is concerned, the main issue is that the reliability of the information revealed is grossly based on the involved company's own internal judgement. As for this point,[66] the declaration policy of each individual firm may greatly vary, bearing the risk of false or misleading declarations of essentiality, so that the final figure of the overall estimated royalties to be charged is eventually distorted. From a business perspective, the advanced solutions have been undertaken with a view to backing the consistency of specific statements by compelling to include full reference of the claimed essential technology to the standard, as well as by obliging the patentee, when requested by a prospective licensee and on a confidential basis, to provide supporting evidence of essentiality, such as claim charts, in the framework of undertaken bilateral negotiations. Such supplementary commitment is supposed to serve the right owners as a disincentive to "over-disclose" their own patents, thereby slowing down the whole assessment process, in cases of feeble grounds for essentiality.

As far as the commitment to license under RAND or royalty-free (RF) terms is now concerned, other critical issues are raised. However, in the premises, it should be considered that firms participating in standardization activities naturally expect to see some rewards for the investments they have been undertaking in developing interoperable accessible solutions, which is why RAND terms tend to represent a more desirable, and therefore significantly more diffused, model than RF. In fact, whereas some participants may be truly inspired to collaborating within an open and free environment, the requirement of RF conditions may spawn the reluctance, on the other hand, of important technology owners to take part in the process and support the

ternet technologies. ETSI operates as a not-for-profit organization with almost 700 ETSI member organizations drawn from 60 countries worldwide. For the official website, refer to: http://www.etsi.org

The ETSI IPR policy was first adopted as an interim policy in November 1994, and confirmed as a permanent policy in November 1997, after protracted negotiations among the membership over many years, and ultimately achieving approval of the competition authorities in Europe, US and Japan. In November 2005 the General Assembly of ETSI approved the creation of a new IPR ad hoc group, whose work officially started in January 2006, to review the IPR policy and investigate issues like FRAND and cumulative royalties.

65 Again, for an illustrative instance, see Art. 6.1, ETSI IPR Policy, *supra*, fn. 64, requiring that: "When an essential IPR relating to a particular standard or technical specification is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give within three months an undertaking in writing that it is prepared to grant irrevocable licenses on fair, reasonable and non-discriminatory terms and conditions [...]. The above undertaking may be made subject to the condition that those who seek licenses agree to reciprocate".

66 See in this respect, *i.a.*: Frain T., "Patents in Standards and Interoperability", Colloquia on Selected Patent Issues, World Intellectual Property Organization, Geneva, November 29, 2006, p. 7 *et seq.*

standard, ultimately leading to market fragmentation and lack of interoperability, which means the standard-setting endeavours are failing.

However, on the one hand, even leaving the RF option out, there is actually no undisputed definition of RAND terms yet, missing an unambiguous authoritative interpretation establishing clarity on the point,[67] beyond the diverse regulatory frameworks of standard-setting bodies, which may anyway solely direct the conduct of parties electively participating in the process. In this respect, some faults also appear from a business perspective, as the implementation of a RAND policy, in principle, does not necessarily lead to a limitative effect as far as the practised licensing fees are concerned, so that these indeed remain subject to different individual interpretations.[68] Thus, in practice, effective access to interface technologies may still be obstructed, should the patent holders who retain standard-related technologies fail to implement truly reasonable and non-discriminatory terms, exploiting the interpretative gaps left by the undersigned IPR policies to their own individual interest, when eventually concluding licenses with third parties. Moreover, the problem of arising costs for third party licensees only becomes more obvious in the most frequent instance of multiple patent owners all detaining standard-related essential technologies, in which case unaccounted separate charges may sum up and eventually increase the cumulative due royalties.

On the other hand, as with any other policy matter, if the applicable terms have not been unambiguously drafted, different interpretations may be the source of disputes and disparities among the parties involved through their rights and obligations. Nevertheless, even appreciable attempts towards transparent and unblemished IPR guidelines on the part of standard-setting organizations do not made up for the fact that, ultimately, these latter neither get directly involved into the specific licensing arrangements for the relevant standardized specifications, finally concluded among the respective patent owners and third parties, nor into settling disputes with respect

67 In Germany, although ultimately the issue was brought to the attention of the Federal Supreme Court in the context of a patent infringement case, no clear definition on the point has yet been provided, except for relying on the "reasonable discretion" of the patent holder with reference to the common practice in the relevant business sector. See on the point: Bundesgerichtshof, Decision of 6 May 2009, full text of the judgement available at: http://juris.bundesgerichtshof.de/cgi-bin/rechtsprechung/document.py?Gericht=bgh&Art=en&Datum=2009&Sort=3&Seite=8&nr=48134&pos=269&anz=1424&Blank=1.pdf. This decision will be analysed in greater depth further in Part III, lett. D, n. 6 of this Contribution.

68 For a legal analysis on the matter in the light of the recent German Federal Supreme Court's jurisprudence, see i.a.: Conde Gallego B., "Die Anwendung des kartellrechtlichen Missbrauchsverbots auf ‚unerlässliche' Immaterialgüterrechte im Lichte der IMS Health- und Standard-Spundfass-Urteile". In: GRUR Int., 2006, p. 16 et seq.; Conde Gallego B., Mackenrodt M., Enchelmeier S. (Ed.), "Abuse of Dominant Position: New Interpretation, New Enforcement Mechanisms?", Berlin, Springer, 2008; Schoeler K., "Patents and Standards: The Antitrust Objection as a Defense in Patent Infringement Proceeding", In: MPI Studies on Intellectual Property, Competition and Tax Law – Patents and Technological Progress in a Globalized World – Liber Amicorum Joseph Straus, 2008, vol. 6, Springer ed., p. 177 *et seq*.

to the validity and scope of the patents at issue, hence leaving a gap of effective enforcement. In other words, in case a participant acts in disregard of the IPR policy adopted by the standardization body of reference, they may eventually face internal sanctions, but the agreement concluded with third parties may irrespectively remain binding. Thus, the option for a patent holder to either adhere to the commitments endorsed or act in spite of them may, from a business perspective, ultimately be simply a choice of prevailing incentives.[69]

bb. Patent Pools' Enforced Licensing Terms

Both the lack of uniform interpretation of RAND terms and the gap of effective enforcement towards the licensing commitments assumed by standard-related patent holders in the standard-setting process may be obliterated by entering a patent pooling agreement.[70] In fact, the pool's administration is invested with the authority to act autonomously with third parties, thereby concluding licenses with them according to uniform RAND conditions, typically following a standardized, pre-arranged scheme. Therefore, in this case the conventional inclusion of RAND terms is directly effective towards licensees, through the bilateral contracts negotiated, since the collective mandate to the pool in force of which the latter are concluded substitutes the additional need for implementation by the individual patent owners involved - thereby also undermining the risk of divergence between the IPR policy agreed on, in principle, and licensing conditions eventually applied, in practice.[71]

69 Some troubling conclusions about the performance of standard-setting organizations have been expressed by: Delacey B. *et al.*, "Strategic Behavior in Standard-Setting Organizations", Harvard NOM Working Paper No. 903214, May 2006, available through the Social Science Research Network at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=903214

70 For an authoritative support, see in this respect the position expressed by WIPO in the outline of its patent law's current issues, dealing with patents and standards, available at: http://www.wipo.int/patent-law/en/developments/standards.html;
besides, the advocated solution also finds empirical support by recent economic studies, such as: Leveque F. and Meniere Y., "Early Commitments Help Patent Pool Formation", Cerna Working Paper, June 2008, also available within the Social Science Research Network at: http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=428080

71 For a balanced outline of some of the issues arising in this context, see *i.a.*: Raymond D., "Benefits and Risks of Patent Pooling for Standard-Setting Organizations", Annual Review of Antitrust Law Developments, Summer 2002, p. 41 *et seq.*; Hovenkamp H., "Standards Ownership and Competition Policy", Boston College Law Review, March 2006, vol. 48, p. 87 *et seq.*, also available at:
http://bc.edu/schools/law/lawreviews/bclawreview/meta-elements/pdf/48_1/04_hovenkamp.pdf

D. Patent Pools and the Interface between Intellectual Property Rights and Antitrust Law

The legal treatment of patent pools lies at the crossroads between intellectual property rights, as conferred upon the different patent holders who contribute their technologies to the pool for a consideration, and antitrust law,[72] as these kinds of license agreements may fall under the scrutiny of competition authorities, to the extent that they may represent a significant obstacle to competitors seeking access to the relevant contract product or technology market,[73] where concerns arise due to the collective pricing of pooled patents and to the regrouping of a large number of parties, which may entail greater possibilities for collusion.[74]

72 For a comprehensive study focusing on the wider and complex interface between IP and competition law, in the current global context, see i.a.: Drexl J., "Research Handbook on Competition and Intellectual Property Law", Edward Elgar Publishing, 2008; Ullrich H., "The Interaction between Competition Law and Intellectual Property Law - An Overview", In: Patent Pools: Approaching an Intellectual Property Problem via Competition Policy, 2007, p. 305 *et seq.*; Anderman S., "The Interface Between Intellectual Property Rights and Competition Policy", Cambridge University Press, 2007; Ghidini G., "On the 'Intersection' of IP and Competition Law", "Intellectual Property and Competition Law: The Innovation Nexus", Edward Elgar Publishing, 2006, p. 99 *et seq.*

73 The former defined in the Commission Regulation (EC) No. 772/2004 of 27 April 2004 on the application of Art. 81 (3) of the Treaty to categories of technology transfer agreements, OJ 2004 L 123/11 (hereinafter TTBER), available at: http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&model=guicheti&numdoc=32004R0772; Art. 1, para. 1, lett. F "contract product", as products produced with the licensed technology. Besides, the relevant technology and product market are defined, with regard to competing undertakings, in the same article 1, respectively under lett. J (i) "competing undertakings on the relevant technology market, being undertakings which license out competing technologies without infringing each other' intellectual property rights (actual competitors on the technology market); the relevant technology market includes technologies which are regarded by the licensees as interchangeable with or substitutable for the licensed technology, by reason of the technologies' characteristics, their royalties and their intended use" and lett. J (ii) "competing undertakings on the relevant product market, being undertakings which, in the absence of the technology transfer agreement, are both active on the relevant product and geographic market(s) on which the contract products are sold without infringing each other' intellectual property rights (actual competitors on the product market) or would, on realistic grounds, undertake the necessary additional investments or other necessary switching costs so that they could timely enter, without infringing each other' intellectual property rights, the(se) relevant product and geographic market(s) in response to a small and permanent increase in relative prices (potential competitors on the product market); the relevant product market comprises products which are regarded by the buyers as interchangeable with or substitutable for the contract products, by reason of the products' characteristics, their prices and their intended use".

74 For a broader overview, see *i.a.*: Hovenkamp H., *et al.*, "IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property Law", 2002, para. 34, p. 34 *et seq.*

I. Confuting the Traditionally Perceived Antagonism between Patent and Antitrust Law: Introducing the Concept of "Competition of First Level" and Refuting the Idea of "Patent Monopolies"

Traditionally, it was believed that there is an inherent conflict between intellectual property, which grants exclusive rights, and antitrust law, that prohibits monopolies, with these two disciplines also pictured as "antagonists". However, said assumption is based on the misleading association and confusion of "monopolies", on the one hand, which are actually situations of fact where there are no alternatives on the relevant market, and "exclusive rights", on the other hand, which are conversely situations where the law confers a certain exclusivity of exploitation, both temporarily and territorially defined, on the right holder, as a consideration of the undertaken endeavours, without this being necessarily followed by a situation of market monopoly,[75] with foreclosure of actual "alternatives", as previously considered.

Indeed, the view is taken that where patent protection is provided and in the interplay between offer and demand, substitute technologies are generally available as valid alternatives, since "competition of first level" - i.e. at the stage where research and development take place - may be in its turn rather enhanced by the perspective of a return of investment, provided by the niche of exclusivity which intellectual property confers upon the right holder in the marketplace - i.e. where "competition of second level" finally occurs.

Hence, IP protection provides a valuable incentive for distinctive players to breed their ideas and step in, eventually challenging already established contenders, thereby supplying the market with alternative choices. Thus, patent exclusivity typically does not coincide with market monopoly.[76] This important distinction, which has been duly endorsed by a qualified doctrine, addresses a fundamental legal issue lying at the very heart of patent protection. Putting it in quite simple terms: "patent rights are not legal monopolies in the antitrust sense of the word. Not every patent is a monopoly and not every patent confers market power".[77]

Whereas IP rights "as such" do not create privileged realms of "economic monopolies", as legal oasis detached by the surrounding harshness of competition - since

75 For a critical, analytic approach on the issue, see i.a.: Drexl J., "The Relationship Between the Legal Exclusivity and Economic Market Power: Links and Limits", In: Ullrich H. and Govaere I., "Intellectual Property, Market Power and the Public Interest. Brussels, 2008, p. 13 *et seq*.

76 In this sense, see i.a.: Clifford A., "Patent Power and Market Power: Rethinking the Relationship Between IP Rights and Market Power in Antitrust Analysis", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 239 *et seq.*; Ullrich H. and Govaere I., "Intellectual Property, Market Power and the Public Interest. Brussels", 2008.

77 Harmon R., "Patents and the Federal Circuit", Sect. 1.4 (b), 5 ed. 2001, p. 21. Also sharing the same fundamental perspective, see *i.a.*: Pitofsky R., "Challenges of the New Economy: Issues at the Intersection of Antitrust and Intellectual Property", Antitrust Law Journal, 2001, p. 913 *et seq*.

patent protection, as considered, typically allows the entrance of independent and innovative substitute products into the market - in some particular circumstances, it may occur that the market power enjoyed by IP holders reaches unintended dimensions, resulting in an actual foreclosure of third party competition, thus leading to a "de facto" monopoly. In other words, depending on the availability of substitute technologies on the relevant market, exclusive rights may ultimately lead to market power and even monopoly as defined under competition law. In such a scenario, expected business dynamics is endangered[78] and the delicate balance between competition and IP law shall be accordingly re-adjusted, eventually by carefully delineating the specific circumstances in which antitrust remedies should intervene to correct the unwanted impasse that occurs when, for the concurrence of encountered factual and economic circumstances, patent protection grows beyond its foreseen conventional scope.[79]

II. Matured View of Complementarity between IP Protection and Competition

Here, the question to be dealt with is whether an intervention of antitrust law to correct a patent misuse may be pertinent and, eventually, desirable.[80] Concerns stem from the debated "intersection" between intellectual property and competition law, with their deriving conflicts, traditionally rooted in the seeming antinomy of the respective direct goals of the named disciplines: promoting innovation through the attribution of exclusive rights, on the one hand, and preserving open access to the market, on the other hand.[81] However, we may be merely confronted with an apparent source of conflict, because at the highest level of analysis, IP and competition law may well serve "complementary" scopes,[82] as they both ultimately aim at promoting consumer welfare and, in different ways, innovation.

78 For a broader, critical approach on the issue, see i.a.: Ghidini G., "Patent Protection of Innovations: A Monopoly with a Wealth of Antibodies", In: "Intellectual Property and Competition Law: The Innovation Nexus", Edward Elgar Publishing, 2006, p. 13 *et seq*.

79 Along the same line: Ghidini G., "Exclusive Protection and Competitive Dynamics of Innovation: Striking a Balance", *supra*, fn. 78, p. 23 *et seq*.

80 For a thorough review on the matter, see: Ullrich H., "The Interaction between Competition Law and Intellectual Property Law: an Overview", European University Institute - Robert Schuman Centre for Advanced Studies, EU Competition Law and Policy Workshop, 2005, Introduction, p. 1 *et seq*., available at: http://www.iue.it/RSCAS/Research/Competition/2005/200612-CompUllrichOVERVIEW.pdf

81 Ghidini G., "On the Intersection of IPRs and Competition Law with Regard to Information Technology Markets", European University Institute - Robert Schuman Centre for Advanced Studies, EU Competition Law and Policy Workshop, 2005, Introduction, p. 1, available at: http://www.iue.it/RSCAS/Research/Competition/2005/200510-CompGhidini.pdf

82 Lowe P., "Intellectual Property: How Special Is It for the Purposes of Competition Law Enforcement?", European University Institute - Robert Schuman Centre for Advanced Studies,

Specifically, on the one hand, competition policy tends to fulfil the named goals by preserving market access, as a driving condition for an efficient and dynamic economy, where suppliers offering the best price-quality conditions would eventually flourish. On the other hand, IP law tends to foster scientific progress for the ultimate benefit of consumers by offering an adequate reward for the innovator, thus nurturing his motivation to invest in new technological solutions, while attempting to strike the right balance between over- and under-protection of inventive endeavours, being the exclusivity conferred upon the right holder limited in scope and in time in order not to undermine follow-on innovation or leading to unnecessarily long periods of high prices for consumers, i.e. longer than required to elicit the innovative effort.

Therefore, by calibrating the means at their disposal and through a profitable dialectical exchange, both IP and competition law share the same long-term objectives in promoting innovation for the benefit of the public at large. It should consequently be up to the legislator to revamp the boundaries between these two interacting disciplines by carefully considering their evolving, but nevertheless interdependent dynamics.[83] Nowadays, accordingly, a more mature view has evolved around the belief that intellectual property rights and antitrust law do not have "antagonist", but "complementary" roles.[84] As highlighted, both systems of law "are aimed at encouraging innovation, industry and competition".[85] Indeed, as argued further, competition, along with IP protection, should be merely one of the "means" to foster production and distribution of goods and, ultimately, to promote innovation and consumer welfare, these latter being the real "goals" to be attained.

Nevertheless, the need to resort to antitrust law might in many cases be avoided at the source, thereby significantly reducing the costs of litigation, should the IP paradigm truly be structured and consequently applied, so as to trace the right balance and reconcile the conflicting interests of the first and subsequent innovators, who are often rivals in the marketplace. Unfortunately, this does not seem to be regularly the case, since, quoting a straightforward statement, "because legislators often fail to properly define the limits of exclusive property rights, the exercise of those rights in

EU Competition Law and Policy Workshop, 2005, Introduction, p. 1, available at: http://www.iue.it/RSCAS/Research/Competition/2005/200510-CompLowe.pdf

83 For the heated discussion over the interplay between intellectual property and antitrust law, see in particular: Arezzo E., "Competition Policy and IPRs: an Open Debate Over an Ever Green Issue", Diritto d'Autore, 2004, vol. 3, p. 81 *et seq.*; Pitofsky R., "Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy", Berkeley Technology Law Journal, 2001, p. 535 *et seq.*

84 Hewitt P., "Antitrust and Intellectual Property, Before the American Intellectual Property Association", Mid-Winter Institute, Jan. 2003, available at: http://www.usdoj.gov/atr/public/speeches/200701.pdf

85 US Federal Trade Commission, "To Promote Innovation: the Proper Balance of Competition and Patent Law", Report, October 2003, Executive Summary, p. 2, available at: http://www.ftc.gov/os/2003/10/innovationrpt.pdf

new situations, and especially with regard to new technologies, attracts scrutiny under competition law, with a view to preventing market foreclosure".[86]

Indeed, it could be argued that if IP protection always managed to strike the right balance between the conflicting interests at stake, there would be less need for competition law to intervene. In fact, whether IP law does actually hit the perfect equilibrium between over- and under-protection of innovative endeavours and whether, and under which circumstances, competition policy should intercede in this delicate domain are complex questions that ought to be properly addressed.

1. Stance of the US Antitrust Authorities

In the United States, the Federal Trade Commission (FTC) confronted in an official report,[87] released in October 2003, the issue of the complementary role of competition and patent law in promoting innovation.[88] Following the wording of the Commission, "Innovation benefits consumers through the development of new and improved goods, services, and processes. An economy's capacity for invention and innovation helps drive its economic growth and the degree to which standards of living increase. Technological breakthroughs such as automobiles, airplanes, the personal computer, the Internet, television, telephones, and modern pharmaceuticals illustrate the power of innovation to increase prosperity and improve the quality of our lives. Competition and patents stand out among the federal policies that influence innovation. Both competition and patent policy can foster innovation, but each requires a proper balance with the other to do so. Errors or systematic biases in how one policy's rules are interpreted and applied can harm the other policy's effectiveness".

On the one hand, the report continues, "American antitrust law, as codified in the Sherman Act, the Federal Trade Commission Act, and other statutes, seeks "to maximize consumer welfare by encouraging firms to behave competitively […] Competition can stimulate innovation. Competition among firms can spur the invention of new or better products or more efficient processes. Firms may race to be the first to market an innovative technology. Companies may invent lower cost manufacturing processes, thereby increasing their profits and enhancing their ability to compete. Competition can prompt firms to identify consumers' unmet needs and develop new products or services to satisfy them".[89]

86 Ullrich H., "Expansionist Intellectual Property Protection and Reductionist Competition Rules: A TRIP Perspective", Journal of International Economic Law, 2004, vol. 7, p. 401.

87 US Federal Trade Commission, *supra*, fn. 85, p. 1 *et seq.*

88 Ferguson R., "Patent Policy in a Broader Context", Remarks - Financial Markets Conference of the Federal Reserve Bank of Atlanta, April 2003, available at: http://www.federalreserve.gov/boarddocs/speeches/2003/20030407/default.htm

89 US Federal Trade Commission, *supra*, fn. 85, p. 1.

On the other hand, the same report properly acknowledges that patent policy also stimulates innovation, since it confers an exclusive right that can enable firms to increase their expected profits from investment in research and development, thus fostering innovation that would not occur if not because of the prospect of a patent. Besides, since the patent system requires public disclosure, it can promote the dissemination of scientific and technical information for the public benefit. Accordingly, the US Constitution authorizes Congress "to promote the Progress of Science and useful Arts, by securing for limited Times to […] Inventors the exclusive Right to their respective […] Discoveries".[90]

The same conciliatory, matured trend between IP and antitrust was also confirmed more recently: in April 2007, the US Federal Trade Commission (FTC), jointly with the Department of Justice (DOJ), again issued a report dedicated to "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition"[91] in order to exhaustively illustrate the federal agencies' competition views with respect to a wide range of questions involving intellectual property licensing, including patent pooling[92] and collaborative standard setting.[93] The report follows a series of hearings, started in cooperation by the named agencies in 2002, entitled "Competition and Intellectual Property Law and Policy in the Knowledge Based Economy".[94] The overall aim was to tackle the complex issues arising when antitrust laws are applied to IP, typically in a setting where business practices are rapidly evolving, on the premises that both antitrust and intellectual property law share the common goal of promoting innovation, with ultimate benefits for consumers.[95] In fact, the report recognises that "patent pools can help solve the problems created by these overlapping patent rights, or patent thicket, by reducing transaction costs for licensees while preserving the financial incentives for inventors to commercialise their existing innovations and undertake new, potentially patentable research and development".[96]

Accordingly, the principles adopted for the assessment of intellectual property practices are pragmatically oriented both at preserving competition and at maintaining incentives for creativity and innovation, adopting a flexible "rule of reason" ap-

90 US Constitution, para. I, Sect. 8.

91 US Federal Trade Commission and Department of Justice, "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition", Joint Report, April 2007, also available at: http://www.ftc.gov/reports/innovation/P040101PromotingInnovationandCompetitionrpt0704.pdf

92 *Id.*, "Chapter 3: Antitrust Analysis of Portfolio Cross-Licensing Agreements and Patent Pools", Joint Report, April 2007, p. 57 *et seq.*

93 *Id.*, "Chapter 2: Competition Concerns when Patents are Incorporated into Collaborative Set Standards", Joint Report, April 2007, p. 33 *et seq.*

94 For more details, see: http://www.ftc.gov/opp/intellect/index.shtm

95 Press Release, "Federal Trade Commission and Department of Justice Issue Report on Antitrust and Intellectual Property", April 2007, available at: http://www.ftc.gov/opa/2007/04/ipreport.shtm

96 US Federal Trade Commission and Department of Justice, *supra*, fn. 91, p. 57.

proach, which weighs the efficiencies and anti-competitive effects of a particular activity, considering the concrete circumstances of the case under consideration, ultimately providing a certain degree of legal certainty and business predictability. More specifically, with respect to cross-licensing and patent pools, express reference is made to the Antitrust Guidelines for the Licensing of Intellectual Property (US Antitrust - IP Guidelines),[97] issued in 1995, which share the same general flexible view re-proposed by the report, while then providing a more comprehensive framework for the evaluation of said licensing practices.

2. European Commission's Corresponding Position

Correspondingly, the European Commission has also expressed a conformed view on the complementary role of intellectual property rights and competition law.[98] Indeed, being aware of the strategic impact of the discussed issues, the Commission launched a public consultation on how future patent policy action to create a EU-wide system of protection can be committed to boost the competitiveness of EU industry, in an attempt to improve the framework conditions in which its business operates[99] and in order to make the patent system itself "effective and credible within society".[100]

On the same premises, with particular reference to technology transfer agreements, the Commission has adopted some rules for applying competition policy to the licensing of patents, know-how and software copyrights, as encompassed by the new Block Exemption Regulation on the application of Art. 81(3) of the EC Treaty to categories of technology transfer agreements and accompanying Guidelines.[101]

97 US Federal Trade Commission and Department of Justice, "Antitrust Guidelines for the Licensing of Intellectual Property", April 1995, available at: www.usdoj.gov/atr/public/guidelines/ipguide.htm

98 The progressive proximity gained by EU and US competition law systems has been extensively analyzed, i.a. by:
Clifford A., "Foundations of Competition Policy in the EU and USA: Conflict, Convergence and Beyond", In: Ullrich H., "The Evolution of European Competition Law: whose regulation, which competition?", ASCOLA Workshop on Comparative Competition Law, Edward Elgar Publishing, 2006, p. 17 et seq.

99 For further details about the European Commission's consultation process, whose closing date for submissions was finally set for the end of March 2006, see:
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/38&format=HTML&aged=0&language=EN&guiLanguage=en

100 European Commission, Directorate General for Internal Market and Services, "Questionnaire on the Patent System in Europe", January 2006, p. 3 *et seq.*, available at:
http://europa.eu.int/comm/internal_market/indprop/docs/patent/consult_en.pdf

101 Commission Notice - Guidelines on the Application of Article 81 of the EC Treaty to Technology Transfer Agreements, O.J. C 101 , 27 April 2004, para.7., p. 2 *et seq.*, available at:

In the specific, it is expressly made clear that "The fact that intellectual property laws grant exclusive rights of exploitation does not imply that intellectual property rights are immune to competition law intervention. […] Nor does it imply that there is an inherent conflict between intellectual property rights and the community competition rules. Indeed, both bodies of law share the same basic objective of promoting consumer welfare and an efficient allocation of resources. Innovation constitutes an essential and dynamic component of an open and competitive market economy. Intellectual property rights promote dynamic competition by encouraging undertakings to invest in the development of new or improved products and processes. So does competition, by putting pressure on undertakings to innovate. Therefore, both intellectual property rights and competition are necessary to promote innovation and ensure a competitive exploitation thereof".[102]

Besides, with reference to the assessment of licensing agreements under Article 81 of the EC Treaty,[103] it is further stated that "there is no presumption that intellectual property rights and licence agreements as such give rise to competition concerns. Most licence agreements do not restrict competition and create pro-competitive efficiencies. Indeed, licensing as such is pro-competitive as it leads to dissemination of technology and promotes innovation".

It is therefore acknowledged that licensing agreements might certainly bear pro-competitive advantages by contributing to the dissemination of new technologies.[104] Indeed, this may happen not only through the disclosure of the invention through the patent office, but also through third parties' transactions.

Ultimately, technology transfers, by way of licensing, facilitate an efficient integration of complementary assets, as the individual patent holder is not necessarily at the same time the best-placed producer. In this respect, licensing helps generating incremental innovation not only by avoiding duplication of research and development, but also by allowing a more strategic allocation of resources in the market.

3. WTO's TRIPS Acknowledgement of IP as a "Good of Trade"

Ultimately, the Agreement on Trade-related Aspects of Intellectual Property Rights (hereinafter TRIPs), being aware of the existing interface between competi-

http://europa.eu.int/eur-lex/lex/Notice.do?val=358871:cs&lang=en&list=343592:cs,343498:cs,358871:cs,287758:cs,282404:cs,256769:cs,224308:cs,222857:cs,215479:cs,215452:cs,&pos=3&page=1&nbl=50&pgs=10&checktexte=checkbox&visu=#texte

102 *Id.*, para. 7.

103 *Id.*, para.9.

104 Lowe P., "Intellectual Property: How Special Is It for the Purposes of Competition Law Enforcement?", European University Institute - Robert Schuman Centre for Advanced Studies, EU Competition Law and Policy Workshop, 2005, Introduction, p. 8, available at: http://www.iue.it/RSCAS/Research/Competition/2005/200510-CompLowe.pdf

tion policy and intellectual property,[105] specifies standards concerning the availability, scope and use of intellectual property rights, within the legal framework of the Agreement Establishing the World Trade Organization (WTO),[106] thus implicitly recognizing IP as a "good of trade".[107]

Indeed, Art. 27 obliges TRIPs members in principle to grant patent protection to inventions in all fields of technology, meaning that for the first time in the history of industrial property innovations, i.e.. immaterial creations, will receive extraterritorial treatment similar to that accorded to other objects of commercial exchange on a wider global scale.[108] In fact, even if the TRIPs contains only rather rudimentary provisions on competition policy, they are quite significant for the essence of its relation to intellectual property.[109]

In general, the objectives and guiding motives of TRIPs are given a somehow more concrete expression in Art. 7, according to which "the protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conclusive to social and economic welfare, and to a balance of rights and obligations". Furthermore, Art. 8(2) recognizes that appropriate measures may be needed to prevent the abuse of intellectual property.

Besides, Art. 40(1) acknowledges that licensing practices, which restrain competition may have adverse effects on trade or may impede technology transfer and therefore innovation. Following Art. 40(2), member states may adopt measures against licensing practices that have anticompetitive effects and constitute abuses of intellectual property rights.

105 Mackenrodt M., "Trade, Intellectual Property and Competition – 1. The Interface of Competition Policy and Intellectual Property in the WTO", IIC, 2005, vol. 36, p. 124 *et seq*. For a thorough analysis on the issue, see in particular: Straus J., "Implications of the TRIPs Agreement in the Field of Patent Law", In: Beier F.-K., Schricker G. (Ed.), "From GATT to TRIPs", IIC Studies, vol. 18, Weinheim, 1996, p. 160 *et seq.;* Ullrich H., "Technology Protection According to TRIPs: Principles and Problems", In: Beier F.-K., Schricker G. (Ed.), "From GATT to TRIPs", IIC Studies, vol. 18, Weinheim, 1996, p. 357 *et seq*.

106 The WTO is the Agreement establishing the World Trade Organization, adopted at Marrakech in April 1994 (WTO). One of the multilateral agreements signed within the institutional and legal framework provided by the WTO is the Agreement on Trade-related Aspects of Intellectual Property Rights (hereinafter TRIPs), which constitutes the Annex 1 C of the WTO. Within Part. II of TRIPs, on the "Standards Concerning the Availability, Scope and Use of Intellectual Property Rights", Section 5 is dedicated to "Patents". A full version of the TRIPS is available at: http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm

107 For a comprehensive legal study on how the international protection of IP rights has been influenced in combination with the international free trade system established through the TRIPS-agreement, see: Beier F.-K. and Schricker G., "From GATT to TRIPs: The Agreement on Trade-related Aspects of Intellectual Property Rights", IIC Studies, vol. 18, Weinheim, 1996.

108 As incisively observed by: Straus J., *supra*, fn. 105, p. 180-181.

109 Along the same line, see i.a.: Anderman S., "The Interface Between Intellectual Property Rights and Competition Policy", Cambridge University Press, 2007, p. 7.

The TRIPs provisions, however, do not provide more specific conditions and criteria under which the relevant licensing practices should be evaluated and, therefore, they do not offer any guidance in assessing more complex competition policy issues arising with respect to specific IP licensing strategies.[110]

110 For a critical overview on the issue, see: Ullrich H., "Expansionist Intellectual Property Protection and Reductionist Competition Rules: A TRIP Perspective", Journal of International Economic Law, 2004, 7, p. 401 *et seq*.

Chapter 2 Historical Outlook

A. Case Survey: The First Distinguished Patent Pools

Patent pools are a quite recent phenomenon, making their first appearance on the licensing scene only in the second half of the XIX century.[111] Here is a selection and a short description of the most significant examples of patent pools throughout the history.[112]

I. Sewing Machine

Actually, when retracing the story of patent pools throughout the last technological developments, it is widely agreed that one of the first recognized examples of a patent pool has been established in 1856 by sewing machine manufactures with the Sewing Machine Combination, consisting of sewing machine related patents aggregated together.

By the 1890s, pooling agreements had become a commonplace in the United States. The rising interest in technology pools stemmed in part from the widely felt desire to avoid the anti-competitive scrutiny pursuant to the Sherman Act of 1890, as patent pools were curiously considered as exempted from regulatory restrictions. This privileged perception was buttressed when in 1902 the US Supreme Court refused to invalidate and dissolve a patent pool, asserting "the general rule is absolute freedom in the use or sale of patent rights under the patent laws of the United States".[113]

II. Motion Picture

In December 1908, the Edison Film Manufacturing Company, the Biograph Company, and the other Motion Picture Patents members ended their competitive feuding in favour of a cooperative system under which the four firms assigned "all the patents in the early-day motion picture industry" to a newly created pool. The

111 Merges R., "Institutions For Intellectual Property Transactions: The Case of Patent Pools", in "Expanding the Boundaries of Intellectual Property: Innovation Policy for the Knowledge Society", August 1999, available at: http://www.law.berkeley.edu/institutes/bclt/pubs/merges/pools.pdf)

112 Consumer Project on Technology (CPTech) on Collective Management of IP Rights, "Patent Pool", available at: http://www.cptech.org/cm/patentpool.html

113 Bement E. & Sons v. National Harrow Company, 186 US 70, 1902, p. 91 *et seq.*

agreement also specified the royalties that were to be paid into the pool by licensees of the pool patents such as movie exhibitors.[114] Thus the motion picture inventors and industry leaders organized the first great film trust called the "Motion Picture Patents Company", designed in fact to bring stability to the chaotic early film years characterized by patent wars and litigation. By pooling their interests, the member companies legally monopolized the business and demanded licensing fees from all film producers, distributors, and exhibitors.

A January 1909 deadline was set for all companies to comply with the license. By February, unlicensed outlaws, who referred to themselves as "independents" protested the trust and carried on business without submitting to the Edison monopoly. In the summer of 1909 the independent movement was in full-swing, with producers and theatre owners using illegal equipment and imported film stock to create their own underground market. The Pool reacted by coercive tactics, such as the confiscation of unlicensed equipment, discontinuation product supply to theatres that showed unlicensed films, and so on.

However, as the independent outlaws flourished, the Motion Picture Patents Company was also hit with antitrust charges by the United States government. In October 1915, the courts determined that the Patents Company and its General Film division acted as a monopoly, falling under the prohibition of Sect. 1 of the Sherman Act[115] banning agreements, conspiracies or trusts "in restraint of trade".[116] Consequently, an order to dissolve the pool was later issued.[117] This change of approach patent pools was a sign that the earlier, "golden years" were over, putting an end to the past unspoken "immunity" of those kinds of agreements, while the tide began to shift.

In fact, private antitrust litigation regarding pooling agreements sharply increased after the US Supreme Court struck down the bathtub enamelling pool in 1912 in the *Standard Sanitary* decision.[118] In the latter case, a trade multi-party agreement under which manufacturers, who were previously independent competitors, limited output and sales of their products, i.a. by orchestrating their prices, was held illegal under the Sherman Act. Thereby, it was established that patent rights are also subjected to the general prohibitions of antitrust law. Here the licenses, although on their face lawful, was in fact considered a shield under which to implement an anti-competitive agreement.

114 Aberdeen J., "The Edison Movie Monopoly: The Motion Picture Patents Company v. the Independent Outlaws", available at: http://www.cobbles.com/simpp_archive/edison_trust.htm

115 US Department of Justice, Sherman Antitrust Act, 15 USC, Sect. 1-7, available at: http://www.usdoj.gov/atr/public/divisionmanual/chapter2.htm

116 For a critical analysis of the "conspiracy" theory developed under Sect. 1 Sherman Act, see: Strohm G., "Abgrenzung zu Conspiracy-Fällen" (Sec. 1 Sherman Act), in "Wettbewerbsbeschränkungen in Patentlizenzverträgen nach Amerikanischem und Deutschem Recht", Schriftenreihe zum Gewerblichen Rechtschutz, 1971, vol. 24, p. 252 *et seq.*

117 Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 513 (1917).

118 Standard Sanitary v. United States, 226 US 20 (1912), available at: http://supreme.justia.com/us/226/20/case.html

III. Folding Bed

In 1916, the owners of various patents related to folding beds and other similar devices entered into an agreement providing exclusive license to the Seng Company to manufacture and sell under the pool patents. Of the total royalties, 33 percent was allocated to the Pullman Couch Company. The license contract was signed by the Davoplane Bed Company (7 patents), the Pullman Couch Company (13 patents) and two inventors. The Seng Company paid a fixed percentage to the pool. Pool members split the royalty according to a pre-defined formula in the pooling agreement.[119]

IV. Airplane

In 1917, the US government needed to purchase more airplanes to use in World War I. Holders of the early patents for airplane production and various intermediate goods needed for it were charging exorbitant royalties for the use of their patents. Besides, production of aircraft in the United States had nearly come to a halt as airplane producers sued each other for patent violations. In March of that year there were two developments leading to the formation of the Manufacturers Airplane Association (MAA).[120]

An advisory panel, headed by then-Assistant Secretary of the Navy Franklin D. Roosevelt, recommended the formation of the patent pool. Consequently, congress passed the Naval Appropriation Act of the Fiscal Year 1918, which included $1,000,000 for the purchase of airplane patents. Every major producer of airplanes became a member of the Manufacturers Aircraft Association. Members would pay $200 in royalties to the MAA. Of the money paid in royalties about 10% were put into a fund to pay for administration of the patent pool.[121]

119 Serafino D., "Early Pools Associated with Monopolies and Cartels (1856-1919)" in "Survey of Patent Pools Demonstrates Variety of Purposes and Management Structures", Knowledge Ecology International Studies, June 2007, p. 9, at: http://www.keionline.org/content/view/69/

120 More on the Manufacturer's Aircraft Association available at: http://www.cptech.org/cm/maa.html

121 For a more comprehensive overview on the importance of patents in the global market for civil aircraft, from an historical and legal perspective, see: Begemann A., "Die Rolle von Patenten in der zivilen Luftfahrtindustrie aus historischer und rechtsvergleichender Sicht", Utz Herbert ed., Jan. 2008.

V. Radio

In 1924, an organization first named the Associated Radio Manufacturers, and later the Radio Corporation of America,[122] merged the radio interests of American Marconi, General Electric, American Telephone and Telegraph (AT&T) and Westinghouse. This pooling agreement was designed to control the licensing of the large number of radio patents, so that each member could have access to all the relevant patents necessary to build radio transmitters, antennas and receivers. The pool led to the establishment of radio parts standardization, airway frequency locations and television transmission standards.

This consolidation and standardization of radio technology[123] allowed the Radio Manufacturers Association (RMA) to control the essential technology that aspiring radio manufacturers would need to supply the sudden public appetite for radio, which, during the early part of the 20's, was growing rapidly. It also allowed RCA and other RMA patent owners to litigate against infringers from a strong, consolidated position. One of the benefits of this control was the ability to standardize the manufacture of electronic parts. This allowed manufacturers to make parts that could be used by radio producers interchangeably.[124]

VI. Hartford-Empire

However, the recently arising suspicion and misconception of patent pools was still persistent and political driven efforts to investigate and break up pools accelerated after some well-publicized hearings striking those kinds of agreements throughout the late 1930s. The famous US Supreme Court decision in the *Hartford-Empire* case[125] is still recalled for the harshness of Justice Hugo Black's outburst, holding against patent pools that "the history of this country has perhaps never witnessed a more completely successful economic tyranny over any field of industry than that accomplished by the pool members". This statement was widely perceived as ushering in an era of regulatory intolerance against these arrangements. As a con-

122 In 1950, the organization changed its name again to Television Manufacturers Association (TMA), then to the Radio Electronics Television Manufacturers Association (RETMA), in 1953. In 1957, the name became the Electronics Industries Association (EIA), now known as the Electronic Industries Alliance. Still quite active as a standards agency, among other things, the EIA maintains an Internet website at: http://www.eia.org/.

123 More on the Radio Manufacturers Association available at: http://www.netsonian.com/antiqueradio/radiodocs/RETMA/ccodeindex.htm

124 Burns R., "British Television: The Formative Years", Published by IET, 1986, p. 337 *et seq.*

125 Hartford-Empire Co. v. United States, 324 U.S. 570 (1945), available at: http://supreme.justia.com/us/324/570/case.html; for more information see also the opinion of the court delivered by Mr. Justice Roberts, available at: http://www.ripon.edu/faculty/bowenj/antitrust/hart-emp.htm

sequence, the number of patent pools created in the United States indicatively dwindled away to almost nothing until after World War II.

Fortunately, the situation improved in 1995, after the US Department of Justice and the US Federal Trade Commission jointly issued their "Antitrust Guidelines for the Licensing of Intellectual Property",[126] amending the previous misconception condemning those kinds of agreements while openly recognizing that "cross-licensing and pooling agreements may provide pro-competitive benefits". This positive approach was welcomed as an encouragement for the formation of new patent pools and opened the way to the establishment of those kinds of practices, especially flourishing within the new emerging video and entertainment industries.

VII. Video

A patent pool was then formed in 1997, by the Trustees of Columbia University, Fujitsu Limited, General Instrument Corp., Lucent Technologies Inc., Matsushita Electric Industrial Co., Mitsubishi Electric Corp., Philips Electronics N.V. (Philips), Scientific-Atlanta Inc., and Sony Corp. (Sony) to jointly share royalties from patents that are essential to compliance with the MPEG-2 compression technology standard. The MPEG-2 standard patent pool comprises a number of essential patents put into the hands of a common licensing administrator empowered to grant licenses on a non-discriminating basis, collect royalties and distribute them on a pro-rata allocation based on each licensor's contribution. The terms of the arrangement were negotiated with and approved by the US Department of Justice.

In 1998, Sony, Philips and Pioneer entered a patent pooling agreement for inventions that are essential in order to comply with certain DVD-Video and DVD-ROM standard specifications. In 1999, another patent pool was created by Toshiba Corporation, Hitachi, Ltd., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corporation, Time Warner Inc., and Victor Company of Japan, Ltd. for products manufactured in compliance with the DVD-ROM and DVD-Video formats.[127] There are presently about 80 US Patents for DVD-ROM drives, DVD-Video players and DVD decoders, and 96 U. S. Patents for DVD-ROM discs and DVD-Video discs.[128] The royalties under the joint license for DVD-Video players and DVD-ROM drives are 4% of the net selling price of the product or US $4,00 per product, whichever is higher. Royalties for DVD decoders are 4% of the net selling price of the product or

126 US Department of Justice and Federal Trade Commission, "Antitrust Guidelines for the Licensing of Intellectual Property (IP Guidelines)", April 1995, available at: www.usdoj.gov/atr/public/guidelines/ipguide.htm

127 See Letter from Klein J., Assistant Attorney General, Department of Justice, Antitrust Division, to Carey R. Ramos, Esq., available at: http://www.usdoj.gov/atr/public/busreview/2485.htm

128 For more information on the VD6C Licensing Agency, see the DVD Licensing Site at: http://www.dvd6cla.com/faq.html

US $1,00 per product, whichever is higher. Besides, the DVD joint Patent Licence requires licensees to grant each of the licensing companies of DVD6C, as well as their licensees, a non-exclusive licence on fair, reasonable and non-discriminatory terms to use any of their patents that are deemed essential for the manufacture, use or sale of DVD Products. This grant-back is restricted only to those DVD products actually licensed to the licensee.

B. Discussed Patent Pools' Examples

I. The Debated Case of Software: The "Open Innovation Network" Initiative

1. Targeting Collective Free "Open Source" Access to Software Patents

Leaving aside for the moment the most targeted branches of the telecommunication industries,[129] we should now say a few words about the issue of patent pools that include software technology, which surely represents a much-debated subject when it comes to IP protection.[130] Confronted with this new prospective scenario, an argument of Bruce Perens, the well-known leader of the Free Software and Open Source community, in favour of Linux having a patent pool is that it would in fact be "a means of defence".[131] Indeed, the basic idea behind the platform "OpenPatents.org", which was consequently constituted, is to change the rules of the patent game and to help solve the problems of mutual blocking of software patents to the benefit of the participants.[132] The resulting Open Patent License can in effect be defined as a cooperative community convening around a reciprocal non-aggression pact, whose features can be further specified as follows: the participating parties may consent to be mutually non-confrontational with respect to: (1) only a specific set of patents; (2) all their software patents; or (3) all their patents. Besides, the concluded agreement would require that companies wishing to obtain the full advantag-

129 For an overview on patent pools for the telecommunication sectors, see: Aoki R. *et al.*, "Coalition Formation for a Consortium Standard through a Standard Body and a Patent Pool: Theory and Evidence from MPEG2, DVD and 3G", Institute of Innovation Research Working Paper, 2005.

130 For a study on the merits of IP protection for software, see i.a.: Lehmann M., "Protecting Software? The Benefit of Exclusive Rights in Intellectual Property" In: Publikationen des Europäischen Patentamts (EPA), 2006, p. 1 *et seq.* For a wider perspective, including a comprehensive examination of the EC Council Directive on the Legal Protection of Computer Programs, see also: Lehmann M. and Tapper C., "A Handbook of European Software Law", Oxford University Press, 1993.

131 For the official website, see: http://www.openpatents.org

132 For an investigation on the debated merits of software patents, see i.a.: Hilty R. and Geiger C., "Patenting Software? A Judicial and Socio-Economic Analysis", In: IIC, 2005, vol. 6, p. 615 *et seq.*

es of the pooled contributions with respect to software patents do not attempt to make an end-run around the license by using forms of IP other than patents that would restrict the re-implementations of works. These would include intellectual property rights, for instance, such as "look and feel" copyrights and restrictions on reverse engineering.

a. From Linux-Based Cooperative Research Paradigms

Pursuing the same popular widespread philosophy of ensuring free "open source" access to software patents - while opposing antithetical "proprietary" approaches[133] - and in order to promote the continued growth of Linux and related software, IBM, Novell, Philips, Red Hat and Sony announced the establishment of a new collaborative undertaking in November 2005, which they symbolically called "Open Invention Network" (OIN),[134] based in New York City and headed by Mr. Rosenthal, formerly vice president of IBM's Intellectual Property and Licensing Group.

Interestingly, IBM, which has now emerged as an icon-star for staying on top of the open innovation bandwagon, was not always a quite "open" company, but used to be a rather traditional and secretive firm, based on a close corporate model and mostly known for producing hardware components.[135] Indeed, its opponents argue that IBM finally became open in markets, like software, where they had fallen behind,[136] profiting from a devoted army of programmers around the world developing open source software at essentially no cost, by relying on their work for incorporating a functional and competitively cheap operating system in IBM computers and, eventually, charging customers for providing support and auxiliary services. On the other hand, in hardware markets, where IBM always had the lead, they were and still are extremely close. Anyway, as far as software is concerned, it is hereby maintained that IBM should at least be given some credit for having seized the potential of a new, more open, business approach and, consequently, invested its managing resources to make it workable. Apparently, the time was then ripe for a change.

133 As notoriously represented, *i.a.*, by the software giant Microsoft.

134 For the official Open Innovation Network (OIN)'s website, see: http://www.openinventionnetwork.com

135 For a critical analysis of IBM's behavior, where it is argued that IBM's embrace of open source software comes not from a new-found ideology, but from its history of pragmatism, see: Campbell-Kelly M., *et al.*, "Pragmatism Not Ideology: IBM's Love Affair with Open Source Software", Working Paper Series, January 2008, available through the Social Science Research network at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1081613

136 Referring to a statement of Kenneth Morse, head of the Massachusetts Institute of Technology (MIT)'s Entrepreneurship Centre, as reported by The Economist in: "The Move Towards Open Innovation is Beginning to Transform Entire Industries", The Economist, Special Report, Oct. 11, 2007, also available at: http://www.economist.com/specialreports/displaystory.cfm?story_id=9928227

b. To Institutionalised Consortia, as Advocated by IBM at the Madrid OECD Conference on the Research Use of Patented Inventions in May 2006

In consideration of the experiences that have been gathered in the meantime, particular attention to the heated issue of software patents was called up anew by Mr. Klett, IP counsel at IBM Research Centre in Zurich, in the course of an OECD Conference on Research Use of Patented Inventions held in May 2006 in Madrid,[137] where "alternative cooperative approaches", as opposed to traditional exclusionary patent practices, were closely scrutinized. Indeed, after stressing the importance of patents to IBM, he actually acknowledged that a more open research paradigm, based on mutual collaboration, is proving to be a viable option and gradually gaining ground, as shown by the increasing popularity and consequent visibility acquired by the open source software community in the latest years.

Nevertheless, informal sharing activities, based on an exchange of communications and relevant information among researchers, might be quite frustrating,[138] shall opposing patent rights be asserted. Even though infringement in early collaborative phases of implementation may still be quite difficult to detect and therefore litigation may eventually be avoided, still the problem encountered is that simple research exemptions cannot always be relied on, as they are not fully harmonized throughout the countries. Accordingly, the solution advocated here rather consists of building solid consortia, more "institutionalised" in their character and far-reaching in their scope, ideally tracking all essential patent holders for the targeted technology at an early stage, while involving them through multiparty cooperation agreements and setting the terms of liabilities of their reciprocal exchange. Such common framework would serve as "stabilizing glue" for binding contributors of innovations together and guiding them during the steps of their collaboration.

Following such paradigm, the "Open Innovation Network" was organized around the acquisition of software patents, mostly related to web services, in order to license them free of charge to others who, in their turn, would agree not to assert their own patents against the community, built around the use of "open source" applications.[139] In practice, IBM's IP policy did not comprise abolishing patent protection,

137 OECD, "Conference on Research Use of Patented Inventions", Madrid, 18-19 May 2006; For all related documents, including summary reports and presentations, refer to: https://www.oecd.org/document/46/0,3343,en_2649_34797_36060462_1_1_1_1,00.html

138 According to Mr. Klett's reported statement, "patents can be frustrating [because] they tell researchers how to do something, but prevent them from doing it", in: OECD, *supra*, fn. 137, p. 13-14, available at: https://www.oecd.org/dataoecd/21/38/37868230.pdf

139 Linux is an open-source operating system that has been created communally by developers around the world. The dispersed nature of Linux, however, means there is no single entity to collect patents and make them generally available. The term "open source" refers to software whose source code - i.e. the human readable code as opposes to the only computer readable binary "object code" - is published and made available to the public under a license that permits users to study, change, and improve the software, and to redistribute it in modified or

but "softening" it by supporting a framework providing a friendlier environment for open collaboration and exchange. On the same line, also IBM's other "Soft IP" initiative should be briefly mentioned here,[140] attempting to promote a smoother patent paradigm based on which the owner is not to be provided with a title to issue an injunction to an infringer, but simply with the right to collect license royalties.

Originally, the term "Open Innovation"[141] was coined by Henry Chesbrough, business professor at the University of California at Berkeley, back in 2003.[142] The central idea behind the fancy name is that in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own corporate R&D lab, but should instead also buy or license processes or inventions (i.e. patents) from others, thus taking part in a constructive dialogue including universities, suppliers and outside inventors.[143] In this perspective, "open innovation" supporters used to describe an environment in which ideas could flow in and out of organizations, depending on where they could be most efficiently handled. The underlying belief endorsed was expressed in the statement that: "If you sit on an idea, you are likely to have it stolen, duplicated or rendered obsolete long before you develop the competences and capabilities needed to unlock its true value"[144]. It is far better, so it was argued, to have external partners to accelerate your innovation processes in return for royalties. Accordingly, internal inventions not being used in a firm's business should be taken outside the company (i.e. through licensing, joint ventures, spin-offs). In contrast, "closed innovation" refers to processes that limit the use of internal knowledge within a company's own internal R&D department and make little or no use of external knowledge.[145]

In the past, in fact, most undertakings operated through the paradigm of "closed innovation". Traditionally, companies tended either to keep their discoveries under

unmodified form. It is often developed in a public, collaborative manner. For more detailed information, see: http://opensource.org; For a thorough analysis on the open source model and ethics, see i.a.: Hope J., "Biobazaar: The Open Source Revolution and Biotechnology", Harvard University Press, 2008; Raymond E., "The Cathedral and the Bazaar", O'Reilly Media, 1999.

140 Sage J., "Soft IP", Presentation at EPO Conference, Brussels, July 5, 2007, available at: http://www.ipjur.com/data/070705Jonathan_Sage.pdf

141 For a thorough study on the concept of "Open Innovation", see i.a.: Hilty R., "Open Innovation in einer Welt mit geistigem Eigentum", In: Picot A. et al., "Innovationsführerschaft durch Open Innovation, Chancen für die Telekommunikations-, IT- und Medienindustrie", Berlin, Springer, 2009, p. 171 *et seq.*

142 Chesbrough H., "Open Innovation", Harvard Business School Press, Boston, 2003.

143 Chesbrough H., "Open Platform Innovation: Creating Value from Internal and External Innovation," Intel Technology Journal, August 2003, vol. 7, 3, p. 5 *et seq.*

144 This was a statement of Andrew Gaule, a leading expert on open innovation, as reported in: Tyrrell P., "The Value of Knowledge: European Firms and the Intellectual Property Challenge", Economist Intelligence Unit White Paper, January 2007, p. 13, also available at: http://graphics.eiu.com/files/ad_pdfs/eiu_EuropeIPR_wp.pdf

145 Chesbrough H., "Open Innovation: A New Paradigm for Understanding Industrial Innovation," in Henry Chesbrough, Wim Vanhaverbeke, and Joel West ed., "Open Innovation: Researching a New Paradigm", Oxford University Press, 2006, p. 1 *et seq.*

trade secret, at least as long as it takes to come up with the next innovation, or to patent them, in order to stay ahead of the competition and to have their own exclusivity secured, thus not being open to assimilate information from outside their own R&D labs. In more recent years, on the contrary, major advances in technology and society have facilitated the diffusion of information and, to a certain extent, the "globalisation" of knowledge. Break-through innovations in the domain of electronic communications, including the Internet, have certainly speeded up this process:[146] nowadays information can be transferred so easily that it seems impossible to prevent.[147] Hence, the "open innovation" model proceeds from a very pragmatic proposition: since firms cannot stop this phenomenon, they should learn to take advantage of it instead.[148]

2. Drawing up a Balance of "Open Innovation" as Alternative Business Models

According to a survey conducted by IBM in 2006 based on interviews with 765 CEOs and business leaders, collaboration can pay off: a financial analysis explains why companies are more eager to create partnerships with other organizations than ever before: firms with higher revenue growth reported using external sources to a significantly higher degree than the slower ones. The most significant sources of innovative ideas came, in the first place, from employees (40%), business partners (37%), customers (34%), consultants (21%), competitors (20%). On the other hand, traditional sources of corporate innovation, such as internal sale and service units and the company's own R&D departments, respectively, accounted for just 17% and 16% of the overall efforts.[149]

Nevertheless, the benefits of the "open innovation" model shall be put into right perspective and, somehow, downsized: in fact, critics have raised the legitimate ob-

146 Dodgson M., *et al.*, "The Role of Technology in the Shift towards Open Innovation: the Case of Procter & Gamble", R&D Management, 2006, vol. 36(3), p. 333 *et seq.*

147 Christensen J., *et al.*, "The Industrial Dynamics of Open Innovation - Evidence from the Transformation of Consumer Electronics", Research Policy, 2005, vol. 34, p. 1533 *et seq.*

148 In his recent book dealing with Open Business Models, Prof. Chesbrough explains how to make money in an Open Innovation landscape: he proposes a diagnostic instrument for assessing a company's current business model, and gives suggestions on how to overcome common barriers to pursue a more open business paradigm, also offering examples of companies that have developed such models - including Procter & Gamble, IBM, and Air Products. For the reference, see: Chesbrough H., "Open Business Models: How to Thrive in the New Innovation Landscape", Boston: Harvard Business School Press, 2006.

149 IBM, "The Global CEO Study 2006", available at: http://www-935.ibm.com/services/au/bcs/html/bcs_ceostudy2006.html, as from Press release: "The Move Towards Open Innovation is Beginning to Transform Entire Industries", The Economist, Special Report, Oct. 11, 2007, also available at: http://www.economist.com/specialreports/displaystory.cfm?story_id=9928227

jection that firms have always been "open" to some degree in order to stay receptive to new market trends.[150] Arguably, the convenience of endorsing a wider "opening" solution with other undertakings greatly varies depending on the line of business adopted. In the specific, capital-intensive industries, such as the pharmaceutical sector, in which consistent time to develop products is required, which thereafter can be sold for years - i.e. are characterized by a long technology-life cycle - would probably benefit less from the open innovation pattern. Ultimately, some scepticism and caution has been called to mind, because the costs of choosing an "open innovation" approach, in management distractions or lost intellectual property rights, has apparently not been nearly as well studied as its putative benefits.[151]

Generally - in industries marked by fast-paced technologies with a shorter product-life cycle, such as for software applications, where traditional patent protections are often inadequate for keeping pace with innovations - where it may prove workable, the open innovation strategy needs some basic conditions to prosper, which I would summarize as follows:

- Coordination - the benefits of an open innovation approach, based on a diversified multitude of contributions coming from internal and external sources, may only be actually achievable if all relevant inputs are properly orchestrated. This may suggest the need for a smart central leadership in order to avoid inconvenient gaps or overlapping endeavours.
- Power of attraction - the chances for success of an open innovation strategy may depend not only on what a firm does, but also, and sometimes even more importantly, on how it is perceived in the market. Big corporations, such as IBM, promoting an open innovation approach, shall be valued mostly for disposing of competent experts to attract knowledgeable outsiders with brilliant ideas. What is needed is a valuable reputation to catalyse crucial contributions that would make the undertaken project workable. This pre-condition may indeed be difficult to fulfil by small, no-name companies, without the right back up for an open innovation enterprise.
- Power of involvement - Still in some way related to the power of attraction requirement, but eventually subsequent to it, is the capacity of a visionary company to cultivate a "network" as a means to bound users, and possible contributors, building a common framework around them, where they may be able to share experiences and expectations. In this way, products and services could be truly customized around customer's needs and evolve accordingly. The open innovation model takes this process even a step further, as here customers are often al-

150 For a comprehensive overview on the "Open Innovation" trend, with a focus on the widespread practices of firms relying on research and development that may lie outside their own boundaries, see i.a.: Chesbrough W. et al., "Open Innovation: Researching a New Paradigm", Oxford University Press, 2006.

151 Dahlander L., Gann D., "How Open is Innovation?", Paper for the DRUID Summer Conference 2007 on Appropriability, Proximity, Routines and Innovation", Copenhagen, June 18 - 20, 2007, available at: http://www2.druid.dk/conferences/viewpaper.php?id=1478&cf=9

so contributors. In this respect, we may well talk of "user-driven innovation", because here the users are not only the end-goal - where innovation is directed - but also its starting point - where innovation is inspired.

Drawing up a general balance, we may observe that, letting aside more or less well-grounded reported criticisms about the effective merits of "open innovation" patterns, these days, alternative collaborative strategies, as coming forth in software environments, are leading to the creation of new open communities, typically organized through cooperative paradigms, which are consequently going to co-exist along with more traditional and exclusionary means of IP protection.[152] As is becoming particularly apparent in software development,[153] new proactive, cooperative IP approaches are increasingly gaining ground and popularity also within other industrial sectors[154] as "alternative business models", aside from more conventional exclusive patent practices, i.e. "proprietary" paradigms.[155] This demonstrates that a centrally planned approach may also be leading to a more open, even arguably anarchic, new model of innovation. These evolving patterns of IP management, based on open collaboration within a common sharing framework, are being consistently nurtured by passionate and dedicated communities of users and innovators and present a big true potential, certainly promising to leave their mark on a new era of technological developments.[156]

152 Burt R. *et al.*, "Intellectual Property Strategy in the 21 Century - Balancing Open & Proprietary Innovation", European Patent Conference (EUPACO) Presentation, Brussels, January 24, 2007, available at: http://www.ipjur.com/data/070124RogerBurt-IBM.pdf

153 For a comprehensive study on the wider debate of IP protection for software, covering the whole spectrum of IP rights, see i.a.: Lehmann M. et al., "Rechtsschutz und Verwertung von Computerprogrammen", ed. O. Schmidt, 1993.

154 Chesbrough H., Crowther A.K., "Beyond High Tech: Early Adopters of Open Innovation in Other Industries", R&D Management, 2006, vol. 36, 3, p. 229 *et seq*.

155 Mr Janez Potočnik, European Commissioner for Science and Research recently affirmed, on the High Level Conference on the European Research Area "The Future of Science & Technology in Europe", Lisbon (Portugal), October 8, 2007: "[...] Increasingly, businesses thrive in an environment of 'open innovation', where connections with each other and with public research institutions are vital to explore ideas and develop products more effectively than would be the case alone. [...]", as reported in: http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/07/609&format=PDF&aged=0&language=EN&guiLanguage=en

156 For favorable views on the open innovation model, see, *i.a.*: Chesbrough H., "Open Business Models: How to Thrive in the New Innovation Landscape", Harvard Business School Press, 2006; Pisano G., "Profiting from Innovation and the Intellectual Property Revolution", Research Policy, 2006, vol. 35(8), p. 1122 *et seq*.

II. The Celebrated "MPEG LA" Case

1. From the First Steps to a Rising Star

"MPEG LA" stands for "The Moving Picture Experts Group Licensing Administrator" and probably represents one of the most current and significant examples of a patent pool,[157] from both an international and economic perspective.

It all started in the late 1980's when a panel of engineers came together to establish an industry-based standard for digital video compression, which is basically a process where digital videos are compressed in size, enabling high transfer rates. It covers the video compression tools that make it possible to squeeze full-length films onto DVDs, stream video over the Internet, and send high-resolution television over cable lines. For these reasons MPEG is among the most used digital standard formats for movies and video-clips on the Internet today.

The panel of experts recognized that the biggest problem in implementing the standard was that many different patent owners were involved, which resulted in a typical "patent thicket" situation,[158] nowadays a notorious problem throughout the legal doctrine analysing patent pools. The solution has been to establish an independent company that would manage the pool of patents allowing "one-stop shopping", i.e. a centrally organized platform where all relevant licenses can be acquired as a unique package,[159] for patent holders and licensees. In 1996 the MPEG LA was born.[160]

Even if in recent years patent pools have become popular in the consumer electronics sphere, the MPEG-2 was the first one of its kind to take on such a significant dimension in the international and economic scene. In contrast to the so-called "mega-pools", sharing all patents within a specific industry, the MPEG-2 pool was primarily based on one central technology and consequently limited to underlying essential patents, aside from various adjustment mechanisms for adding newly emerged patents, according to pre-determined criteria, and fixing royalty rates, thereby conferring on it a certain degree of flexibility.

The initial members of the patent pool included: Columbia University, Fujitsu, General Instrument, Matsushita, Mitsubishi, Lucent, Philips, Scientific-Atlanta and

157 Baltes C., "Patent Pools - An Effective Instrument for the High Technology Co-operation?", Spring 2003, available at: http://www.jur.lu.se/internet/english/essay/masterth.nsf/0/6C1CE2960E92A1BCC1256D2C003F6BEC/$File/xsmall.pdf?OpenElement, p. 27 *et seq*.

158 Shapiro C., University of California at Berkeley, "Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standards-Setting", March 2001, available at: http://www.haas.berkeley.edu/~shapiro/thicket.pdf, p. 17 *et seq*.

159 For an analysis of the notion, see i.a.: OECD, "Science, Technology and Industry Outlook 2006", OECD Publ., 2006, p. 157 and Takenaka T. et al., "Patent Law A Handbook of Contemporary Research", Edward Elgar Publishing, 2008, p. 714 *et seq*.

160 Andersen S., "Inside MPEG LA, the Prototypical Patent Pool Recovering Lawyer Revolutionizes IP Management Model", Corporate Legal Times, vol. 12, no. 130, September 2002.

Sony. Altogether, they combined twenty-seven patents and offered one-stop shopping for manufactures of television, digital videodiscs and players, telecommunications equipment as well as cable, satellite and broadcast television services. To get support for the formation of the pool, the nine patent holders identified all patents that are essential for being able to meet the MPEG-2 international standard. Their licenses were granted to all interested parties through a licensing agent (i.e. LA), administering the pool on behalf of its members and based in the United States in Denver, subsequently becoming popular as MPEG LA.

As regards its functioning, the MPEG LA employed independent experts to determine whether all relevant patents were essential and suitable to be included in the pool, in the absence of alternative specifications to reach the technical product or process targeted. At the time, the MPEG lawyers and experts reviewed over eight thousand US patents abstracts and over eight hundred patents owned by over thousand companies and inventors. Finally, they identified twenty-seven essential patents, most of which were owned by foreign inventors.[161] The license eventually conferred had a worldwide range and was granted, under pre-defined terms, to any licensee without discrimination.[162] Consequently the MPEG LA collected royalties and distributed them among the members according to a pro-rata allocation based on each licensor's proportionate share of the total number of patents contributed to the pool.[163]

As mentioned above, an adjustment mechanism included in the license agreement of the pool pre-determined in what way new patents were added into the existing package. Specifically, a set of norms to be used for the evaluation of new essential technologies and the corresponding recalculation of the corresponding royalties was identified by a so-called "liability rule".[164] Furthermore, the MPEG-2 agreement had a grant back provision that required the licensee to grant the licensor a non-exclusive grant back of any essential patent eventually retained. On the other hand, there was no other major competitive restrictive obligation on the licensee, who remained substantially free to develop substitute products also outside of the pool.[165]

A revealing article that appeared on the Intellectual property Law & Business Review provided an accurate economic and legal assessment of the MPEG LA's first patent pool and described it as a "royalty gold mine". Lawrence Horn, a lawyer, ad-

161 The list of current licensors may be consulted at: http://www.mpegla.com/m2/m2-licensors.cfm

162 The list of current licensees may be consulted at: http://www.mpegla.com/m2/m2-licensees.cfm

163 For a legal analysis of the MPEG-LA patent pool, see, i.a.: Russell L., "Royalty Rates for Licensing Intellectual Property", Published by John Wiley and Sons, 2007, p. 75 *et seq.*; Taplin R., "Valuing intellectual property in Japan, Britain, and the United States", Published by Routledge, 2004, p. 84 *et seq.*

164 For an insight in this legal notion, see: Merges R., "Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations", California Law Review, 1996, vol. 84, no. 5.

165 For the details of the license agreement, see: http://www.mpegla.com/m2/m2-agreement.cfm

ministered the pool as the company's vice president for licensing and business development. The report referred to him as "scouring the globe for intellectual property, finding all the patents for a given technology and lumping them together in one convenient package". As underlined, it could take a lot of effort and negotiating to get a patent pool off the ground, but the work was well paid off by the turnover obtained by consortia such as the MPEG-2, defined as the most lucrative ever patent pool for a technology.[166]

Since its creation, the MPEG-2 has evolved to comprise 650 patents from 24 holders, with some 800 licensees, including industry giants like Apple Computer Inc., and Warner Home Video Inc. It has been calculated that each time a DVD player was sold, the pool received $2.50 for the MPEG-2 decoder contained inside the player. On the same line, each time a pre-recorded DVD was sold, the pool pocketed 3 to 4 cents. These royalties were split among the patent holders in the pool and MPEG LA took a 10 percent cut, according to the above-mentioned report. Besides, the pool picked up royalties from other products and services, such as on-demand television or computer DVD drives, that used the MPEG-2 standard. Since MPEG-2 technology first entered the market, MPEG LA has formed six patent pools, all related in one way or another to video. One pool is based on a more advanced compression technology, called MPEG-4. [167]

2. Still a Necessary Evil?

Yet, as underlined in the above-mentioned article, "even as the MPEG-2 owners take in the royalties, patent pools still cannot seem to shake their reputation as a necessary evil". Quoting the report further: "In the past decade pools have become something like the licensing version of Donald Trump: increasingly popular, even if they still seem a bit suspect […] No patent holder goes into a pool completely happy about the idea: grouping one's patents with everyone else's patents, and licensing them en masse according to non-negotiable terms, means giving up a lot of the very control that a patent confers. Sharing IP can bring other forms of trouble, too, particularly with antitrust regulators. Pools can be structured to fix prices, stifle competition, discourage innovation, or divide markets. Yet increasingly, going it alone is a luxury companies just don't have. More and more products are built according to standards that incorporate bits and pieces of IP owned by many different companies - so many companies that getting all the necessary licenses in place can be a difficult task. If the task is too difficult, a new technology may never get off the ground, leav-

166 Cohen A., "MPEG LA's First Patent Pool Pulls in Millions of Dollars. Now the Licensing Company is wading into the Murky Waters of Digital Rights Management and Making a Royalty Splash won't be Easy", Intellectual Property Law & Business", vol. 05, issue 02, February 2005, also available at: http://www.law.com/jsp/article.jsp?id=1108389913560

167 All current information retrieved may be consulted at: http://www.mpegla.com/m4v/index.cfm

ing IP owners with patents that no one wants to license. That leaves IP owners with a tough decision: They can take a chance with a pool, hopefully spurring a market for their IP; or they can go it alone and possibly never see that market materialize. […] MPEG LA has bet its whole business that companies won't-or can't-go it alone".[168]

168 Cohen A., *supra*, fn. 166, p. 2; For a comprehensive analysis, see also: Hovenkamp H. "IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property Law", Aspen Publishers, 2002, p. 34 *et seq.*

Chapter 3 Comparative Analysis: US Legal Treatment of Patent Pools - Delineating the Modern Archetype

A. Outlook on the American Model: The Early Years

I. From the Initial Patent Holders' Immunity to the Fierce Supreme Court's Antitrust Scrutiny

Between the end of the XIX and the beginning of the XX century, US courts gave sweeping deference to the licensing of patents and such activities, in whatever forms they came into existence, were in practice considered immune to the application of antitrust restraints.[169] At the time you could rightly speak of a patent pools' substantial freedom of any competitive scrutiny. The first organizations mandating the licensing of technologies and the establishment of patent pools were indeed entrusted by the government of the United States in order to promote the public interest. This "green light" for the creation of patent pools has characterized the early history of this practice, which has played an important role in the business scene over the last one hundred years.

In 1856, some forty years before the Sherman Act became effective, the sewing industry, as mentioned in the preceding section, successfully instituted one of the first patent pools. Subsequently, the passage of the Sherman Act in 1890 – one hundred years after the first Patent Act of 1790 – set the stage for courts to begin construing how antitrust and patent doctrines should interact. As the Federal Trade Commission Report on Innovation pointed out,[170] "although both patent and antitrust have antecedents dating back farther than the enactment of those two statutes,[171]

169 Baltes C., "Patent Pools – An Effective Instrument for the High Technology Cooperation?", Spring 2003, available at: http://www.jur.lu.se/internet/english/essay/masterth.nsf/0/6C1CE2960E92A1BCC1256D2C003F6BEC/$File/xsmall.pdf?OpenElement, p.22 *et seq.*

170 US Federal Trade Commission, "To Promote Innovation: the Proper Balance of Competition and Patent Law", Report, October 2003, Chapter I, p. 15 *et seq.*, available at: http://www.ftc.gov/os/2003/10/innovationrpt.pdf

171 As Robert Merges and John Duffy pointed out, tracing the history of the core concepts of patent law through the present days, Aristotle discussed and rejected a proposal for a patent-like system in the fourth century B.C.; See Merges R. and Duffy J., "Patent Law and Policy: Cases and Materials", 2002, 3. ed., p. 1-13. Conversely, English courts wrestled with competition law early on and, for example, rejected a monopoly granted by Elizabeth I.; See "The Case of Monopolies", 77 England Report, 1260, 1603. Other competition law issues, such as restraint of trade cases, with parties demonstrating cartel behavior, were brought as contract cases. Courts in England and the United States refused to uphold such contracts, long before the

courts did not give significant attention to the intersection of patents and antitrust until the early 1900s". Early court opinions generally refrained from subjecting patent-related conducts to antitrust scrutiny,[172] most typically because it was considered that the very object of these patent laws was in fact nothing but a monopoly. Therefore Courts often seemed "to immunize from antitrust scrutiny the conduct of firms holding patents",[173] which also held true in case of patent pools with outright price fixing.

These were the golden years of patent pooling agreements, which reached their apices in 1902, when the Supreme Court, in the case *Bement & Sons v. National Harrow Co.*,[174] established the dominance of patent law over federal antitrust provisions. The Supreme Court expressly proclaimed that a patent holder enjoys absolute freedom to license his patents under any conditions contractually agreed upon between the patentee and the licensee. In the Court's view, the fact that the contract created a substantial monopoly, or even fixed prices, did not constitute a violation of the Sherman Act.

This idyllic situation for patent holders ended in 1912 with the United States Supreme Court's decision in *Standard Sanitary Manufacturing Co. v. United States*,[175] which dissolved a patent pool because of alleged antitrust violations. This case marked a milestone, since the courts began to condemn patent pooling as a practise that could indeed have antitrust implications. The patent pool at issue related to an enamelling process for sanitary ironware. In fact the pool brought together eighty-five per cent of the enamelware manufactures. Specifically, the pooling agreement provided that the participants agree on minimum sales prices, resale prices enforcement, and refusal to sell to unlicensed manufactures. The Supreme Court found that this was a clear case of misuse of intellectual property rights and ruled that the patentees crossed the line on what is necessary to protect the use of a patent, going beyond the legal scope of protection.[176]

When the United States entered World War I in 1917, they found themselves in desperate need of airplanes. As has also been set forth in the preceding section, at this time two firms held blocking patents necessary for the airplane manufactures. The Wright Company controlled the basic patent, namely the wing-twisting mechanism, while Curtiss Aeroplane & Motors Corporation held the principal patents for a

Sherman Act was written. See: Lopatka J., "The Case for Legal Enforcement of Price Fixing Agreements", Emory Law Journal, 1989, vol. 1, p. 38 *et seq.*

172 Among others, see: Bement v. National Harrow Co., 186 US 70, 1902; Heaton-Peninsular Button-Fastner Co. v. Eureka Specialty Co., 77 F. 288, 6th Cir. 1896; Strait v. National Harrow Co., 51 F. 819, N.D.N.Y. 1892.

173 Anthony, 28 AIPLA Q.J., p. 5.

174 Bement v. National Harrow Co., 186 U.S. 70 (1902), available at: http://supreme.justia.com/us/186/70/case.html

175 Standard Sanitary v. United States, 226 US 20 (1912), available at: http://supreme.justia.com/us/226/20/case.html

176 For a contextual historical-based approach, already embracing i.a. the decision at issue, see *supra,* Part. I of this contribution.

wing-flap mechanism that improved Wright's basic patent. The two companies, engaged in a long drawn-out dispute in which Wright accused Curtiss of infringement on its wing-twisting mechanism, refused to manufacture airplanes. This put the American government in a grave situation just before the entry into the war. To exit the impasse the National Advisory Committee for Aeronautics proposed a cross-licensing agreement where the aircraft manufactures should each pay a royalty to be able to have access to all patents in the pool. The Attorney General concluded that the pro-competitive effects of these arrangements outweighed any anti-competitive effects. It was the first time that a balance of the overall effects of a pooling agreement was reached, with due account taken of the concrete contextual features of the specific situation at issue. This agreement had the pro-competitive benefit of removing the stranglehold on the aircraft industry and, as the patents did not compete with each other or with any others outside of the pool, competition could not be hampered.[177]

However, by the 1930s the Supreme Court soon returned to its stricter approach towards patent pooling agreements, reflecting in its attitude a newly emerged stronger role of antitrust and a corresponding weaker role of patent law. In fact, at the time, patent was perceived by some commentators as a legal instrument favouring "the powerful and the unscrupulous" and therefore as being detrimental to competitors.[178] This jurisprudential line culminated in 1931 with the decision *Standard Oil Co. v. United States*,[179] which is also remembered as "the cracking patents case", where the Supreme Court created and applied the so-called "market power test" for the first time, which, based on the actual market power of the participating undertakings, provided the competent authorities with practical guidelines for determining whether a patent pool is violating antitrust provisions.

In 1945 the Supreme Court, applying again its "market power test", dissolved one of the most notorious patent pooling agreements in history with its decision in *Hartford-Empire Co. v. United States*.[180] The patent pool covered over six hundred patents, allowing its members to sustain glass prices at unreasonably high levels. Judge Hugo Black stated in the judgement: "The history of this country has perhaps never witnessed a more completely successful economic tyranny over any field of the industry than that accomplished by the appellants". As partial remedy the Court mandated the participating undertakings to license their patents to all interested third par-

177 On the antitrust issues underlying this case, see: Laurence I., "Patents and Antitrust Law", Published by Commerce Clearing House, inc., 1942, p. 148 *et seq.*; For a panoramic history of the rise of the US aerospace industry, retracing also the origin of the Manufacturers Airplane Association, see: Wayne B., "Barons of the Sky: from Early Flight to Strategic Warfare: the Story of the American Aerospace Industry", Published by Johns Hopkins University Press, 2002, p. 114 *et seq.*

178 Kahn A., "Fundamental Deficiencies of American Patent Law", American Economic Review, 1940 (30), 475, p. 485-86

179 Case, 283 US 163, 1931.

180 Case, 323 US 386, 1945; for more information see also the opinion of the Court delivered by Mr. Justice Roberts, available at: http://www.ripon.edu/faculty/bowenj/antitrust/hart-emp.htm

ties without discrimination or restrictions, at the standard royalty level. Three years later, in 1948, the Supreme Court ruled that even an agreement, which combines blocking patents that could not be otherwise fruitfully exploited without infringing on each other's intellectual property rights, could violate the Sherman Act, as in the specific case in *United States v. Line Materials*,[181] if a price-fixing clause is involved.[182]

II. The Patent Act of 1952 and the "Nine No-Nos": Defining the Spheres of Interference between Antitrust and Patent Law

The Congress reacted to this judicial trend by passing the Patent Act of 1952, which strengthened the patent system by limiting the interferences of antitrust law and the overreaching doctrine of patent misuse.[183] In 1957, as a result of the frequent overlaps of the patent and the antitrust system,[184] a lengthy study was issued on the initiative of the Congress on "The Patent System and the Modern Economy".[185]

Within this framework, an important step towards the regulation and a certain level of legal certainty of patent pools, although always through a suspicious approach, occurred in the 1960s, when the US Department of Justice closely evaluated all existent patent pools and produced a list of nine stereotyped patent licensing practices that would be considered per se antitrust violations. This list was soon known as the "Nine No-Nos" and comprised the following prohibited general practices in the context of patent licensing: "(1) requiring a licensee to buy unpatented materials from the licensor; (2) requiring a licensee to assign to the patentee any patent which may be issued to the licensee after the license agreement is executed; (3) attempting to restrict the purchaser of a patented product in the resale of that product; (4) restricting the licensee's freedom to deal in products or services not within the scope of the patent; (5) agreeing with the licensee that the licensor will not,

181 United States v. Line Material Co., 333 U.S. 287 (1948), available at: http://supreme.justia.com/us/333/287/case.html

182 For a thorough analysis on the antitrust considerations of price-fixing clauses, particularly when applied to patent pools, in the American jurisprudence of the time, see: Dreiss U., "Die Unzulässigkeit der Preisbindung bei Gleichzeitiger Lizenzierung und fremder Patente durch Patent Pools: United States v- Line Material Co." in "Die Kartellrechtliche Beurteilung vom Lizenzvertragssystemen im Amerikanischen und Deutschen Recht", Schriftenreihe zum Gewerblichen Rechtschutz, 1972, vol. 26, p. 65 *et seq.*

183 35 USC. Sect. 1 *et seq.*

184 For a critical analysis of the application of the so-called "Misuse Doctrine" as a justification for the wide interference of the general protection of antitrust law at the costs of the special system of patent rights, see: Strohm G., "Wettbewerbsbeschränkungen in Patentlizenzverträgen nach Amerikanischem und Deutschem Recht", Schriftenreihe zum Gewerblichen Rechtschutz, 1971, vol. 24, p. 213 *et seq.*

185 US Senate Commission, "Study of the Subcommission on Patents, Trademarks and Copyrights of the Senate Commission on the Judiciary", 84th Congress, 2nd Session, 1957.

without the licensee's consent, grant further licenses to any other person; (6) requiring the licensee to take a package license; (7) requiring the licensee to pay royalties, including total sales royalties, in an amount not reasonably related to the licensee's sales of products covered by the patent; (8) attempting to restrict a process patent licensee's sales of products made by the patented process; and (9) requiring a licensee to adhere to any specified or minimum price in its sale of licensed product".[186] This list of prohibited patent licensing practices was perceived as an overzealous antitrust enforcement of the Department of Justice and thus heavily criticized by some authors.[187] In fact, it was conteded that antitrust ascendancy during this period lacked both a sound economic foundation and a sufficient appreciation of the incentives for innovation that patents in general and patent licensing in particular can provide.[188] In practice, the Department of Justice's severe approach generally tended to make companies over-cautious about concluding patent pooling agreements.

Remaining within this restrictive jurisprudence tradition, which in principle looked at pooling agreements with disfavour, in 1973 the District Court of Columbia decided the case *United States v. Glaxo Group Ltd*.[189] The case dealt with a British drug manufacturer, who held an American patent on a fungicide, and another British drug manufacturer, who held another American patent on a micro size dosage form of fungicide. The two manufacturers signed a patent pool agreement, containing certain restrictions on the sale of the bulk form of this fungicide. Both firms imposed on each other certain restrictions in sublicensing agreements with American chemical companies. In the civil antitrust action brought before the District Court, the United States Government sought to enjoin enforcement of the bulk sale restrictions on the grounds that they had a negative effect on trade. The District Court held that said restrictions infringed on the Sherman Act, thus granting the government's request for injunctive relief, but not going further by ordering sales on reasonable, non-discriminatory terms and fixing reasonable royalties' terms.

Even if the courts didn't condemn a pool formation as such, dissolving the underlying agreement as a whole, like in the more glamorous cases of 1931, i.e. the so-called "cracking patent case", and of 1945, as mentioned above, respectively, certain particularly restrictive clauses, such as restraints on price or output, fell under the jurisprudential veto.[190] Even if patent pools do not need to be completely open to all

186 For the "Nine No-Nos" list, see: Federal Trade Commission, "To Promote Innovation: the Proper Balance of Competition and Patent Law", Report, October 2003, p. 18 *et seq.*, available at: http://www.ftc.gov/os/2003/10/innovationrpt.pdf

187 Bruce B., "Remarks before the Michigan State Bar Antitrust Law Section", September 1972, reprinted in Commercial Clearinghouse Trade Regional Rep. 50, p.146.

188 See i.a.: Hovenkamp H. et al. "IP and Antitrust: an Analysis of Antitrust Principles Applied to Intellectual Property Law"Aspen Publishers Online, 2002.

189 United States v. Glaxo Group Ltd., 410 U.S. 52 (1973), available at: http://supreme.justia.com/us/410/52/case.html

190 For an outline of the historical jurisprudential developments, see i.a.: Pearlstein D., "Cross-Licensing and Patent Pools", "Antitrust Law Developments", American Bar Association, 5 ed., 2002, p. 1080 *et seq.*

candidates wanting to join, in the case *Northwest Wholesale Stationers Inc. v. Pacific Stationery and Printing Co*[191] the Court ruled that exclusion from a pooling agreement between parties having gained a dominant position in the relevant market may, under some circumstances, harm competition. Specifically, exclusion from a patent pool is likely to have anti-competitive effects if, on the one hand, owners of the excluded technologies cannot compete with the pool on the relevant market based on the quality of their own products, and if, on the other hand, pool members benefit from a dominant position on the same market. Another possible anti-competitive effect of patent pools arrangements, which was mentioned in the case at issue, is related to the circumstance that patent pools may require that their members grant each other licenses for current and future technology for a reduced or no consideration. This so called "grant-back" clause might tend to hamper innovation due to the fact that in that case the members of the pool are under obligation to share their successful research and development efforts and consequently other passive members can get a "free ride" on their hard-won accomplishments.

On the whole these restrictive legal conditions, under which patent pools were scrutinized through the severe assessment both of the jurisprudence and of the federal agencies, reflected the historical contraposition perceived between antitrust law and patent policy,[192] already analysed in the introduction of this contribution. Quoting the Federal Trade Commission's Innovation Report,[193] "broadly speaking, throughout much of the twentieth century, courts and federal agencies considered patents to confer monopoly power and, correspondingly, viewed antitrust as always opposed to monopoly power. Some have argued that this perceived conflict led courts to believe that, in any given case, they had to find that either patents or antitrust took precedence. In general, when courts were favouring patents, they were usually disfavouring antitrust, and vice versa. A variety of factors appear to have shaped these shifts, including perceptions about the power of big business, the competitive significance of various patent licensing practices, the nature and role of patents, and the best ways to achieve economic and technological growth".

191 Northwest Wholesale Stationers v. Pac. Stationery, 472 U.S. 284 (1985), available at: http://supreme.justia.com/us/472/284/case.html

192 See, i.a., Crown Die & Tool Co. v. Nye Tool & Mach. Works, 261 US 24, 37, 1923, citing Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 US 405, 1908 (patents as monopolies); Pate R., "Antitrust and Intellectual Property, Before the American Intellectual Property Association", 2003 Mid-Winter Institute, Jan. 2003, available at: http://www.usdoj.gov/atr/public/speeches/200701.pdf

193 US Federal Trade Commission, "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy", Report, October 2003, Chapter I, Sect. 2, p. 14, available at: http://www.ftc.gov/os/2003/10/innovationrpt.pdf

B. US Guidelines for the Licensing of Intellectual Property: The Current View

I. The Institution of the Court of Appeals for the Federal Circuit in 1982 and the 1988 Department of Justice's Antitrust Guidelines: Advocating the "Rule of Reason"

A change of trend in the public perception of antitrust regulation and patent policy was already recognizable at the end of the 1970s.[194] The main factors converging to reverse the scenario of antitrust dominance over the patents' regime were related to the general concerns about the situation of industrial stagnation at the time, connected with a lack of significant technological innovation. The economic stasis led to an overall reconsideration of the antitrust doctrine and its traditionally severe approach to patents.

In 1978 President Carter appointed an Advisory Committee to perform a domestic review of industrial innovation. One year later, the Patent and Information Policy Subcommittee of the Advisory Committee issued its Report on Patent Policy.[195] The study aimed at providing an answer to the growing concerns of government officials and policymakers about the overall decline of research and development activities, on the foreground of a general economic weakening. One question to be answered was whether, and to what extent, patent policies contributed to these circumstances, with regard to the alarmingly low point of US economy, where investments in basic science and in applied research had almost disappeared. The Committee partly attributed this situation to a diminished patent incentive in the United States for which effective remedies were to be taken. Among other recommendations of the Report, one aimed at the creation of "a centralized national court with exclusive appellate jurisdiction over patent-related cases as a vehicle for ensuring more uniform interpretation of the patent law".[196] These concerns were taken seriously, and they finally led the Congress, in 1982, to institute the Court of Appeals for the Federal Circuit (hereinafter CAFC).[197]

194 For a review of the main jurisprudential decisions tracing the history of patent pools, as well as the underlying antitrust trend, from the beginning of the XX century, see: Gilbert R., "Antitrust for Patent Pools: A Century of Policy Evaluation", Stanford Technology Law Review, 2004, available at: http://stlr.stanford.edu/pdf/gilbert-patent-pools.pdf

195 Industrial Subcommittee for Patent and Information Policy of the Advisory Committee on Industrial Innovation, Report on Patent Policy, 1979, 155.

196 *Id.*

197 28 USC. Sect. 1295. The United States Court of Appeals for the Federal Circuit was created through the merging of two specialized courts: the US Court of Claims and the US Court of Customs and Patent Appeals. For an overview, see, i.a.: Schneider M., "Der United States Court of Appeals for the Federal Circuit: Entstehungsgeschichte, Zuständigkeit, Zusammensetzung und Umfang der Patentrechtsprechung", GRUR International, Gewerblicher Rechtsschutz und Urheberrecht - Internationaler Teil, Oct. 2000, p. 863 *et seq.*

In the following years, economists and lawyers designed a new economic framework around the antitrust system[198] and this updated approach included a closer, more positive interaction with patent policy.[199] In 1981, Antitrust Division Deputy Assistant Attorney General Abbott B. Lipsky Jr. harshly criticized the Nine No-Nos list drafted in the 1960s, as mentioned above, by the US Department of Justice for banning certain patent licensing practices as considered per se antitrust violations - addressing them as "containing more error than accuracy" and therefore calling the need to review the possible efficiency justifications, within their concrete business context, for each of the practices that the Nine No-Nos had previously automatically condemned.[200]

Following some critical comments on the prior failure of the courts and the Department of Justice to acknowledge the fundamental nature of intellectual property and the beneficial role that technology licensing plays in a healthy, competitive economy, in 1988 the same Department of Justice issued the Antitrust Enforcement Guidelines for International Operations, elaborated on these reviewed policy statements and containing a section on intellectual property licensing agreements that underlined consumer benefits from those transactions[201] and explicitly adopted a "rule of reason" approach to intellectual property licensing issues, abandoning the previous merely legally formalistic method, ultimately embodied in the "Nine No-Nos".

Thus, by the end of the 1980s, as outlined by the recent Federal Trade Commission's Innovation Report,[202] "congressional and court-driven changes had significantly strengthened patents. Antitrust incorporation of updated economic thinking led to a generally more favourable view of how to conduct competition with respect to the influence of patents. This incorporation of economics held the potential for both competition and patent policy to develop a greater integration and balance".

198 Shapiro C. *et al.*, "Antitrust Policy: A Century of Economic and Legal Thinking", The Journal of Economic Perspectives, Winter 2000, vol. 4, no. 1, p. 43 *et seq*.

199 Demsetz H., "Two Systems of Belief about Monopoly", in "Industrial Concentration: the New Learning", Boston: Little Brown, 1974, p. 164 *et seq.*

200 Lipsky A., "Current Antitrust Division Views on Patent Licensing Practices", Antitrust Law Journal, 1981, 50, p. 517-24

201 1988 International Guidelines, Sect. 3.6, 3.61.

202 Federal Trade Commission, "To Promote Innovation: the Proper Balance of Competition and Patent Law", Report, October 2003, Chapter I, Sect. 2, p. 23 *et seq.*, available at: http://www.ftc.gov/os/2003/10/innovationrpt.pdf

II. The Department of Justice and Federal Trade Commission's 1995 IP Guidelines and their Funding Principles

Antitrust Policy has continued to implement new economic insights when it comes to addressing the intersection of antitrust and patents that gained precedence in the 1980s. In 1995, the Antitrust Division of the Department of Justice and the Federal Trade Commission jointly issued the Antitrust Guidelines for the Licensing of Intellectual Property (hereinafter IP Guidelines)[203]. Similarly to the 1988 Department of Justice's Antitrust Enforcement Guidelines for International Operations, the 1995 IP Guidelines identify and discuss potential efficiencies associated with many licensing practices and emphasize the need for licensing practices to be analysed under the "rule of reason".[204] They outline the approach of the federal antitrust agencies in this area, and apply the same antitrust principles to patent and copyright licenses as are used to analyse conduct relating to any other type of personal property. It should be noted that the guidelines are only indicators of the position of the federal enforcement agencies and consequently not binding but only persuasive on the courts. There are other sources of antitrust challenges in the United States, such as private parties and state attorneys general, who may not agree with the approach of the guidelines.[205] Nonetheless, they provide a good basis for analysis and counselling.[206]

The IP Guidelines embody three general principles:

1. The first[207] is that "for the purpose of antitrust analysis, the Agencies regard intellectual property as being essentially comparable to any other form of property". However, responding to some concerns expressed about this statement, the same guidelines undermine this characterization, adding that: "intellectual prop-

203 US Department of Justice and Federal Trade Commission, "Antitrust Guidelines for the Licensing of Intellectual Property", April 1995, available at: www.usdoj.gov/atr/public/guidelines/ipguide.htm

204 The 1995 IP Guidelines superceded the 1988 International Guidelines. The 1988 International Guidelines specified that "because they hold significant pro-competitive potential, unless the underlying transfer of technology is a sham, the Department analyzes restrictions in intellectual property licensing arrangements under a rule of reason", Sec. 3.62. The 1995 Guidelines provide for a slightly greater possibility of per se treatment, see IP Guidelines, Sec. 3.4, but still make clear that the Agencies use the rule of reason "in the vast majority of cases." IP Guidelines, Sec. 3.4; See more generally Sect. 4 "General principles concerning the Agencies' evaluation of the rule of reason".

205 In particular, while the guidelines are generally consistent with the case precedents, there are some areas in which the guidelines take a different view of licenses than the judicial precedents might justify.

206 Cohn *et al.*, "Antitrust Pitfalls in Licensing: a Practical Guide", Practicing Law Institute Patents, Copyrights, Trademarks, and Literary Property Course Handbook, June, 2004, p. 246 *et seq.*

207 US Department of Justice and Federal Trade Commission, "Antitrust Guidelines for the Licensing of Intellectual Property (IP Guidelines)", Sect. 2.0, "General Principles", April 1995, available at: www.usdoj.gov/atr/public/guidelines/ipguide.htm

erty has important characteristics, such as ease of misappropriation, that distinguish it from many other forms of property. These characteristics can be taken into account by standard antitrust analysis, however, and do not require the application of fundamentally different principles".[208]

2. Secondly, "the Agencies do not presume that intellectual property creates market power in the antitrust context".[209] This important remark undermines the automatic conflict between patents and antitrust traditionally perceived by courts by assuming that patents always create monopoly power in the hands of the patent holder. As noted above, patents may enable the holder to exercise market power, but the Antitrust Agencies do not any longer assume that this must be necessarily the case.
3. Thirdly, "the Agencies recognize that intellectual property licensing allows firms to combine complementary factors of production and is generally procompetitive". [210] Thereby the IP Guidelines explicitly highlight the potential efficiencies that firms and undertakings can gain through different forms of intellectual property licensing, including patent pools, which can "benefit consumers through the reduction of costs and the introduction of new products".[211] Further, the IP Guidelines state that "by potentially increasing the expected returns from intellectual property, licensing also can increase the incentive for its creation and thus promote greater investment in research and development".[212] Along the same lines, the IP Guidelines note that various forms of exclusivity can provide a licensee with the incentive to invest in commercialising and distributing products, embodying the intellectual property right at issue, by "protecting the licensee against free-riding on the licensee's investments by other licensees or by the licensor".[213]

208 *Id.,* Sect. 2.1, "Standard antitrust analysis applies to intellectual property". The IP Guidelines further note that the power to exclude others from the use of intellectual property may vary substantially, and that "the greater or lesser legal power of an owner to exclude others is also taken into account by standard antitrust analysis".
209 *Id.,* Sect. 2.0, "General Principles".
210 *Id.,* Sect. 2.1, "Standard antitrust analysis applies to intellectual property".
211 *Id.,* Sect. 2.3, "Pro-competitive effects of Licensing".
212 *Id.*
213 *Id.,* Sect. 2.3, "Pro-competitive effects of Licensing".

III. Driving Criteria for Patent Pools in the IP Guidelines and Business Review Letters: Sanctioning an Overall More Favourable Approach

When examining patent pools,[214] the IP Guidelines state that such cooperative licensing agreements "may provide pro-competitive benefits" when they:

1. Integrate complementary technologies;
2. Reduce transaction costs;
3. Clear blocking positions;
4. Avoid costly litigation;[215]
5. Promote the dissemination of technology.

Conversely, the IP Guidelines call to mind that pooling agreements "can have anti-competitive effects in certain circumstances" if:

1. The excluded firms cannot effectively compete in the relevant market for the good, incorporating the licensed technologies;
2. The pool participants collectively possess market power in the relevant market;
3. The limitations on participation are not reasonably related to the efficient development and exploitation of the pooled technologies.

For example, quoting the Guidelines,[216] "collective price or output restraints in pooling arrangements, such as the joint marketing of pooled intellectual property rights with collective price setting or coordinated output restrictions, may be deemed unlawful if they do not contribute to an efficiency-enhancing integration of economic activity among the participants […]. 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.[217] […] Settlements involving the cross-licensing of intellectual property rights can be an efficient means to avoid litigation and, in general, courts favour such settlements. When such cross-licensing involves horizontal competitors, however, the Agencies will consider whether the effect of the settlement is to diminish competition among entities that would have been actual or likely potential competitors in a relevant market in the absence of the cross-license. In the absence of offsetting efficiencies, such settlements may be challenged as unlawful restraints of trade.[218] […] Pooling arrangements generally need not be open to all who would like to join. However, exclusion from cross-licensing and pooling arrangements among parties that collectively possess market power may,

214 *Id.,* Sect. 5.5, "Cross-licensing and Pooling arrangements".

215 For an interesting overview on patent litigation in Europe, see in particular: Schneider M., "Die Patentsgerichtbarkeit in Europa: Status Quo und Reform", Schriftenreihe zum gewerblichen Rechtsschutz, 2005, vol. 136; Straus J., "Patent Litigation in Europe - A Glimmer of Hope? Present Status and Future Perspectives", Washington University Journal of Law and Policy, 2000, p. 403 *et seq*.

216 IP Guidelines, *supra,* fn. 207, Sect. 5.5, "Cross-licensing and Pooling arrangements".

217 See United States v. New Wrinkle, Inc., 342 US 371 (1952) (price fixing).

218 Cf. United States v. Singer Manufacturing Co., 374 US 174 (1963) (cross-license agreement was part of broader combination to exclude competitors).

under some circumstances, harm competition.[219] […] In general, exclusion from a pooling or cross-licensing arrangement among competing technologies is unlikely to have anticompetitive effects unless (1) excluded firms cannot effectively compete in the relevant market for the good incorporating the licensed technologies and (2) the pool participants collectively possess market power in the relevant market. If these circumstances exist, the Agencies will evaluate whether the arrangement's limitations on participation are reasonably related to the efficient development and exploitation of the pooled technologies and will assess the net effect of those limitations in the relevant market.[220] […] Another possible anticompetitive effect of pooling arrangements may occur if the arrangement deters or discourages participants from engaging in research and development, thus retarding innovation. For example, a pooling arrangement that requires members to grant licenses to each other for current and future technology at minimal cost may reduce the incentives of its members to engage in research and development because members of the pool have to share their successful research and development and each of the members can free ride on the accomplishments of other pool members.[221] […] However, such an arrangement can have pro-competitive benefits, for example, by exploiting economies of scale and integrating complementary capabilities of the pool members, including the clearing of blocking positions, and is likely to cause competitive problems only when the arrangement includes a large fraction of the potential research and development in an innovation market".[222]

Additionally, the IP Guidelines discuss the more general criteria underlying a pooling agreement that must be taken into consideration and specifically:

1. The patents in the pool must be valid and not expired;[223]
2. No aggregation of competitive technologies and setting a single price for them;
3. An independent expert should be used to determine whether a patent is essential to complement technologies in the pool;
4. The pool agreement must not disadvantage competitors in downstream product markets;
5. The pool participants must not collude on prices outside the scope of the pool, for example on downstream products.

219 Cf. Northwest Wholesale Stationers, Inc. v. Pacific Stationery & Printing Co., 472 US 284 (1985) (exclusion of a competitor from a purchasing cooperative not per se unlawful absent a showing of market power).

220 See section 4.2, "General principles concerning the Agencies' evaluation of licensing arrangements under the rule of reason – Efficiencies and justifications".

221 See generally United States v. Mfrs. Aircraft Ass'n, Inc., 1976-1 Trade Cas. (CCH) 60,810 (S.D.N.Y. 1975); United States v. Automobile Mfrs. Ass'n, 307 F. Supp. 617 (C.D. Cal 1969), appeal dismissed sub nom. City of New York v. United States, 397 US 248 (1970), modified sub nom. United States v. Motor Vehicle Mfrs. Ass'n, 1982–83 Trade Cas. (CCH) 65,088 (C.D. Cal. 1982).

222 See Sect. 3.2.3, "Antitrust Concerns and Modes of Analysis – Research and Developments: Innovation Markets".

223 See Sect. 6, "Enforcement of invalid intellectual property rights".

On the basis of what has been reported above, we can certainly conclude that on the whole the 1995 IP Guidelines, as well as the 1988 International Guidelines, signal a new perspective toward patent licensing that is far more positive than earlier antitrust approaches. Thus, with particular reference to patent pools, the US Department of Justice and the Federal Trade Commission have finally recognized that those agreements can have significant pro-competitive effects and may improve a business' ability to "survive" this era of rapid technological innovation characterized by an increasingly global economy. Accordingly the IP Guidelines recognize that "licensing, cross-licensing, or otherwise transferring intellectual property […] can facilitate integration of the licensed property with complementary factors of production" and that such integration can "benefit consumers through the reduction of costs and the introduction of new products".[224] Still the Guidelines also caution, however, that "while intellectual property licensing arrangements are typically welfare-enhancing and pro-competitive, antitrust concerns may nonetheless arise" particularly "when a licensing arrangement harms competition among entities that would have been actual or likely potential competitors in a relevant market in the absence of the license".[225]

In the same vein, the Antitrust Division of the Department of Justice has issued, from 1997 until 2002, a total of four Business Review Letters analysing in greater depth the antitrust issues raised by the specific patent pools under examination and discussing the features that reduce the risks of competitive drawbacks of such agreement.[226] Each letter explicitly recognizes that patent pools can enhance competition in the relevant market by promoting the dissemination of new technologies.[227] In each case, based on the descriptions of the patent pools provided by the parties, the Antitrust Division declined to initiate enforcement action.[228]

224 *Id.*

225 IP Guidelines, *supra,* fn. 207, Sect. 3.1, "Antitrust concerns and modes of Analysis – Nature of the concerns".

226 See Letter from Joel I. Klein, Acting Assistant Attorney General, Antitrust Division, Department of Justice, Letter to Garrard R. Beeney, Esq., June 26, 1997, available at: http://www.usdoj.gov/atr/public/busreview/1170.htm (hereinafter MPEG Pool Letter); Letter from Joel I. Klein, Assistant Attorney General, Antitrust Division, Department of Justice, to Garrard R. Beeney, Esq., Dec. 16, 1998, available at: http://www.usdoj.gov/atr/public/busreview/2121.htm (hereinafter Phillips DVD Pool Letter); Letter from Joel I. Klein, Assistant Attorney General, Department of Justice, to Carey R. Ramos, Esq., counsel to Hitachi, Ltd., June 10, 1999, available at: http://www.usdoj.gov/atr/public/busreview/2485.htm (hereinafter Hitachi DVD Pool Letter); Letter from Charles A. James, Assistant Attorney General, Antitrust Division, Department of Justice, to Ky P. Ewing, Esq., Nov. 12, 2002, available at: http://www.usdoj.gov/atr/public/busreview/200455.htm

227 See MPEG Pool Letter, *supra*, fn. 226, p. 5; Phillips DVD Pool Letter, *supra*, fn. 226, p. 5; Hitachi DVD Pool Letter, *supra*, fn. 226, p. 5.

228 See MPEG Pool Letter , *supra*, fn. 226, p. 9-10; Phillips DVD Pool Letter, *supra*, fn. 226, p. 9; Hitachi DVD Pool Letter, *supra*, fn. 226, p. 10.

IV. Department of Justice and Federal Trade Commission's Joint Hearings on Competition and IP Law Policy and the Ensuing Innovation Reports: Paving the Way for a Sustainable Balance

In accordance with the new economic approach[229] and in order to examine the current balance between antitrust and patent law, as well as common intellectual property licensing practices, including patent pools, and the implications of those activities to the benefit of innovation and consumer welfare, the Federal Trade Commission and the Department of Justice held joint hearings on "Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy", which took place in 2002 and involved more than 300 panellists: participation included business representatives from firms and the independent inventor community; major patent and antitrust organizations; leading antitrust and patent practitioners; and leading scholars in economics, antitrust and patent law. In addition, the Federal Trade Commission received about 100 written submissions. Business representatives were mostly from high-tech industries in the sectors of pharmaceuticals, biotechnology, computer hardware and software and the Internet Community.

On February 6, 2002 the Opening Day Comments[230] for the Public Hearings outlined the reasoning supporting the Business Review Letters, which were addressing the targeted patent pools' proposals to jointly license the protected technologies to other companies. Specifically, the addressees were an MPEG patent pool, based on an industry standard for video compression technology, and two DVD patent pools. In all cases under examination, as anticipated above, the Division concluded that the proposed arrangements did not appear to pose antitrust concerns. In particular, and with reference to the Business Review process, it was stated that "the Division's decisions rested on a number of factors, including the fact that the pools only license those patents essential for a manufacturer to comply with an established standard. The pools were designed to capture the efficiencies that may come from licensing complementary technologies. Concomitantly, they were designed to limit the anticompetitive effect that can arise from pooling technologies, such as the elimination of competition or the increase in prices that could arise if substitute technologies (that is, technologies that could compete against each other) were placed in a pool".

Anticipating this resolution, just one year before those Public Hearings, in January 2001, the US Patent and Trademark Office issued a White Paper on Patent Pool-

229 For a wider, comprehensive debate on the issue, see i.a.: Drexl J., "Is There a 'More Economic Approach' to Intellectual Property and Competition Law?", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 27 *et seq.*

230 James C., Opening Day Comments for F.T.C/D.O.J. Public Hearings, Feb. 2002, available at: http://www.ftc.gov/opp/intellect/james.htm

ing,[231] acknowledging that patent pools can indeed be used to create a number of social and economic benefits. These include, in particular, the elimination of problems caused by "blocking" patents or "stacking" licenses,[232] reducing licensing transaction costs, sharing the risks in research and development, and facilitating the exchange of technical information or know-how not covered by patents.

Lastly, following those joint hearings, in October 2003 the Federal Trade Commission issued a comprehensive report dedicated "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy" (hereinafter Innovation Report),[233] which gave several recommendations for improvements in the current inter-relation between such complementary bodies of law, putting its main focus on the patent system and thoroughly considering forms of licensing practices, such as patent pools, in view of their pro-competitive potential.

This study has actually paved the way for the most recent joint report of the US Department of Justice and the Federal Trade Commission on "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition",[234] released in April 2007. This represents the federal antitrust agencies' current view on the matter at issue, in line with the preceding approach outlined. Accordingly, the present report discusses a broad range of IP licensing practices, with particular attention to settings where business endeavours are rapidly evolving, including collaborative standard setting and patent pooling, from a competitive standpoint and in an ultimate attempt to strive for innovation. The basic insight the report is based on is that preserving incentives for both creative efforts and competition is of paramount importance for the progress of society.[235] Hence, the competitive effects of cross-licensing practices and patent pools[236] are evaluated under the "rule of reason" framework as articulated in the 1995 Antitrust IP Guidelines, thereby signalling the

231 USPTO, White Paper on Patent Pooling, available at: http://www.uspto.gov/web/offices/com/speeches/01-06.htm

232 On the issue, see Carl Shapiro, University of California at Berkeley, "Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standards-Setting", March 2001, available at: http://www.haas.berkeley.edu/~shapiro/thicket.pdf

233 Federal Trade Commission, "To Promote Innovation: the Proper Balance of Competition and Patent Law", Report, October 2003, available at: http://www.ftc.gov/os/2003/10/innovationrpt.pdf

234 US Department of Justice and Federal Trade Commission, "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition", Joint Report, April 2007, available at: http://www.ftc.gov/reports/innovation/P040101PromotingInnovationandCompetitionrpt0704.pdf

235 Federal Trade Commission's Press Release, April 17, 2007, available at: http://www.ftc.gov/opa/2007/04/ipreport.shtm

236 See in particular: Chapter 3, "Antitrust Analysis of Portfolio Cross-Licensing Agreements and Patent Pools", p. 57 *et seq.*, in: US Department of Justice and Federal Trade Commission, "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition", Joint Report, April 2007, also available at: http://www.ftc.gov/reports/innovation/P040101PromotingInnovationandCompetitionrpt0704.pdf

continuation of an enduring trend, in line with the level-headed approach endorsed in recent years.

However, just as antitrust law is catching up with a more mature assessment of patent pools in their established forms, alongside with increasingly well-defined antitrust norms, such agreements are becoming more complex. In particular, pools are increasingly being adopted as devices to better coordinate the implementation of technical standards, as initially specified by standard setting organizations.[237] In this respect, at the intersection of standardization processes and patent pooling, a new range of greatly unexplored new issues arises which still need to be fully addressed by US courts and antitrust authorities.[238]

237 For a balanced outline of some of the issues arising in this context, see *i.a.*: Raymond D., "Benefits and Risks of Patent Pooling for Standard-Setting Organizations", Annual Review of Antitrust Law Developments, Summer 2002, p. 41 *et seq.*; Hovenkamp H., "Standards Ownership and Competition Policy", Boston College Law Review, March 2006, vol. 48, p. 87 *et seq.*, also available at: http://bc.edu/schools/law/lawreviews/bclawreview/meta-elements/pdf/48_1/04_hovenkamp.pdf

238 For a focused and illuminating analysis on this new issue, see: Crane D., "Patent Pools, RAND Commitments, and the Problematics of Price Discrimination", Cardozo Legal Studies Research Paper No. 232, April 2008, also available under the Social Science Research Network at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1120071

Chapter 4 The EU Legal Framework

A. Art. 81 of the EC Treaty

I. The Proscription of Art. 81 (1) and Its Legal Consequences, in Particular as Set by the 2006 Guidelines on Methods of Setting Fines

The milestone for the legal assessment of patent pools within the European Union, and their interface with competition and antitrust provisions, is embodied in Art. 81 of the Treaty establishing the European Community (hereinafter EC Treaty),[239] in the opening 1st Chapter, within Title VI, dedicated to the Rules on Competition, Section 1, for the Rules Applying to Undertakings. Indeed, both Art. 81 and the following Art. 82 of the EC Treaty, this latter about the abuse of dominant positions, as the very same heading suggests, are addressed to undertakings, i.e. any economic operator, other than the state, acting in its public capacity and participating in the exchange of goods or services on the market.[240] These articles complement the provisions on the "free movement of goods and services" contained in the EC Treaty - not to be undermined through anti-competitive behaviours by economic operators - as they prohibit certain typified practices and agreements to the extent that they are deemed to be incompatible with the realization of the Internal Market. In fact, the achievement of this goal, at a time, provides the basis of legitimacy for the European Commission's active intervention and traces the borderline of the actual scope of its interference with otherwise merely domestic matters.[241]

Coming closer to approaching the content of this provision, the first paragraph of Art. 81[242] sets a general mandatory prohibition and reads:

"The following shall be prohibited as incompatible with the common market: all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have

239 As for its scope of application, it shall be reminded that the EC Treaty represents a source of "primary" European Community law, thus directly binding for all Member States, as if national law.

240 For a clear overview on the main issues in EC competition law and policy in this regard, see i.a.: Albors-Llorens A., "EC Competition Law and Policy" – "The Scope of Application of Art. 81 and 82 EC", Willan Publishing, 2002, p. 4 *et seq.*

241 For a closer analysis on the aims and objectives of Art. 81 and 82 EC, see i.a.: Fairhurst J., "Law of the European Union", Pearson Education, 2007, p. 637 *et seq.*; For a broader, general overview on the criteria guiding the antitrust assessment of the EC authorities, see in particular: Immenga U. et al, "Wettbewerbsrecht EG: Kommentar zum Europäischen Kartellrecht", Beck, 2007.

242 For the text of the full provision, see: http://www.europa.eu.int/comm/competition/legislation/treaties/ec/art81_en.html

as their object or effect the prevention, restriction or distortion of competition within the common market, and in particular those which: (a) directly or indirectly fix purchase or selling prices or any other trading conditions; (b) limit or control production, markets, technical developments, or investment; (c) share markets or source of supply; (d) apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage; (e) make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their method or according to commercial usage, have no connection with the subject of such contracts".

It should be borne in mind that the list is not exhaustive, but only typifies some agreements and concerted practices among undertakings, which are generally deemed to be, in consideration of their object or effect, anti-competitive and to negatively affect trade within the common market. Nevertheless, the inventory of Art. 81(1) is extremely broad and comprehensive in scope, as can particularly be inferred from the first of the named anti-competitive restraints, explicitly encompassing also clauses that (lett. a), as literally reported: "directly or indirectly fix […] trading conditions", which may well apply to practically all commercial contracts, where parties, in the course of their trade, are typically going to be bound by specific, reciprocal obligations.[243]

When confronted with such agreements or practices, Member States "shall" prohibit them "as incompatible with the common market". As penalty, pursuant to Art. 81(2)[244] it is ruled that: "Any agreements or decisions prohibited pursuant to this article shall be automatically void", therefore neither it can be legally enforced, nor shall third parties be considered bound by it. Moreover, antitrust cases falling under the proscriptions of Article 81 and 82 of the EC Treaty may also result in the imposition of heavy fines against the contravening undertakings, according to the criteria outlined by the recent Commission's Guidelines,[245] which entered into force in September 2006[246] (hereinafter 2006 Guidelines).[247]

243 For a general overview on the issue, see i.a.: Foster N., "EU Law", "Competition and Merger Law", Oxford University Press, 2007, p. 157 *et seq*.

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244 For a legal commentary on the underlying antitrust enforcement measures, see i.a.: Fairhurst J., "Law of the European Union", "Enforcement of Competition Law: Powers and Procedures", Pearson Education, 2007, 6 ed., p. 685 *et seq*.

245 European Commission, "Guidelines on the Method of Setting Fines Imposed Pursuant to Article 23(2)(a) of Regulation No 1/2003", Official Journal of the European Union, OJ C 210/2, 1 September 2006, also available at: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/c_210/c_21020060901en00020005.pdf

246 The new Commission's Guidelines were in fact adopted on 28 June 2006, but they only applied to cases for which a statement of objections was notified after the 1st September 2006, which is the date of publication of the Guidelines in the Official Journal: OJ C 210/2, 1 September 2006.

247 These further refined the parameters partly already applied under the preceding Guidelines on Methods of Setting Fines Imposed Pursuant to Article 15(2) of Regulation No 17, issued in

The driving principles introduced by the 2006 Guidelines may be reported as follows:[248]

- First of all, by deploying a clear reference to the "value of sales" of each undertaking, the focus is shifted on the actual economic importance of the infringement, both as a whole and reflecting the relative weight of each participating firm, thus a more pragmatic approach is adopted.[249] In fact, the 1998 Guidelines, which were based on a lump sum system, were frequently criticized with regard to this particular aspect;
- Second, the duration of the infringement had previously only marginal consequences on the basic amount of the fine, since each additional year in which the transgression was perpetuated may merely have led to a maximum 10% increase of the starting sum. Instead, the 2006 Guidelines still multiply by 10 the impact of the duration on the level of the financial penalty to be determined. Hence, the period of the violation eventually becomes a key-factor for sanctioning purposes, as each year of involvement in the infringing activities will be fully reflected in the basic amount to be charged;[250]
- Finally, the classification of the violations among "minor", "serious" and "very serious", which appeared in the previous Guidelines, have been abandoned, as mostly representing a blurry and unnecessary step, where, in particular, the category of minor infringements was indeed quite useless in practice.

Within the limits set by the Regulation at issue, the Commission enjoys wide discretional powers on undertakings,[251] having regard to the gravity and the duration of

January 1998 (hereinafter 1998 Guidelines), substantially reflecting the Commission's most recent practice in antitrust cases.

248 For an overview, see, *i.a.*: Broca H., "The Commission Revises its Guidelines for Setting Fines in Antitrust Cases", Competition Policy Newsletter, Autumn 2006, no. 3, p. 1 *et seq.*, also available at: http://ec.europa.eu/comm/competition/publications/cpn/cpn2006_3.pdf

249 See Point 13 of the 2006 Guidelines: "In determining the basic amount of the fine to be imposed, the Commission will take the value of the undertaking's sales of goods or services to which the infringement directly or indirectly relates in the relevant geographical area within the EEA. It will normally take the sales made by the undertaking during the last full business year of its participation in the infringement (hereafter 'value of sales')".

250 See Point 19 of the 2006 Guidelines: "The basic amount of the fine will be related to a proportion of the value of sales, depending on the degree of gravity of the infringement, multiplied by the number of years of infringement".

251 Specifically, following Art. 23(2)(a) of Regulation No 1/2003 on the Implementation of the Rules on Competition Laid Down in Articles 81 and 82 of the Treaty (OJ L 1, 4 January 2003, p. 1 *et seq.*, as amended by Regulation No 411/2004, OJ L 68, 6 March 2004, p. 1 *et seq.*), as now also reflected in Point 1 of the 2006 Guidelines, the Commission may decide to impose financial sanctions on undertakings or association of undertakings either intentionally or negligently violating the above-mentioned antitrust provisions. However, infringements by negligence, which along with intentional violations is one of the two kinds of infringements covered by Art. 23(2) of Regulation No 1/2003, may justify the granting of a fee reduction, representing one of the mitigating factors to be taken into account following the Commission's Guidelines. Nevertheless, such circumstance actually plays a quite marginal role, as it

the restrictive practices eventually ascertained. This prerogative does not only entail the obligation to investigate and punish individual infringements on a case-by-case basis, but also encompasses the more general duty to pursue an overall policy vowed to transparently apply the principles laid down by the EC Treaty in competition matters in order to grant a higher degree of legal predictability and, consequently, steer business practices in the light of those propositions.[252] Accordingly, fines should have a sufficiently broad deterrent effect, in order to also discourage other undertakings from engaging in anti-competitive behaviours, this being the ultimate purpose of the Commission's intervention.[253]

With these objectives in view, in order to determine the final amount of the fine, it seemed appropriate to refer, on the one hand, to the value of the sales of goods or services to which the infringement relates[254] and, on the other hand, to the duration of the violation, as having a more or less severe impact on the marketplace and, consequently, providing a reliable proxy of adjustment to reflect the economic importance of the infringement.[255] Accordingly, following this two-step methodology, the Commission may correct the final amount of the fine to be imposed upwards or downwards, according to the respective presence of aggravating or mitigating circumstances.[256]

On the one hand, examples of the former may be the repetition of the same or similar infringements, after the Commission or the competent national competition authority has eventually ascertained a given violation; the refusal to cooperate with,

did already under the 1998 Guidelines, as practice shows that the types of conducts that are fines by the Commission rarely appear to be characterized by mere negligence.

252 Indeed such Guidelines shall constitute rules of practice whose implementation shall not depart from the underlined principles in an individual case without providing for specific reasons, in compliance with the principle of equal treatment, as affirmed, *i.a.*, in: Case C-189/02 P, Dansk Rørindustri A/S a.o. v. Commission, ECR, 2005, p. I-5425, para. 209.

253 See Point 4 of the 2006 Guidelines, last sentence: "Fines should have a sufficiently deterrent effect, not only in order to sanction the undertaking concerned ('specific deterrence') but also in order to deter other undertakings from engaging in, or continuing, behavior that is contrary to Art. 81 and 82 of the EC Treaty ('general deterrence')".

254 For the reference, see: "Basic Amount of the Fine", Points 12 to 26 of the 2006 Guidelines: specifically, the determination of the basic amount of the fine will be first of all established by reference to a proportion of the value of the sales to which the infringement relates, as confined, on the one side, in terms of territory, to the relevant geographic region within the European Economic Area (EEA), appropriately reflecting the scope of the Commission's sphere of action and, on the other side, in terms of time, to the last full business year in which the anti-competitive practice took place.

255 See: "Adjustment of the Basic Amount", Points 27 to 31 of the 2006 Guidelines.

256 No major changes have been introduced to the possible adjustments factors in the 2006 Guidelines, which mainly draw the conclusions of the Commission's case law and practice in the recent years, reflecting its most crucial developments.

or the obstruction of, the Commission's investigations;[257] the role of a particular undertaking as leader in, or instigator of the infringement.

On the other hand, mitigating circumstances may well occur when the firm concerned supplies evidence that the infringement has been promptly brought to an end after the competition authority's intervention, or when the undertaking has effectively collaborated with the Commission beyond the scope of its legal obligations.

However, in the former case, the new Guidelines, in line with the current jurisprudential practice,[258] specify that said mitigating factor does not apply to secret agreements,[259] since it is apparent that in such circumstances firms could always enter into confidential anti-competitive arrangements trusting that, once discovered - where by force the secrecy would subsequently be unveiled and thereby brought to an end - they would in any event benefit from a fine reduction, if they just stop their conduct once the authorities have tracked it down anyway; in other words, here the termination of the infringement at issue is actually induced by the discovery itself, and thus cannot be directly credited to the good will of the undertaking alone.

Anyway, the principles outlined are always to be applied in a flexible manner, considering the specific circumstances of each case under scrutiny. Besides, the final amount of the fine must not, in any event, exceed 10% of the undertaking's worldwide aggregate turnover in the preceding business year, as laid down in Art. 23(2) of Regulation No 1/2003 and correspondingly reflected in Point 32 of the 2006 Guidelines.[260] Moreover, under certain circumstances, those who consider to have been harmed by the anti-competitive agreement may also bring up private actions for damages before the national competent authorities.[261]

II. The Scope of the Individual Exemption under Art. 81 (3)

The prohibition contained in Article 81(1) of the EC Treaty is not absolute. Restrictive agreements will be valid and enforceable if they satisfy the exemption criteria of Article 81(3) of the EC Treaty. An exemption under Article 81(3) of the EC

257 See, for instance, Case C-308/04 P: Judgment of the Court (Second Chamber) of 29 June 2006 — SGL Carbon AG v Commission of the European Communities, Official Journal, C 212, 2 Sept. 2006, p. 0003 – 0004.

258 As confirmed in Case C-328/05 P: Appeal brought on 30 August 2005 by SGL Carbon AG against the judgment of the Court of First Instance of the European Communities (Second Chamber) of 15 June 2005 in Joined Cases T-71/03,T-74/03, T-87/03 and T-91/03 Tokai and Others v Commission of the European Communities, in respect of Case T-91/03, Official Journal C 281, 12 Nov. 2005, p. 0007 – 0008.

259 See Point 29, first indent, last sentence, of the 2006 Guidelines.

260 See for a confirmation of the fine's level and its underlying mechanism, i.a.: Bradgate R. et al., "Commercial Law", Oxford University Press, 2007, p. 378.

261 Carlin F. *et al.*, "The Last of Its Kind: The Review of The Technology Transfer Block Exemption Regulation", Symposium on European Competition Law, Northwestern Journal of International Law and Business, vol. 24, Spring 2004, p. 603 *et seq.*

Treaty will be granted if, broadly speaking, the pro-competitive advantages of an agreement outweigh its anti-competitive effects, hence resulting in a positive "net balance".[262]

In fact, limiting the general applicability of the mandatory prohibition set by the first paragraph of Art. 81, the third paragraph provides for a legal exemption under some particular circumstances, stating that: "The provisions of paragraph 1 may, however, be declared inapplicable in case of: any agreement or category of agreements between undertakings; any decision or category of decisions by associations of undertakings; any concerted practice or category of concerted practices, which contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefits, and which does not: (a) impose on the undertakings concerted restrictions which are not indispensable to the attainment of these objectives; (b) afford such undertakings the possibility of eliminating competition in respect of a substantial part of the product in question".

Sorting out the quoted provision in its essential elements, two positive and two negative requirements can be identified, respectively. Namely, a "prima facie" anti-competitive agreement may eventually be exempted under Art. 81(3), should all the following circumstances be satisfied:[263]

- It contributes to the improvement of the production or distribution of goods or (alternatively) the promotion of technical or economic progress (first positive condition);
- It allows consumers a fair share of the resulting benefits (second positive condition);
- It does not impose concerted restrictions on the undertakings that are not indispensable to the attainment of these objectives (first negative condition);
- It does not eliminate competition with respect to a substantial part of the product in question (second negative condition);

Apparently Art. 81 applies a quite frequently used legal technique, which consists in the setting of a general rule limited in its scope of application by particular exceptions. However, at a closer look some inconsistencies between the first and the third paragraph may be questioned. In fact, it cannot be consistently maintained that, on the one hand, Art. 81(1) protects competition for one or more reasons whereas, on the other hand, Art. 81(3) exceptionally allows some particular anti-competitive agreements if they are instrumental to the achievement of other aims.[264]

262 Along the same line, see i.a.: Ritter L., et al., "European Competition Law: A Practitioner's Guide", "The System of At. 81 (3)", Kluwer Law International, 2004, p. 137 *et seq.*

263 Jones A. et al., "EC Competition Law: Text, Cases and Materials", Oxford University Press, 2007, p. 1139 *et seq.*

264 Fine F., "The EC Competition Law on Technology Licensing", Sweet & Maxwell ed., 2006, p. 20.

Following the "ratio" of the provision endorsed by this contribution, one way to reconcile the apparent dichotomy of Art. 81, thereby preserving its overall internal consistency, could be to shift its emphasis:

- From a short-term perspective, which is the starting point for a first evaluation of the "prima facie" anti-competitive restraints of an arrangement falling under Art. 81(1);
- To a medium and long-term perspective, which finally represents the decisive standpoint, from which the overall positive effects labelled by Art. 81(3) shall be evaluated, eventually driving the balance towards a concluding assessment of the agreement under consideration, by extracting its "net" value.

Ultimately, the view is taken that the apparent conflict of Art. 81 could also be solved by considering "competition", preserved by the general prohibition of the first paragraph, not as the highest goal, but instead as one among the "means" available to foster "the production or distribution of goods or to promoting technical or economic progress, while allowing the consumers a fair share of the resulting benefits", the latter representing the real, ultimate "aim" justifying the exception contained in the third paragraph.[265] Therefore, innovation, coupled with consumers' welfare, represents the real final target to be achieved. This approach is also shared by the modern doctrine, where it has been highlighted that: "Competition is not […] regarded as an end in itself. It is one of the most important means by which a genuinely integrated market is achieved".[266]

This vision also appears to be partly supported by the Commission's Guidelines on the Application of Art. 81(3) of the Treaty,[267] which states under its general remarks: "The objective of Article 81(1) is to protect competition on the market as a means of enhancing consumer's welfare and of ensuring an efficient allocation of resources. Competition and market integration serve these ends since the creation and preservation of the common market promotes an efficient allocation of resources throughout the Community for the benefit of consumers".[268]

Following a certain common sense it should be questioned why "competitiveness" as such should after all arise as privileged value and, consequently, be entitled to a higher rank than other business practices, which are in principle also defensible. In fact, our political system, although basically inspired by liberal principles, might only be legitimised by the attainment of the general public good, which - while it cannot be already concretised by competition itself, being that a mere step in the way of promoting innovation - may eventually become tangible for the community

265 In the same sense and with respect to the so-called "efficiency goal" of Art. 81 and 82 EC, the complementarity of IP and competition law's protection has been recently supported also by: Kolstad O., "Competition Law and IP Rights – Outline of an Economic-Based Approach", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 3 *et seq.*

266 Fairhurst J., "Law of the European Union", Pearson Education, 2007, p. 637.

267 Guidelines on the Application of Art.81(3) of the Treaty (2004/C 101/08).

268 *Id.*, para. 12.

through improved "production or distribution of goods", as well as through "technical or economic progress", both ultimately benefiting society by generating collective welfare. It is within this interpretative framework and against the attainment of these goals that patent pools should be assessed when confronted with antitrust concerns.

B. The Way to the TTBER

I. TTBER 1996 and Commission Evaluation Report

In March 1965 the issuance of the Council Regulation No 19/65/EEC,[269] and in particular its Art. 1, empowered the Commission to apply Article 81(3) of the EC Treaty by regulation to certain categories of technology transfer agreements and corresponding concerted practices that would otherwise fall within the prohibition of Article 81(1) and to which only two undertakings were party, thereby excluding the exemption of multiparty licensing. Pursuant to such legislative mandate, the Commission had, in particular, adopted Regulation (EC) No 240/96 of 31 January 1996 on the application of Article 81(3) of the Treaty to certain categories of technology transfer agreements (hereinafter TTBER 1996).[270] In fact, block exemption regulations in the field of technology licensing were adopted for the first time in the mid 1980s for both patent and know-how licenses,[271] the combination of which resulted in the TTBER of 1996.[272]

Basically, the ultimate scope of the Commission in adopting a "block exemption" regulation to the benefits of certain categories of technology transfer agreements was to facilitate the dissemination of knowledge, thereby maximizing the benefits of innovation, as fostered by licensing and technology exchange. The idea behind the block exemption is to automatically exclude certain types of agreements, i.e. as a "block", from the general prohibition of Art. 81(1) of the EC Treaty, thus eliminating the need for an "individual exemption", requiring the latter a laborious case-by-case assessment of the anti- and pro-competitive effects of the licensing agreement at issue, balancing, on the one hand, the restrictive effects caught by Art. 81(1) with,

269 Council Regulation (EEC) No 19/65, OJ 36, 6.3.1965, p. 533-65. As last amended by Council Regulation (EC) No 1/2003 of 16 December 2002 on the Implementation of the Rules on Competition Laid Down in Articles 81 and 82 of the Treaty, OJ L 1, 4 January 2003, p. 1 *et seq*.

270 Commission Regulation (EC) No 240/96 of 31 January 1996 on the application of Article 85 (3) [now Art.81 (3)] of the Treaty to certain categories of technology transfer agreements, OJ L 31, 9.2.1996, p. 2-13, as amended by the 2003 Act of Accession, and available at: http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=31996R0240&model=guichett

271 Commissions Regulations (EEC) 2349/84 of 23 July 1984 and 556/89 of 30 November 1989.

272 For a more extensive legal analysis on the TTBER of 1996, see i.a.: Ullrich H. In: "EG Wettbewerbsrecht", Immenga U. & Mestmaecker E. eds, 1997, n. 33, p. 1241 *et seq*.

on the other hand, the benefits for innovation and consumer welfare that give rise to legal exemption under Art. 81(3).

However, the TTBER of 1996, setting out the overall EU competition policies applicable to patent and know-how licensing agreements still did not encompass patent pools or other multiparty licensing agreements[273] and therefore has met with some criticism. Demonstratively, Alexander Schaub, former Director General of the European Commission's DG Competition, sarcastically described it as a "dinosaur awaiting extinction".[274] Specifically, as pointed out during a Symposium on European Competition Law, the TTBER was regarded as "the last of the mainstream EU block exemption regulations to apply a formalistic and rigid exemption approach according to which all restraints are presumed to be illegal unless expressly permitted by the block exemption or notified to the Commission for individual clearance".[275] Taking into account the voiced criticism, on 20 December 2001 the Commission issued an Evaluation Report on the TTBER 1996,[276] where it openly admitted the shortcomings of the Block Exemption Regulation under exam and promised a radical, more liberal, economics-based approach to technology transfer, in line with the recent revisions of other major block exemptions.[277]

In particular, regarding multiparty licenses,[278] the evaluation report critically recognized that: "As the TTBE only covers bilateral license agreements, a significant number of more complex arrangements, such as licensing programmes, multilateral pools and licence packages fall outside its scope […]. Such arrangements have become increasingly important for industry, given the growing complexity of new technologies. As a result, the Commission has frequently received notifications concerning these types of agreements. […] In this respect, it can be observed that multiparty licensing, including multilateral pools, may be pro-competitive when they in-

273 Expressly, Art. 5.1. of the old Technology Transfer Block Exemption Regulation provided that: "This regulation shall not apply to: (1) agreements between members of a patent or know-how pool which relate to the pooled technology".

274 Schaub A., "Remarks at the Fordham Corporate Law Institute's 28 th Annual Conference on International Antitrust Law and Policy", Report, Oct. 2001.

275 Carlin F. *et al.*, "The Last of Its Kind: The Review of The Technology Transfer Block Exemption Regulation", Symposium on European Competition Law, 24 Northwestern Journal of International Law and Business, Spring 2004, p. 601 *et seq.*

276 European Commission, "Evaluation Report on the Transfer of Technology Block Exemption Regulation No 240/96 of 20 December 2001", COM(2001) 786 final, available at: http://europa.eu.int/comm/competition/antitrust/technology_transfer/en.pdf

277 See Commission Regulation 2790/1999 on the Application of Article 81(3) of the Treaty to Categories of Vertical Agreements and Concerted Practices, 1999 O.J. (L 336) 21; Commission Regulation 2658/2000 on the Application of Article 81(3) of the Treaty to Categories of Specialization Agreements, 2000 O.J. (L 304) 3; Commission Regulation 2659/2000 on the Application of Article 81(3) of the Treaty to Categories of Research and Development Agreements, 2000 O.J. (L 304) p. 7.

278 Sect.5.1.4, p. 33, "Multiparty licenses" in European Commission, "Evaluation Report on the Transfer of Technology Block Exemption Regulation No 240/96 of 20 December 2001", COM(2001) 786 final, available at: http://europa.eu.int/comm/competition/antitrust/technology_transfer/en.pdf

volve non-competing undertakings. In particular, they may allow the parties to bring together complementary inputs, reduce transaction costs (for instance by creating one-stop shopping for a technology package), clear blocking positions and avoid costly infringement litigation".[279] Having regard to such perceived efficiency enhancing factors, the question raised was whether, and to what extent, multiparty licensing should be covered by a revised block exemption.

The Commission's Evaluation Report generated a public debate advocating the need of a reform and finally resulting in the repeal of the TTBER 1996. The consultation process that followed aimed at the adoption of a new Transfer of Technology Block Exemption Regulation, inviting all interested parties to provide their feedback on the basis of their practical experience under the TTBER 1996.[280]

Finally, quoting from the same Commission's Review Report: "Most submissions that express an opinion on this issue plead for the coverage of multiparty licensing by a future block exemption regulation, though often only below a rather low market share threshold and/or limited to situations of complementary or blocking IPRs. […] The increased importance of these types of agreements is mentioned as the most important reason".[281] However, as the Review Report also duly revealed: "A number of the submissions speak out against coverage. Some because they consider that the issues will be too complicated to be handled in a block exemption regulation and are better addressed in guidelines, others because they would not like to see a new block exemption regulation being delayed […]". Eventually, time was finally ripe for a new regulation.

II. TTBER's Review Process

On the basis of the evaluation report and in consideration of the submitted contributions, nearly two years later, on 1 October 2003, the Commission published a formal proposal for a new technology transfer block exemption (hereinafter Draft

279 For an interesting overview on the scenario of patent litigation in Europe, see: Straus J., "Patent Litigation in Europe - A Glimmer of Hope? Present Status and Future Perspectives", Washington University Journal of Law and Policy, 2000, p. 403 *et seq.*

280 Finally the consultation resulted in the submission of 33 replies: 11 submissions have come from industry and trade associations, 7 from law and IPR societies, 5 from individual law firms, 5 from national competition authorities (UK, Italy, France, The Netherlands, Finland), 2 from individual companies and 3 from consultants and others. All submissions are available at: http://europa.eu.int/comm/competition/antitrust/technology_transfer

281 Annex 1, "Summary of Submissions on TTBE Review Report", to the European Commission, "Evaluation Report on the Transfer of Technology Block Exemption Regulation No 240/96 of 20 December 2001", COM(2001) 786 final, p. 2, available at: http://europa.eu.int/comm/competition/antitrust/technology_transfer

TTBER)[282] together with detailed draft guidelines (hereinafter Draft Guidelines),[283] which explained how the new regulation is to be implemented and how Article 81 of the EC Treaty shall be applied to agreements that fall outside the field of application of the revised regulation.

Interestingly, although the TTBER was not due to expire until the 31 March 2006, this anticipated review process was designed to coincide not only with the accession date of ten new Member States in the European Union on 1 May 2004, but also with the entry into force of the Council Regulation 1/2003 on the Implementation of the Rules on Competition Laid Down in Articles 81 and 82 of the Treaty,[284] also referred to as the Modernization Regulation.[285] Indeed, within a wider context, the review of the TTBER of 1996 could be regarded as "part of a wider modernisation process",[286] deemed to bring the latter in line with the "new generation" of Regulations and Guidelines on related fields, based on economic observation[287] and aiming at providing a more flexible framework for the assessment of given business endeavours.[288]

As from its entry into force on 1 May 2004, the Modernization Regulation radically reformed the system of competition law enforcement in the EU[289] by abandoning the Commission's long-standing monopoly (and at the same time heavy burden) in implementing the antitrust rules laid down in Art. 81 and 82 of the EC Treaty,

282 For a critical insight on the Draft TTBER, see i.a.: Drexl J., Hilty R.,et al., "Comments on the Draft Technology Transfer Block Exemption Regulation", In: IIC, 2004, Volume 35, p. 187 *et seq.*

283 Draft Commission Regulation on the application of Art.81(3) of the Treaty to categories of technology transfer agreements; Draft Guidelines on the application of Art.81(3) of the Treaty to technology transfer agreements, OJ 2003 C 235/10, also available at: http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/c_235/c_23520031001en00100054.pdf

284 Council Regulation (EC) No 1/2003 of 16 December 2002 on the Implementation of the Rules on Competition Laid Down in Articles 81 and 82 of the Treaty, OJ L 1, 4 January 2003, as amended by Regulation (EC) No 411/2004, OJ L 68, 6 March 2004.

285 For a critical outlook, see i.a.: Anderman S., "The New EC Competition Law Framework for Technology Transfer and IP Licensing", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 107 *et seq.*

286 Dolmans M., Piilola A., "The Proposed New Technology Transfer Block Exemption: Is Europe really better off than with the current regulation?", World Competition 26(4), 2003, p. 546 *et seq.*

287 On the point, for an analysis on the legal implications of the reform in a wider perspective, see i.a.: Anderman S., "The New EC Competition Law Framework for Technology Transfer and IP Licensing", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 107 *et seq.*

288 In particular referring to: Commission Regulation 2790/1999 for vertical agreements; Guidelines on the applicability of Art.81 EC to horizontal cooperation agreements; Commission Regulation 2659/2000 for research and development agreements; Commission Regulation 2658/2000 for specialization agreements.

289 Gauer C., *et al.*, "Regulation 1/2003 and the Modernization Package Fully Applicable Since 1 May 2004", Competition Policy Newsletter, Summer 2004, no. 2, p. 1 *et seq.*, also available at: http://ec.europa.eu/comm/competition/publications/cpn/cpn2004_2.pdf

thereby extending the competences of the competition authorities of the EU member states (hereinafter also referred to as national competition authorities or NCAs) by establishing parallel responsibilities between EU and member states according to flexible rules of allocation, each time favouring the best placed authority for intervening. Consequently, the old system of notification was abolished and companies could no longer rely on an up to then centrally administered notification procedure. Therefore, a judicial decision on the merit may be finally reached only in the event of a challenge under Art. 81 EC before a national court or other competent antitrust authority. Otherwise the compatibility of the agreement at issue with the criteria set out by Art. 81 (3) EC would be left to the individual self-assessment of the undertakings themselves.

In order to better operate in such a modernized enforcement system, a "European Competition Network" (ECN)[290] was specifically inaugurated as a vehicle to ensure coherent and effective application of Community competition rules within a collaborative framework[291] for an optimized allocation of antitrust cases among the different NCAs and the European Commission,[292] as well as for the establishment of a record of best practices.[293]

Consequently, as from May 2004 a wide network of national competition authorities and courts - particularly important in an extended European Union of 25 member states - was actively encouraged to apply EC competition rules by a direct route,[294] eventually sanctioning the compatibility of a licensing agreement with EU

290 The basis for the functioning of the ECN are laid down in the "Commission Notice on Cooperation within the Network of Competition Authorities" (OJ C 101, 27 April 2004, p. 3.) and in the "Joint Statement of the Council and the Commission on the Functioning of the Network of Competition Authorities"
(available at: http://ec.europa.eu/comm/competition/ecn/joint_statement_en.pdf) to which all competition authorities in the network have adhered by special statement.

291 The ECN is the framework for the close cooperation mechanisms of Council Regulation 1/2003, as well as a discussion forum dealing with a variety of topical issues of interest to its member authorities. However, the ECN as such does not have any autonomous powers or competences, since it is not an institution and it does not have any legal personality. It is the competition authorities of the Member States and the European Commission that have powers and competences to apply, in particular, the Community competition rules laid down in Articles 81 and 82 EC. Thus, companies and individuals do not enter in contacts with the ECN but always with one or more of the competition authorities.

292 Gauer C., Jaspers M., "The European Commission Network, Achievements and Challenges - A case in Point: Leniency", Competition Policy Newsletter, Spring 2006, no. 1, p. 8 *et seq.*, also available at: http://ec.europa.eu/comm/competition/publications/cpn/cpn2006_1.pdf

293 The agreements and practices that are "ECN-relevant", thus coming under the close cooperation rules and mechanisms thereby put in place, are those capable of having an "appreciable" effect on trade between EU Member States. In addition, the authorities meeting within the ECN can exchange their experience and views regarding particular sectors of the economy, representing this the common competition culture enhancement role of the ECN. For more details, see: http://ec.europa.eu/comm/competition/ecn/faq.html

294 In fact, the European Competition Network (ECN) presented an impressive result of antitrust enforcement actions during the first two years from its establishment: actually, more than 560

antitrust law, and thereby its enforceability, without the need for intervention by a central administrative clearance "ad hoc".[295]

Pursuant to the publication of those drafts, there was a second round of consultations where the Commission, under the lead of Mario Monti, at that time in charge as European Commissioner for Competition Policy, once more invited all interested parties to send their comments on these texts[296]. Finally, despite several critical voices on the proposed approach,[297] the new TTBER[298] didn't change the basic structure presented in the Draft Regulation and Guidelines. In particular, the block exemption, disregarding some proposals in this direction, still does not include multiparty licensing agreements, such as patent pools, in which more than two parties are involved. Hence, said arrangements would have to be individually exempted under Art. 81(3) of the EC Treaty, therefore leaving this important part of licensing practices merely covered by the TTBER Guidelines,[299] in which one entire section is dedicated to patent pools,[300] basically applying the principles set out in the TTBER by analogy.

In fact, as regards the extension of the TTBER of 1996, regulating only bilateral technology transfer agreements, to multiparty licensing such as patent pools, the Commission had initially really taken this strongly supported option into considera-

cases were reported in the common ECN case-management system, as reported in: Gauer C., Jaspers M., *supra*, fn. 292, p. 8.

295 In this sense, see: Gauer C., *et al.*, *supra*, fn. 289, p. 1.

296 As a result, beyond 70 contributions from industry, trade associations, intellectual property organizations, as well as national authorities, law firms and universities, were submitted and can be found at:
http://europa.eu.int/comm/competition/antitrust/technology_transfer_2/en.pdf

297 Among the critics, see Lind, *et al.*, "The European Commission's Draft Technology Transfer Block Exemption Regulation and Guidelines: A Significant Departure from Accepted Competition Policy Principles", European Commission Law Review, 2004, vol. 25, p. 168: "The TTBER and Guidelines as they stand are not only bad competition policy, but are also unworkable"; Intellectual Property Lawyers Association, "Reform to the Technology Transfer Regulation", IPLA, p.4, available at:
http://europa.eu.int/comm/competition/antitrust/technology_transfer_2/14_17_ipla_en.pdf

298 Commission regulation (EC) No. 772/2004 of 27 April 2004 on the application of Art.81(3) of the Treaty to categories of technology transfer agreements, OJ 2004 L 123/11 (hereinafter TTBER), available at:
http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&model=guicheti&numdoc=32004R0772

299 Commission Notice - Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements, O.J. C 101, 27/04/2004 P. 2 - 42 (hereinafter Guidelines), available at:
http://europa.eu.int/eur-lex/lex/Notice.do?val=358871:cs&lang=en&list=343592:cs,343498:cs,358871:cs,287758:cs,282404:cs,256769:cs,224308:cs,222857:cs,215479:cs,215452:cs,&pos=3&page=1&nbl=50&pgs=10&checktexte=checkbox&visu=#texte

300 Guidelines, *supra*, fn. 299, section 4, "Technology pools", par. 210 *et seq.*

tion.[301] However, as the latter is explicitly merely empowered – by virtue of the above-mentioned Council Regulation of 1965,[302] as currently amended by Regulation (EC) No 1/2003 – to regulate bilateral technology transfer agreements, the extension of the block exemption over multiparty arrangements would have required a longer procedure, passing through the authorization of the Council. Consequently, the idea of bringing patent pools within the scope of the block exemption was finally discarded, as it was already clear from the draft TTBER in 2003.

As for the specific reasons explaining the maintained exclusion of multiparty licenses from the TTBER, the following should be in summary accounted:

- Since the cooperation of both Council and Parliament would be required for a Council regulation extending the powers of the Commission beyond bilateral technology transfer agreements, that procedure would ultimately delay the adoption of the TTBER;
- Multiparty licensing rules in the TTBER would be of limited added value, as typically patent pools involve high market shares making the licensing agreements fall outside the scope of the block exemption anyway;
- Patent pools meeting the conditions established by the current case law, i.e. if limited to essential and complementary technologies, open, non-exclusive, as well as licensed on fair, reasonable and non-discriminatory (so-called "FRAND") terms, are not caught by Art. 81 (1).[303] Therefore, the jurisprudence at hand already supplies a certain degree of legal predictability, while, in comparison with a traditional legislative source, also offering the additional benefit of a more versatile approach;
- Pooling agreements not meeting the above-mentioned criteria may lead to market foreclosure, and consequently an individual analysis is strongly recommended anyway;[304]
- Finally, it has been brought up that an inclusion of multiparty licenses would complicate the linear structure of the TTBER where, on the other hand, the

301 Dolmans M., Piilola A., "The Proposed New Technology Transfer Block Exemption: Is Europe really better off than with the current regulation?", World Competition 26(4), 2003, p. 561 *et seq.*

302 OJ 36, 6.3.1965, p. 533/65. Regulation as last amended by: Council Regulation (EC) No 1/2003 of 16 December 2002 on the Implementation of the Rules on Competition Laid Down in Articles 81 and 82 of the Treaty, OJ L 1, 4 January 2003.

303 For a legal outline of the "FRAND Exception", in the context of antitrust assessment of patent pools, see i.a.: Nack R. and Von Meibom W., "Patents Without Injunctions? – Trolls, Hold-Ups, Ambushes and Other Patent Warfare", In: MPI Studies on Intellectual Property, Competition and Tax Law – Patents and Technological Progress in a Globalized World – Liber Amicorum Joseph Straus, 2008, vol. 6, Springer ed., p. 495 *et seq.*; More in general on the application of FRAND for standard-related technology licensing, see: Ullrich H., "Patente, Wettbewerb und Technische Normung", GRUR, 2007, p. 826 *et seq.*

304 For a legal analysis on the point, see i.a.: Van Bael I., "Clauses Which May Require An Individual Exemption Under Art. 81 (3): Agreements Between Members of a Technology Pool", In: "Competition Law of the European Community", Kluwer Law International, 2005, p. 651 *et seq.*

Guidelines, taking a more flexible approach and applying the TTBER's principles by analogy, may be a more appropriate reference for assessment.[305]

C. Current TTBER and Accompanying Guidelines

I. New TTBER's Operative Principles

On 1 May 2004 the new Technology Transfer Block Exemption Regulation[306] became finally effective and therefore directly binding and enforceable in all Member States of the European Union.

However, pursuant to the transitional provision of Art.10,[307] the full harmonization effect of the TTBER was postponed until 1 April 2006. As for its final term of validity, the current TTBER is due to expire on 30 April 2014, after 10 years from its coming into force.[308]

In the premises,[309] it is stated that the new regulation shall meet the two requirements of ensuring effective competition and providing adequate legal security for undertakings, based on the simplification of the applicable regulatory framework and on the adoption of an economic-based approach,[310] with regard to the concrete impact of the agreements under consideration on the relevant market.

305 For a comparison with the former TTBER on the point of exclusion of patent pools from its coverage, see: Van Bael I., "Agreements Specifically Excluded from the Former TTBER", In: "Competition Law of the European Community", Kluwer Law International, 2005, p. 628 *et seq*.

306 Commission Regulation (EC) No. 772/2004 of 27 April 2004 on the application of Art.81(3) of the Treaty to categories of technology transfer agreements, (TTBER), OJ 2004 L 123/11, available at:
http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&model=guicheti&numdoc=32004R0772

307 *Id.,* Art.10 "Transitional period", stating that: "The prohibition laid down in Article 81(1) of the Treaty shall not apply during the period from 1 May 2004 to 31 March 2006 in respect of agreements already in force on 30 April 2004 which do not satisfy the conditions for exemption provided for in this Regulation but which, on 30 April 2004, satisfied the conditions for exemption provided for in Regulation (EC) No 240/96".

308 *Id.,* Art.11 "Period of validity".

309 *Id.,* Premise no. 4.

310 For a critical assessment on the economic approach promoted by the new TTBER, see i.a.: Bishop S., "From Black and White to Enlightenment? An Economic View of the Reform of EC Competition Rules on Technology Transfer", In: "EU Policy Issues: A Critical Examination of the Block Exemption Regulation and the Corresponding Guidelines", European University Institute - Robert Schuman Centre for Advanced Studies, The Annual EU Competition Law and Policy Workshops, 2005 Session, available at:
http://www.eui.eu/RSCAS/Research/Competition/2005/200510-CompBishop.pdf
A Critical Examination of the Block Exemption Regulation and the Corresponding Guidelines

Nevertheless, the evident benefits of such modern approach, and its underlying flexibility, come with a "toll", as it has been perceptively observed that: "The price to be paid for economic precision is a loss of legal certainty".[311]

1. Systematisation and Definition of Technology Pools

While patent pools are still excluded from the direct scope of application of the TTBER,[312] the fourth and last section of the Guidelines[313] is entirely dedicated to "Technology Pools", thereby amending for their technical exclusion from the direct field of application of the TTBER[314] and corroborating the increasing importance that these forms of multiparty licensing agreements have assumed in our economy.

As for the concrete application of the standards set forth in the Guidelines, it shall be reminded that they "must be applied in light of the circumstances specific to each case.[315] This excludes a mechanical implementation. Each case must be assessed on its own facts and the guidelines must be applied reasonably and flexibly".[316] This brings to mind the "rule of reason", previously examined when dealing with the American approach as set out in the US Antitrust Guidelines for the Licensing of Intellectual Property[317] and therefore it represents a point of conjunction with the US legal treatment of licensing agreement under the antitrust scrutiny.

311 Drexl J., "Is There a 'More Economic Approach' to Intellectual Property and Competition Law?", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 31. On the same argument in the wider context of the TTBER, see: Drexl J., „Die neue Gruppenfreistellungsverordnung über Technologietransfer-Vereinbarungen im Spannungsfeld von Ökonomisierung und Rechtssicherheit", In: GRUR Int., 2004, p. 716 *et seq.*

312 *Id.,* Premise no. 7: "this Regulation should only deal with agreements where the licensor permits the licensee to exploit the licensed technology, possibly after further research and development by the licensee, for the production of goods or services. It should not deal with licensing agreements for the purpose of subcontracting research and development. It should also not deal with licensing agreements to set up technology pools, that is to say, agreements for the pooling of technologies with the purpose of licensing the created package of intellectual property rights to third parties".

313 Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 210 *et seq.*

314 Pursuant to Art. 2 TTBER.

315 For the methodology for the application of Article 81(3) as set out in the Commission Guidelines on the application of Article 81(3) of the Treaty, see Joined Cases C-395/96 P and C-396/96 P, Compagnie Maritime Belge, [2000] ECR I-1365

316 Guidelines, *supra*, fn. 299, part I "Introduction", para. 3.

317 US Department of Justice and Federal Trade Commission, Antitrust Guidelines for the Licensing of Intellectual Property (IP Guidelines), April 1995, available at: www.usdoj.gov/atr/public/guidelines/ipguide.htm, Sec. 4 "General principles concerning the Agencies' evaluation of the rule of reason".

Under the general framework for applying Art.81 EC,[318] as clarified by the Guidelines, "The assessment of whether a licence agreement restricts competition must be made within the actual context in which competition would occur in the absence of the agreement with its alleged restrictions".[319] This also represents the point of departure for assessing the pro- and anti-competitive impact of technology pools, complementing the pragmatic reference to the state of affairs with the "rule of reason" and, thereby, effectively setting an indelible link to the concrete economic context in which such corporations arise.

Finally there shall be no "presumption of illegality" outside the safe harbour of the block exemption, thus it cannot be automatically assumed that technology transfer agreements falling outside the TTBER are caught by Article 81(1) or fail to satisfy the conditions of Article 81(3). Hence, an individual and unbiased assessment of the arrangement at issue shall operate on a case-by-case basis,[320] keeping in mind the ultimate goal of promoting innovation by maintaining the right balance between ensuring effective competition, on the one hand, and supporting economic initiatives and undertakings with an adequate level of legal certainty, on the other hand.

Technology pools are defined, for the scope of these Guidelines,[321] as "arrangements whereby two or more parties assemble a package of technology which is licensed not only to contributors to the pool but also to third parties". Although the statement at hand seems to give equal weight to both terms, the real emphasis is to be put on the second one, since the pivotal justification of a patent pool is the licensing of the contributed technologies to third parties in an aggregated form, to which the respective grants of rights within the pool is merely instrumental, as a possible choice for the internal organizational framework to be adopted, but certainly not essential to the achievement of the core pool's objectives.

Arguably, departing from a too formalistic definition, it shall be observed that a pool may as well effectively operate towards third parties independently from the fact that its members have or have not been granting each other mutual access to all pooled technologies, as long as the pool itself, acting as a "super partes", has been invested with the authority to conclude transactions as a legal entity on behalf of its associates. Therefore, this contribution rather adheres to the more concise and substantial definition, describing patent pools as consortia through which multiple patent owners offer third parties a joint non-exclusive license to access their patented technology, which will typically cover given technical applications.[322]

318 Guidelines, *supra*, fn. 299, part II "General Principles", Sect. 2 "The general framework for applying Art.81", papa. 11.

319 , [1966] ECR 337, and Case C-7/95 P, John Deere, [1998] ECR I-3111, para.76.

320 Guidelines, *supra*, fn. 299, part III "Application of the TTBER", Sect. 1 "The effects of the TTBER", para. 37.

321 *Id.,* Sect. 4 "Technology pools", para. 210, first sentence.

322 See, in this regard, the definition and concept expressed by Haller M. and Palim M. in "The Rise and Rise of Patent Pools", Intellectual Asset Management Magazine, October/November 2005, Issue 14, p. 9 *et seq*.

2. Questionable Demarcation of the Pool's Agreements between TTBER and Guidelines

As we have seen, patent pools as such are not covered by the TTBER, but are only addressed by the Commission Guidelines, which, although applying the same TTBER's principles by analogy, have no binding, but only "persuasive" authority, thus providing only a minimum of legal predictability. Consequently, the particular pooling agreement under consideration cannot benefit from a block exemption, but will keep on being exposed to the individual case-by-case assessment procedure, under the general competitions rules set out in Art. 81 of the EC Treaty.

Indeed, when attempting to respectively define the reach of the TTBER and the "residual competence" of the Guidelines, these trace a distinction between:

- On the one hand, pooling agreements as such, i.e. establishing technology pools and setting out the terms and conditions for their operation, which, irrespectively of the number of parties, are not covered by the block exemption. This is allegedly justified on the grounds that said arrangements do not directly aim at the "production of contract products",[323] namely products incorporating or produced with the licensed technology, thus not directly nurturing technological innovation. For these reasons such agreements do not "a priori" fall under the TTBER and are, consequently, deemed to be addressed only by the Commission Guidelines. The specific issues faced by pooling arrangements[324] - and not typically arising in the context of other types of licensing - would regard, in particular, (a) the selection of the technologies to be included and (b) the structural and functional operation of the pool.
- On the other hand, individual licences granted by the pool to third-party licensees are treated like other licence agreements, as if the pool was a single entity-patentee, which are block exempted when the conditions set out in the TTBER are fulfilled, with particular regard to the requirements of Article 4 of the TTBER containing the list of hardcore restrictions.[325] In fact there would be no reason to exclude such bilateral agreements just because one of the parties involved is the pool, acting in the quality of its representative, as an independent entity.

Thus, when referring to patent pooling agreements "as such" the Commission is deemed to allude to the above-mentioned first set of arrangements, i.e. the regulation of the respective rights and obligations inside of the pool, dealt with within the Guidelines. Conversely, all relations established towards third-party licensees, although to a certain extent predetermined in the context of the pool, may fall under

323 TTBER, *supra*, fn. 298, Art. 2 "Exemption"; Guidelines, *supra*, part III "Application of the TTBER", Sect. 2.2 "Agreements for the production of contract products", para. 41.

324 *Id.,* para. 212.

325 *Id.*

the TTBER, just like any bilateral agreement, here between the entity-pool (patentee) and the third party (licensee).

The exclusion of pooling arrangements from the Regulation's direct field of application - where the Guidelines explicitly state that: "Agreements establishing technology pools and setting out the terms and conditions for their operation are not, irrespective of the number of parties, covered by the block exemption"[326] - shall be read in conjunction both with the exemption set forth by Art. 2 of the TTBE. This latter dictates that "Art. 81 (1) of the Treaty shall not apply to technology transfer agreements entered into between two undertakings [first condition] permitting the production of contract products [second condition]" - and with Sect. III.2.2. of the Guidelines - further elucidating on what may fall under the definition of "agreements for the production of contract products" for the scope of the block exemption. Specifically, such point clarifies that, in order to be covered by the TTBER, the license must permit the licensee to exploit the licensed technology for the production of goods or services.

Nevertheless - while as far as the first requirement is concerned, it is perspicuous that patent pools may be excluded from the block exemption on the basis of the number of parties involved, if as is typically the case, more than two undertakings participate in the enterprise, and in account of the consequent probability of high combined market shares, typically exceeding the thresholds explicitly set forth in the TTBER[327] - the critical view is shared that the exclusion of a patent consortium on the basis of the scope of the agreement not meeting the requirement of the TTBER cannot be as easily justified.[328]

In fact, it is true that agreements establishing patent pools coincide with and presuppose, in the first place, the setting out of the terms and conditions for their operation, covering the reciprocal rights and obligations of the parties involved, but nevertheless such stipulations are inherently linked and indeed "instrumental" to the ultimate common goal of the exploitation of the pooled technologies for production of the contracted-product, by way of licensing with third parties. Hence, in practice, there is no "clear-cut" distinction between the prototype agreement establishing the pool and the subsequent bilateral contracts concluded with third parties, where the Guidelines shall assumedly strictly confine their scope of application to the former.

Besides, also wanting to adhere to the literal wording of the provision at issue[329] on the exclusion of "agreements establishing technology pools" from the benefits of the block exemption, referring to the setting out of the "terms and conditions for their operation" may (unintentionally but inevitably) well also encompass the pre-

326 *Id.*

327 Being said market-share thresholds set forth in Art. 3 of the TTBER.

328 For a complementary, but still critical stance on the matter, see *i.a.*: Ullrich H., "The Interaction between Competition Law and Intellectual Property Law: an Overview", European University Institute - Robert Schuman Centre for Advanced Studies, EU Competition Law and Policy Workshop, 2005, Introduction, p. 1 *et seq.*, available at: http://www.iue.it/RSCAS/Research/Competition/2005/200612-CompUllrichOVERVIEW.pdf

329 Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 212, first sentence.

defined "licensing" terms that are going to be negotiated with third parties, which on the contrary may certainly be covered by the TTBER. Indeed, the consortium's provisions on the contractual terms to be applied to licensees represent the core business of the pool, as well as its means of self-subsistence, determining the flow of royalties to be respectively allocated to the pool contributors.

Therefore, the view is taken that a rigid separation, as proposed in the Guidelines, between agreements establishing technology pools, excluded by the block exemption, on the one hand, and the licensing terms to be included in third parties' negotiations, covered by the TTBER, on the other hand, although necessary for systematic purposes, in practice represents an artificial and somehow inefficient distinction, because the latter may partly overlap with the former, as the content of the transactions to be undertaken with licensees (such as the amount of royalties to be charges, the scope and duration of the contract, eventual additional clauses, like the right of termination in case of a challenge, and so on) is already substantially predefined in the pooling agreement itself.

In other words, to evaluate the antitrust compliance of a technology pooling arrangement, also individual licenses concluded with third parties - thus possibly falling under the TTBER - shall not be regarded in isolation, abstracted from their business context, but likewise appraised in the light of the overall principles set out in the Guidelines, where patent pools are portrayed in a more thorough manner, reflecting their actual economical weight and distinguishing character.

Besides, as regards other points, the same Guidelines seem to point in this direction, like for instance when laying out the Commission's criteria for the assessment of the overall competitiveness of a pool if the latter also encompasses complementary, but non-essential patents.[330] Here reference is made, in particular, to whether such technologies are available only as part of a single package or whether parties interested also have the option to negotiate a license only for part of the package, with corresponding reduction of royalties.[331] This specific condition, stipulated, among others, in the context of the pool, is necessarily also going to be reflected in the individual agreements concluded with third parties, which, in their turn, may be certainly covered by the block exemption, hence making the assumption of a net separation between the Guidelines and the TTBER's respective scope of intervention redundant.

330 *Id.,* para. 221 *et seq*.
331 *Id.,* para. 222, lett. d.

II. Antitrust Scrutiny of Technology Pools under the Guidelines

1. Nature of the Pooled Technologies: Substitutes v. Complements and the Concept of Essentiality

The most recurrently typified negative and positive effects of technology pools on competition, as outlined in the Guidelines, are closely linked to the respective relationships of the pooled technologies and may be summarized as follows:

- On the one hand, if substitute technologies are involved,[332] pooling agreements may first of all result in a restriction of internal competition among the pool's contributors because of the joint selling of the pooled patents, mischievously taken out from their natural competitive context in the marketplace.[333]

Indeed, a pool composed solely or predominantly of substitute, instead of complementary, applications, might dangerously resemble a "price fixing cartel". Moreover, when a technology pool supports an industry standard or establishes a "de facto" industry standard, in addition to diminishing competition between the parties, technology pools may also result in a reduction of external innovation by foreclosing alternative technologies, as the existence of the standard and the related technology pool may make it more difficult for new and improved technologies to enter the market.

- On the other hand, if constituted of complementary technologies,[334] pools may certainly also produce pro-competitive effects, in particular by reducing transaction costs and by setting a limit on cumulative royalties, thereby avoiding "double marginalisation".[335]

The latter notion typically delineates the double (or, in general, the multiple) mark-up, which firms involved in a multi-level production process respectively charge as the retail price to the subsequent purchaser in order to get higher "margins" of profit.[336] Therefore, if the distinct production stages are operated by differ-

332 For the scope of the TTBER, "substitute technologies" are defined as such "when either technology allows the holder to produce the product or carry out the process to which the technologies relate", Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 216, 2nd sentence.

333 Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 213.

334 For the scope of the TTBER: "Two technologies are complements as opposed to substitutes when they are both required to produce the product or carry out the process to which the technologies relate", Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 216, 1st sentence.

335 Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 214.

336 The phenomenon of "double marginalization" was first discussed in the early 19th Century by the French mathematician Cournot A. in: "Recherches sur les Principes de la of the Richesses", 1938, English edition: "Research into the Mathematical Principles of the Theory of Wealth", Edited by N. Bacon, New York: MacMillan, 1897. A more thorough analysis is to be found in Spengler J., "Vertically integration and Antitrust Policy, Journal of Political

ent companies, having a certain market monopoly, a renewed surcharge occurs at each step, with the consequence that the final product has a higher price than would be the case, if a single company could control the entire production process, in which case the "marginalization" effect would eventually take place only once.[337] In other words, "double marginalization" is avoided, because the intent to draw a certain margin of profit is going to be related to the contributed technologies as a whole, thus not resulting from the sum-up of all patents needed to produce the targeted contract-product taken individually.[338]

Accordingly, the creation of a consortium, as a collective managing entity, may well have an overall positive outcome as to the third parties' transactions, by simplifying the negotiation procedure and allowing for "one-stop shopping", covering all the pooled technologies. The resulting competitive advantages are particularly evident in sectors where intellectual property rights are prevalent, i.e. clearing the way through so called "patent thickets",[339] where in order to operate on the market licences need to be negotiated from a significant number of patent holders. Moreover, joint licensing and servicing can lead to further significant cost reductions, should third-party licensees also receive on-going services concerning the application of the licensed technology.

Finally, another main advantage offered by a pool of complementary technologies is also the overtaking of the "hold-up" problem, which arises when one of the patent holders refuses to grant licenses under reasonable terms, taking unfair advantage of being, in hypothesis, the last of a series of contractors needed to get access to a given package of interdependent technologies, thus abusing his stronger bargaining position to "hold-up" the prospective licensee.[340]

Economy, 1950, vol. 58, p. 347 *et seq*. ; More recently, Motta M, "Competition Policy", Cambridge University Press, 2004.

337 See also: Hart O. and Tirole J., "Vertical Integration and Market Foreclosure", Brookings Papers on Economic Activity: Microeconomics, 1990, p. 205 *et seq.*; Waterson M., "Price-Cost Margins and Successive Market Power." Quarterly Journal of Economics, Feb. 1980, p. 135 *et seq.*

338 As considered, the phenomenon of "double marginalization" was first discussed in the early 19th Century by the French mathematician Cournot A. in: "Recherches sur les Principes de la of the Richesses", 1938, English edition: "Research into the Mathematical Principles of the Theory of Wealth", Edited by N. Bacon, New York: MacMillan, 1897.

339 Shapiro C., "Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standards-Setting", March 2001, available at http://www.haas.berkeley.edu/~shapiro/thicket.pdf

340 Merges R., "Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations", 84 California Law Review, 1996, vol. 9, p. 1293 *et seq.*: "A hold-out is someone who refuses to agree to a bargain for strategic reasons. For example, if a city government needs to buy five parcels of land from property owners A, B, C, D, and E, E might wait until the other four (A-D) have sold their land. This puts E in the driver's seat in bargaining with the city: E can now charge a very high price - in theory, up to the total amount the city has to spend on the project, minus what was paid to A-D - for his or her land. Since this price will often be more than the average price paid to A-D, and in any event more than the price E could have obtained if he or she were not the last to sell, such a holdout strategy will be rational in many cases".

In order to clarify the basic distinction underlying the competitive assessment of patent pools, the Guidelines provide the definitions of complementary as opposed to substitute technologies, as well as of the concept of essentiality of a technology included in the pool, formulating the differentiation as follows:[341]

- "Two technologies are complements as opposed to substitutes when they are both required to produce the product or carry out the process to which the technologies relate".
- "Conversely, two technologies are substitutes when either technology allows the holder to produce the product or carry out the process to which the technologies relate".
- "A technology is essential as opposed to non-essential if there are no substitutes for that technology inside or outside the pool and the technology in question constitutes a necessary part of the package of technologies for the purposes of producing the product(s) or carrying out the process(es) to which the pool relates. A technology for which there are no substitutes, remains essential as long as the technology is covered by at least one valid intellectual property right. Technologies that are essential are by necessity also complements".[342]

However, endorsing a critical stance, the definition of essentiality adopted by the Guidelines is a rather "strict" one, as it is not deemed sufficient for a technology to have no substitute inside the pool and as such to represent a necessary step for the production of the contracted product (what we would call "relative essentiality") in order to be regarded as essential, but it is also required that no alternative technologies exist outside of the pool, which appears to represent a heavy burden to comply with, in "absolute" terms.[343]

Anyway, the differentiation between complementary and substitute technologies is of outmost importance for the assessment of patent pools under the antitrust scrutiny of the Commission and it is a determinant for the outcome for the grant of an exemption. Indeed this sensible distinction, based on economic and empirical rather than speculative observations, is also to be found in the antecedent US Antitrust Guidelines for the Licensing of Intellectual Property,[344] representing a retained "constant" in the assessment of the competitive impact of patent pools.

341 Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 216.

342 For a legal stance embracing the distinction between complementary and substitute technologies into a pool, see i.a.: Byrne N. et al., "Licensing Technology", Jordans Publishers, 2005, p. 365 *et seq.*

343 On the point, see i.a.: Van Bael I., "Complementary versus Substitute Technologies Comprised in a Pool", In: "Competition Law of the European Community, Kluwer Law International", 2005, p. 700 *et seq.*

344 US Department of Justice and Federal Trade Commission, "Antitrust Guidelines for the Licensing of Intellectual Property", April 1995, Sect. 5.5 "Cross-licensing and pooling agreements", available at: www.usdoj.gov/atr/public/guidelines/ipguide.htm

2. Beyond Categorizations: Competitive Efficiencies from a Consumer Perspective

Beyond plain categorizations, it shall be nevertheless observed that the difference between complementary and substitute technologies is not "clear-cut" in all cases, since technologies may be partly substitutes and partly complements. In these intermediate situations, priority has been eventually given to the consumer perspective, which is regarded as a decisive parameter for determining the respective nature of two or more given technologies. Concretely expressed, every time that licensees, due to efficiencies stemming from the integration of two technologies,[345] are likely to demand and purchase both technologies, these are treated, for purposes of legal assessment, "as if they were complements", even if in fact they are partly substitutable. In such cases, the more liberal approach adopted by antitrust authorities is based on the practical consideration that, even in the absence of the pool, it is likely that licensees acquire both technologies anyway, due to the additional economic benefit of employing both technologies as opposed to employing only one of them.[346]

An example may help to clarify the concept: thinking to both a laptop and a flat computer screen, nobody would ever seriously consider the technologies underlying such two products as "complement" to each other, since they are not both required to produce the same, but different products. In fact, they could even be regarded as "substitute", as normally you may choose to purchase one or the other. Nonetheless, it follows from empirical observation, that an increasing number of consumers who buy a laptop are also likely to purchase an additional external monitor, following considerations of convenience (generally a laptop, while it has to be light and easy to carry, may have a small screen, thus the benefit of a bigger additional monitor to be connected and used in the usual working place). In this respect, hypothetically, if two patent owners contribute the respective technologies for a laptop and an external screen in a pool, their agreement is likely to fall under a positive legal assessment, given the consideration of their technologies as complementary, in accordance with the effective market demand.

3. Different Categories of Technologies and Possible Combined Scenarios

Eventually, out of the combinations of the different categories of technologies which, as outlined above, could be included in a pool, three possible scenarios could theoretically be depicted, as duly outlined by the Guidelines for the purposes of as-

345 Along the same line, giving primary considerations to actual efficiencies resulting from the combination of different technologies in a pool: U.S. Department of Justice and the Federal Trade Commission, "Patent Pools – Efficiencies", In: "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition", April 2007, p. 66 *et seq.*

346 Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 218.

sessment under Art.81 EC, in view of improving the legal predictability and confer a certain degree of legal certainty to some typified kinds of agreement.[347]

- The worst scenario occurs when the inclusion of substitute technologies in the pool restricts inter-technology competition, ensuing into collective bundling,[348] where charged royalties rise above competitive levels. Besides, where the pool is solely or predominantly composed of substitute patents, the arrangement is deemed to cover a price fixing between competitors. Hence, as a general rule the Commission considers the inclusion of substitute technologies into the pool to be a severe violation of Article 81(1), where the conditions of Article 81(3) are unlikely to be fulfilled in the case of pools, which comprise substitute technologies to a significant extent. Given that the technologies in question are alternatives, no transaction cost savings accrue from including both technologies in the pool, in the absence of which the licensees would not have required both. It is not sufficient that the parties remain free to license independently, as in order not to undermine the consortium, which allows them to jointly exercise market power, the parties are likely to have little incentive to compete with each other.
- The best scenario, on the other hand, occurs when a pool is composed exclusively of technologies that are essential and therefore necessarily also complements. In the case of such a combination, the creation of the pool as such typically falls outside the prohibition of Article 81(1), even irrespective of the market position of the parties.[349] However, single clauses under which licences are granted may still fall under the bar of Article 81(1).[350]

Finally a mixed scenario takes place when non-essential but complementary patents are included in the pool, where caution is advised because of the risk of foreclosure of third party technologies.[351] In fact, it is argued that when a specification, for which substitutes exist outside of the pool, is included within the aggregated technology package, licensees are likely to have little incentive to acquire a competing specification, when the overall royalty paid for the package already covers such substitute technology.[352] In this respect, the Guidelines disputably maintain that: "The inclusion of technologies which are not necessary for the purposes of producing the product(s) or carrying out the process(es) to which the technology pool relates also forces licensees to pay for technology that they may not need", concluding

347 For an extensive overview of the antitrust assessment of technology licensing agreements from a European competitive stanse, see: Korah V., "Introductory Guide to EC Competition Law and Practice", 9th ed., 2007, Hart Publishing, p. 104 *et seq*.

348 Guidelines, *supra*, fn. 299, para. 219.

349 *Id.,* para. 220.

350 For an analytical outline on the scenarios described in relation to the nature of the pooled technologies, see i.a.: Ritter L., et al., "European Competition Law: A Practitioner's Guide", Kluwer Law International, 2004, p. 843 *et seq*.

351 Guidelines, *supra*, fn. 299, para. 221.

352 On the issue of foreclosure of thirs party technologies, see i.a.: Jones A. et al., "EC Competition Law: Text, Cases and Materials", Oxford University Press, 2007, p. 842.
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that the inclusion of complementary patents thus amounts to collective bundling. "When a pool encompasses non-essential technologies, the agreement is likely to be caught by Article 81(1) where the pool has a significant position on any relevant market".[353]

Concerning this last point, it should be critically observed that two technologies that are complements, according to the same definition of complementarity previously provided by the Guidelines[354] - according to which: "Two technologies are complements as opposed to substitutes when they are both required to produce the product or carry out the process to which the technologies relate" - must accordingly also both be "necessary" for the production of the contracted product at issue. The fact that possible alternative specifications exist outside of the pool, meaning that strictly speaking the technology in question is not absolutely "essential" because of the availability of substitute technologies on the market, does not at the same time imply that such a technology becomes unnecessary, as the latter - or alternatively its substitute- is still required in the "complementary" chain of steps for the realization of the contract product. In other words, essential technologies must necessarily be complements, but complements may not be essential, in absolute terms.

Arguably, the Guidelines misleadingly appear to infer that when complementary but non-essential technologies are included in the consortium, licensees have to pay for applications that they may not need. In fact, even assuming the non-essentiality of a complementary patent within the pool, interested third parties, which do not find it convenient to license that particular technology from the pool itself, are anyway compelled to pursue an alternative solution in order to fill in the complementary step, which is still necessary to get access to all specifications underlying the pool's contract product. At the worst, it could be argued that the incentive to pursue eventually available substitutes in the marketplace is diminished, when the acquired assembled package already covers a valid alternative specification, as reported in the fist part of the Commission's statement.[355] In any event, more far-reaching conclusions, such as those endorsed by the Guidelines - even if tempered by the acknowledgement that there may be other ways to ensure that third party technologies are not foreclosed[356] - may not be equally sharable for the reasons given.

Following the reasoning outlined, it is hereby disputed that, in the case outlined, the option to be left open should rather be one of:

- Either a replacement of the pooled technology with the external substitute, if convenient conditions can be negotiated, which would consequently be followed by the exclusion of the previously contributed patent, this outcome coinciding with the solution proposed in the Guidelines;
- Or a maintenance of the complementary specification within the pool, should the patent at issue, despite of having become non-essential for the emergence of

353 *Id.,* para. 221, last sentence.
354 *Id.,* para. 216, first sentence.
355 *Id.,* para. 221, first and second sentence.
356 *Id.,* para. 222, fourth sentence.

a concurrent third party's technology, still prove superior for reasons of competitive convenience.

In any case, the choice should be based on objectively relevant factors, such as quality-price considerations, with regard to the actual situation in the market place. Thus, a possible conflict between a pooled and an alternative external technology should not automatically be solved by the exclusion of the former, as simply put by the Guidelines.

4. Antitrust Concerns Beyond Merely Technological Systematizations

While in theory competitive assessments of patent pools are to a great extent made on the basis of the interrelations of the pooled technologies, paraphrased into the opposition between substitute and complementary specifications, real-life scenarios are much more complex, and even the strict exclusion of substitute technologies from the assembled package does not completely eliminate the risk of antitrust collusion. In fact, in the moment of negotiating about which patents to include in the pool and which to leave out, in the hypothesis of more patentors holding complementary, but respectively substitute technologies, some other hidden "compensation" mechanisms may be convened in order to repay the owners of the excluded specification, who may nevertheless contribute other technologies to the pool, thereby also ensuring their final agreement to the collectively adopted solution.[357]

Besides, when it comes to patent pooling supporting technical standards, these risks of collusions are even compounded. In principle, the purpose of a standard-setting body should be the selection of the best standard to be implemented in the market. In practice, however, the participants in the process are not unbiased techno-

357 In this respect, it has been argued that: "Alas, even the commitment not to pool substitutes is no guarantee that the pool will not price as a cartel. Pool negotiations often involve discussion between patentees with suites of patents, some substitute and some complementary. Suppose that Acme has patents x1 and y1 and Beta has patents x2, which competes with x1, and z1, which does not compete with any other patent proposed for the pool. Following the assumed antitrust principle of 'complements only', the pool will not be able to include both x1 and x2, so Acme and Beta will have to agree which one comes in and which one stays out. Since both firms will want their own patent included, they will look for some quid pro quo for agreeing to allow the other's patent in - perhaps some 'adjustment' in the royalty rate of y1 or z1. Further, the negotiated rate of x1 or x2 could easily become a benchmark for the extra-pool licensing of whichever patent was not included in the pool. Indeed, even if Acme and Beta negotiate over the royalties of only complementary patents, those conversations may facilitate interdependent pricing by Acme and Beta of their competitive patents", in: Crane D., "Patent Pools, RAND Commitments, and the Problematics of Price Discrimination", Cardozo Legal Studies Research Paper No. 232, April 2008, p. 6, also available under the Social Science Research Network at:
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1120071

crats, but mostly patentees, and the standard is likely to pass through a thicket that incorporates some of those patents.

In fact, the very fundamental distinction between "complements" and "substitutes "becomes blurred in the context of a standard-setting process. In fact, while in the simplest patent pool case demand for the technology package is indeed external to the consortium, being influenced by market's needs, when standardization activities are involved it is mostly the patentees themselves who decide which technologies to include in the standard, thus creating the demand for the patents to be pooled.[358]

5. Particular Obligations upon Standard-Related Technology Owners Involved in a Pool: Early Disclosure and Licensing Terms

a. A Delicate Balance of Interests as Base for the Commission's Recommendations

As regards the market power that can be acquired by the pool, arising in itself special caution before antitrust authorities, as considered particular consideration shall be given to the case of patent consortium supporting industry standards. In this respect, the Guidelines state that: "Undertakings setting up a technology pool that is compatible with Article 81, and any industry standard that it may support, are normally free to negotiate and fix royalties for the technology package and each technology's share of the royalties either before or after the standard is set. Such agreement is inherent in the establishment of the standard or pool and cannot in itself be considered restrictive of competition and may in certain circumstances lead to more efficient outcomes. In certain circumstances it may be more efficient if the royalties are agreed before the standard is chosen and not after the standard is decided upon, to avoid that the choice of the standard confers a significant degree of market power on one or more essential technologies. On the other hand, licensees must remain free to determine the price of products produced under the licence. Where the selection of technologies to be included in the pool is carried out by an independent expert this may further competition between available technological solutions".[359]

In sum, weighing up the cause of the freedom to be conferred upon the right holders for fixing their royalties, on the one hand, against the concerns of individual

358 As it has been perceptively observed, by Crane D., *supra*, fn. 357, p. 7: "There is a concern that the SSO process could degenerate into horse-trading between patentees, each willing to support gerrymandering in favor of other patentees in exchange for some gerrymandering in favor of his own patents. For example, suppose that the optimal path for the standard is X-Y-Z, which reads on no patents and employs the best available technology. One can image that three patentees, each with one patent (A, B, or C), could agree to support an A-B-C standard. In this scenario, standard-setting collusion is doubly harmful, first because it reads on patents when it employs a technologically inferior path".

359 Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 225.

abuse of market power upon the owner of a patent deemed to be essential for the implementation of a standard, on the other hand, the Commission chose to follow a rather diplomatic approach: in principle, sanctioning the sovereignty of the patentees to resolve when and how to set their licensing fees, but in practice recognizing that such determination may lead to more efficient results, from a competitive standpoint, if it occurs before the standard is chosen, thereby also accounting for a more transparent, cost-effective choice of the technologies to be eventually included into a standard.

In fact, the Commission already in the past advocated a more general set of recommendations for standard setting bodies on the ways to manage intellectual property rights relating to standards, thereby complying with EU competition rules. Specifically, pursuant to an officially issued Communication in 1992 on Intellectual Property Rights and Standardization[360] - more recently complemented also by another Commission Communication, released in 2004, on the role of European Standardization in the framework of EU policies and legislation[361] - many standard-setting organizations adopted leading principles directed at avoiding antitrust liability.[362] The ensuing implementations range from mere requirements of ex-ante disclosure, upon owners of technologies considered for inclusion into a given standard, to more far-reaching commitments to stipulate licenses on "reasonable and non discriminatory" (RAND) terms.

Nevertheless, it has been perceptively argued that antitrust "ex ante" disclosure obligations, as well as contractual enforcement actions by standard-setting organizations, especially as far as licensing fee commitments are concerned, may well guarantee that the royalties and other licensing terms are stipulated up front under RAND conditions, thereby counter-balancing the risk of individual abuse of market power. However, disputably such measures merely replace, on the one hand, the risk of "unilateral" holdouts with, on the other hand, the danger of collusion and price fixing, eventually resulting in cartelization and "collective" abuses.[363] In this respect, the antitrust authorities in the US have instead shown a very diffident approach to "ex ante" disclosures through their recent "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition" of April 2007. There preliminary negotiations over licensing terms are considered to generate a serious potential both for the exercise of market power by standard-related patent owners and for naked price-fixing.[364]

360 Commission Communication on IPRs and Standardization, COM 92/445, October 22, 1992.

361 Commission Communication on the role of European Standardization in the Framework of European Policies and Legislation COM (2004) 674 final.

362 In the EU, standards bodies are actually recognized under Directive 98/34 of June 22, 1998, on Technical Standards and Regulations, published on OJ L 204, July 21, 1998, p. 37.

363 See in this respect the arguments raised by: Crane D., *supra*, fn. 357, p. 7.

364 US Federal Trade Commission and Department of Justice, "Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition" - "Chapter 3: Antitrust Analysis of Portfolio Cross-Licensing Agreements and Patent Pools", Joint Report, April 2007, p. 50-52.

b. The Precedence Set by Standard-Setting Bodies

Actually, the issue of an early disclosure of proprietary technologies susceptible to be incorporated into a standard truly came into the limelight following major developments set forth by standard-setting bodies dominating the international scene.[365] Establishing a prominent precedent, the European Telecommunications Standardisation Institute (ETSI)[366] adopted in March 2007 a new IP Rights Policy,[367] which is premised on a complementary pair of pivotal principles. First, members involved in the standardization process shall be obliged to inform ETSI of relevant essential patents in a timely fashion, hence a precursory disclosure is demanded. Second, should pertinent patented technologies be opportunely identified, the right owners shall undertake making their relevant licences available on fair, reasonable and non-discriminatory (FRAND) terms. Specifically, in this regard the adopted policy respectively requires that, on the point of disclosure: "[...] each member shall use its reasonable endeavours, in particular during the development of a standard or technical specification where it participates, to inform ETSI of essential IPRs in a timely fashion. In particular, a member submitting a technical proposal for a standard or technical specification shall, on a bona fide basis, draw the attention of ETSI to any of that member's IPR which might be essential if that proposal is adopted".[368] As a consequence, when it comes to licensing commitments, "when an essential IPR relating to a particular standard or technical specification is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give within three months an undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and non-discriminatory terms and conditions [...]. The

365 On the point, see: Piesiewicz G. and Schellingerhout R., "Intellectual Property Rights in Standard Setting from a Competition Law Perspective", Competition Policy Newsletter, Autumn 2007, no. 3, p. 36 *et seq.*, also available at: http://ec.europa.eu/comm/competition/publications/cpn/cpn2007_3.pdf

366 The European Telecommunications Standards Institute (ETSI) is a recognized European standardization body, which produces globally-applicable standards for Information and Communications Technologies, including fixed, mobile, radio, converged, broadcast and internet technologies. ETSI operates as a not-for-profit organization with almost 700 ETSI member organizations drawn from 60 countries worldwide. For the official website, refer to: http://www.etsi.org

367 The ETSI IPR Policy was first adopted as an interim policy in November 1994, and confirmed as a permanent policy in November 1997, after protracted negotiations among the membership over many years, and ultimately achieving approval of the competition authorities in Europe, US and Japan. In November 2005 the General Assembly of ETSI approved the creation of a new IPR ad hoc group, whose work officially started in January 2006, to review the IPR policy and investigate issues like FRAND and cumulative royalties. The ensuing March 2007 IPR Policy may be consulted at: http://www.etsi.org/WebSite/document/Legal/ETSI_IPR-Policy.pdf

368 Art. 4.1, ETSI IPR Policy, Annex 6 of ETSI Rules of Procedure, March 29, 2007, available at: http://www.etsi.org/WebSite/document/Legal/ETSI_IPR-Policy.pdf

above undertaking may be made subject to the condition that those who seek licences agree to reciprocate".[369]

Proceeding along the same path, the VMEbus International Trade Association (VITA),[370] a leading US standard-setting organization accredited by the American National Standards Institute, adopted new rules in 2007 requiring the disclosure not only of possibly relevant patents, but also of pending applications as a precondition for participation in standard setting activities.[371] Eventually, failure to disclose known essential patents on a prompt basis shall lead to a royalty free license encompassing the relevant claims of the concealed right acquired.[372] Likewise, the American Institute of Electrical and Electronics Engineers Standards Association (IEEE-SA)[373] implemented a policy in early 2007, also committing its members to similar criteria.[374]

Fundamentally, the constant escalation in patenting trends, coupled with the number of standards incorporating proprietary technologies, has raised the public awareness of the threat to competition that owners of patented specifications essential to a standard may exercise in lack of appropriate regulations. Because a patent required for the implementation of a standard reaches a much higher value once the latter is set, the system shall create a counter-incentive for the right holder who would attempt to extract the "ex-post" value earned by his technology, exponentially related to its "ex-ante" market value.

In this respect, while the role of competition authorities, such as the European Commission, is not to impose a specific IP policy on standard-setting bodies, but rather to shed some light on typically encountered antitrust issues,[375] the industry, as also convening in the framework of standard-setting organizations, has positively responded to the need to comply with the competitive parameters outlined.

369 Art. 6.1, ETSI IPR Policy, Annex 6 of ETSI Rules of Procedure, March 29, 2007, available at: http://www.etsi.org/WebSite/document/Legal/ETSI_IPR-Policy.pdf

370 VMEbus International Trade Association (VITA – VMEbus being a recognized computer-based standard) is an incorporated, non-profit organization of vendors and users having a common market interest in computing systems. Founded in 1984, VITA believes in and champions open system architectures as opposed to proprietary system architectures. For the official website, see: http://www.vita.com

371 The policy was adopted on January 17, 2007, following the US Department of Justice Antitrust Division's Business Review Letter providing guidance to VITA on October 30, 2006, available at: http://www.usdoj.gov/atr/public/busreview/219380.htm

372 For an updated outline of VITA's policies on disclosure and licensing of patents in standards, see: http://www.vita.com/disclosure

373 For the official website, see: http://www.ieee.org/web/standards/home/index.html

374 The policy adopted with regard to patent may be consulted at: http://standards.ieee.org/guides/bylaws/sect6-7.html

375 This view has also been expressed by Piesiewicz G. and Schellingerhout R., "Intellectual Property Rights in Standard Setting from a Competition Law Perspective", Competition Policy Newsletter, Autumn 2007, no. 3, p. 38, also available at: http://ec.europa.eu/comm/competition/publications/cpn/cpn2007_3.pdf

From an antitrust perspective, the rationale behind the requirement of an "ex-ante" disclosure of patents in the context of a standard-setting process is founded on the need to promote competition on the basis of technological and economic convenience, rather than on positions of power retained by the holder of an essential standard-related technology "ex post". A different solution would end up into the very same "hold-up" deadlock, should the patentee refuse to adhere to reasonable and open licensing terms, which the pool is finally committed to avoid. Besides, pursuing a policy of transparency as regards possibly relevant patents and the applicable licensing terms would enable competition among alternative specifications, eligible to be eventually incorporated into a standard, based on technical merits and more advantageous licensing conditions, eventually also considering suitable technologies freely available in the public domain. Accordingly, companies are going to be encouraged to compete more openly by promptly disclosing relevant technical assets and by proposing licensing terms likely to make their specifications more attractive for inclusion into a standard, where the final selection will finally reflect a thoroughly informed choice.

As far as the licensing terms adopted with regard to third parties to the pool are concerned, the Guidelines make a distinction and focus their attention on pools having a dominant position on the market, where "royalties and other licensing terms should be fair and non-discriminatory and licences should be non-exclusive".[376] The Guidelines explain that: "These requirements are necessary to ensure that the pool is open and does not lead to foreclosure and other anticompetitive effects on down stream markets. These requirements, however, do not preclude different royalties for different uses. It is in general not considered restrictive of competition to apply different royalty rates to different product markets, whereas there should be no discrimination within product markets. In particular, the treatment of licensees should not depend on whether they are licensors or not. The Commission will therefore take into account whether licensors are also subject to royalty obligations".[377]

III. Assessment of Individual Restraints: Non-Compete, Grant-Back and Non-Challenge Clauses

1. General Principles

There are three main clauses that are likely to be found with a certain frequency in the context of pooling agreements and that present a high level risk of distorting competition and ultimately hampering innovation:[378]

376 Guidelines, *supra*, fn. 299, sect. 4 "Technology pools", para. 226.

377 *Id.,* para. 226.

378 For an overview of the competitive impact of individual restraints most commonly found in technology transfer licensing agreement, more in general, see i.a.: Anderman S., "The New EC Competition Law Framework for Technology Transfer and IP Licensing", In: Drexl J.

- Non-compete clauses are banned by the Guidelines stating that: "licensors and licensees must be free to develop competing products and standards and must also be free to grant and obtain licences outside the pool. These requirements are necessary in order to limit the risk of foreclosure of third party technologies and ensure that the pool does not limit innovation and preclude the creation of competing technological solutions. Where a pool supports a (de facto) industry standard and where the parties are subject to non-compete obligations, the pool creates a particular risk of preventing the development of new and improved technologies and standards".[379]
- Grant-back obligations[380] pursuant to the Guidelines "should be non-exclusive and be limited to developments that are essential or important to the use of the pooled technology. This allows the pool to feed on and benefit from improvements to the pooled technology. It is legitimate for the parties to ensure that the exploitation of the pooled technology cannot be held up by licensees that hold or obtain essential patents".
- Non-challenge clauses are associated in with the risk that they may shield invalid patents within the pool. In this respect, the Guidelines warn that: "pooling raises the costs/risks for a successful challenge, because the challenge fails if only one patent in the pool is valid. The shielding of invalid patents in the pool may oblige licensees to pay higher royalties and may also prevent innovation in the field covered by an invalid patent. In order to limit this risk any right to terminate a licence in the case of a challenge must be limited to the technologies owned by the licensor who is the addressee of the challenge and must not extend to the technologies owned by the other licensors in the pool".[381]

On this last point, it is necessary to explain that the problem of challenging invalid patents and the consequent right of the licensor to terminate the agreement, which are and have to stay two separated concepts, are slightly different when arising in a pooling agreement or in a bilateral license.[382] The latter case is dealt with in Art.5.1 of the TTBER, which prohibits: "(lett. c) any direct or indirect obligation on the licensee not to challenge the validity of intellectual property rights which the licensor holds in the common market, without prejudice to the possibility of providing for termination of the technology transfer agreement in the event that the licensee challenges the validity of one or more of the licensed intellectual property rights".

ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 121 *et seq.*

379 Guidelines, *supra*, fn. 299, para. 227.

380 *Id.,* para. 228.

381 *Id.,* para. 229.

382 On the legal implications of non-challenge clauses in general, see the i.a.: McPeake R., "European Community Competition Law in Practice", Oxford University Press, 2004, ed. 5, p. 215 *et seq.*

This provision is mirrored by paragraphs 112 and 113 of the Guidelines. The first, with regard to non-challenge clauses,[383] i.e. obligations not to challenge the validity of the licensor's intellectual property, specifies that:

- "The reason for excluding non-challenge clauses from the scope of the block exemption is the fact that licensees are normally in the best position to determine whether or not an intellectual property right is invalid. In the interest of undistorted competition and in conformity with the principles underlying the protection of intellectual property, invalid intellectual property rights should be eliminated. Invalid intellectual property stifles innovation rather than promoting it […]".
- Conversely, paragraph 113 of the Guidelines covers the possibility for the licensor to terminate the licence agreement in the event of a challenge of the licensed technology, stating that: "the licensor is not forced to continue dealing with a licensee that challenges the very subject matter of the licence agreement […] The provision thereby ensures that the licensee is in the same position as third parties". What is important here is the wording of the legal provisions and in particular of Art. 5.1 (c) of the TTBER, providing the licensor with a right of termination in the event that the licensee challenges the validity of "one or more of the licensed intellectual property rights". Thus, when the licensee challenges "any" of the grantor's licensed patents, the agreement can be terminated as a whole and not just with reference to the challenged patent at issue. This is different in the case of patent pools, where it is specifically stated that "any right to terminate a licence in the case of a challenge must be limited to the technologies owned by the licensor who is the addressee of the challenge and must not extend to the technologies owned by the other licensors in the pool".[384]

2. Contextual Implementation

As outlined by a recent study on the design of patent pools and the determination of licensing rules to be adopted,[385] typical grant-back or non-compete clauses cannot be evaluated in themselves, without considering the nature of the technologies involved. In fact, both non-compete clauses - i.e. prohibiting independent licensing,

383 For a legal outline on such clauses, see i.a.: Van Bael I., "Termination Clauses and Non-Challenge Obligations ", In: "Competition Law of the European Community", Kluwer Law International, 2005, p. 704.

384 *Id.,* para. 229. For a comparison and along the same line, see: Joelson M., "An International Antitrust Primer: A Guide to the Operation of United States, European Union and Other Key Competition Laws in the Global Economy", Kluwer Law International, 2006, 3 ed., p. 366 *et seq*.

385 Lerner J., Strojwas M., Tirole J., "The Design of Patent Pools: The Determinants of Licensing Rules", November 2005, p. 1 *et seq.*, available at: http://www.people.hbs.edu/jlerner/PatPoolEmpiricalPaper.pdf

where patent owners would otherwise remain free to grant licenses on their inventions, as typically combined with follow-up implementations - and grant-back provisions - i.e. disposing that any innovation deriving from the contributed patent has to be mandatorily transferred to the pool - present both costs and benefits, respectively. In particular, as supported by empirical evidence:[386]

Independent licensing has the disadvantage of potentially creating competition between the members and the pool itself, in particular if the patents involved are substitutes; on the other hand, not foreclosing the possibility of such licenses through non-compete clauses has the benefit of allowing patent holders to develop their technologies in directions unrelated to the pool, thus bringing new implementations into the marketplace for the benefit of consumers.

Conversely, a non-compete provision would oblige the members of the pool, in order to be allowed to license independently to third interested parties, to first secure for themselves a license from the pool for the very same technology they initially conceived, which within the context of ordinary bilateral negotiations may appear as a paradox. In fact, these so called "add-on innovations", built on a particular patent contributed by a member to the pool, enable a new, stand-alone implementation of such patent, unrelated to the activities of the pool, as the latter stays unaffected by this particular new application. By contrast, the individual right holder could benefit from this new implementation, should the possibility of independent licensing and marketing be provided to recoup his investment in this research and development.

Grant-back clauses are normally foreseen to avoid the risk of "hold-up",[387] which arises when a pool member, after entering into a pooling agreement, develops a technology which turns out to be essential to the pool, thus leading to a "blocking patent", and holds up the whole pool - which is initially formed around a starting, agreed-upon set of patents, technically referred to as "kernel" - by detaining exclusive rights on his new patent and denying access to the pool. In this case, it is extremely difficult to determine whether the "missing piece" of intellectual property right that is necessary for an efficient implementation of the pooled technology (i.e. the "blocking patent") was already known to the patentee at the time of entering the

386 Lerner J., Tirole J., "Efficient Patent Pools", American Economic Review, 2004, p. 691 *et seq.*

387 Merges R., "Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations", 84 California Law Review, 1996, vol. 9, p. 1293 *et seq.*: "A hold-out is someone who refuses to agree to a bargain for strategic reasons. For example, if a city government needs to buy five parcels of land from property owners A, B, C, D, and E, E might wait until the other four (A-D) have sold their land. This puts E in the driver's seat in bargaining with the city: E can now charge a very high price—in theory, up to the total amount the city has to spend on the project, minus what was paid to A-D—for his or her land. Since this price will often be more than the average price paid to A-D, and in any event more than the price E could have obtained if he or she were not the last to sell, such a holdout strategy will be rational in many cases". See generally, Calabresi G. *et al.*, "Property Rules, Liability Rules, and Inalienability: One View of the Cathedral", Harvard Law Review, 1972, vol. 1089, p. 1106 *et seq.*

pool or not.[388] This gives courts, in case of litigation, a hard time when they are called upon to assess the alleged "bad faith" of the pool member, under which circumstance only they could legitimately mandate the compulsory transfer of the litigated patent to the pool, at no or low cost. The impasse, which the judiciary may be confronted with, is easy to perceive when at the time of entering the pool the pool member had the mere "knowledge", but not yet the "ownership" of the essential patent at issue.

However, the situation may be equally complicated when the contributor was unaware, at the stage of the pool formation, that one of his patents would turn out to be essential, thus acting in "good faith" by not dedicating it to the pool. In the face of these deficiencies, such hold-ups can be more easily avoided "a priori", through ad-hoc grant-back clauses to be included in the patent pool's constitutional statute. Nonetheless, grant-backs come at a cost, by discouraging pool members from investing their own resources into new implementations of the contributed technologies, when they will be forced to license it back to the pool, at no or a low licensing rate, according to a pre-determined scheme. In fact, such an automatic grant may lead to a "free riding" on the part of passive members of the pool to the detriment of innovation, while discouraging individual initiatives.

The actual balance between costs and benefits of the restrictive clauses at issue is greatly influenced by the nature of the pooled technologies.[389] The idea is easily grasped when considering the polar cases of pools composed, respectively, by either perfect substitute or perfect complement technologies:

- In a pool constituted of substitute technologies, the main restriction derives from non-compete clauses, prohibiting independent licensing from individual pool members to third parties, outside the constitutional framework of the pool. That is comprehensible if you consider that substitute technologies may both be employed individually for the production of the contract-product developed by the pool, so that the patentee, who would license his technology independently pursuant to bilateral negotiations with third parties, would directly compete with the pool he is part of. On the other hand, the patentee may freely develop further implementations of his own technology, normally without being forced to automatically grant them back to the pool. In fact, in pool of substitute grant-back clauses do not represent the default solution, but the choice of whether or not including them is conducted on a case-by-case basis and depends on the comparison of the reduced incentive to innovate and the wish to avoid the threat of a hold-up by the owner of a subsequent, potential blocking patent, which would paralyze the activity of the whole pool. However, based on the same considerations as to the nature of substitute technologies, the risk of a hold-up situation is highly reduced here, since the contract-product may normally be produced with the alternative pooled technologies, as well.

388 Lerner J., Strojwas M., Tirole J., *supra*, fn. 385, p. 1 *et seq.*
389 *Id.,* p. 4 *et seq.*

- In a pool constituted of complement technologies, instead, independent licensing is not a problem under normal circumstances, thus non-compete clauses are rarely included in such kinds of pools. Here, the key can also be found in the nature of the technologies involved: complements have necessarily to be employed together in order to obtain the desired contract-product. For this reason, should a patentee market his own individual technology by way of independent licensing to third parties, which would not constitute direct competition for the pool, as its field of activity is not limited to the pool members' isolated technologies. Besides, as outlined above, such independent licensing practices offer the benefit of enhancing the incentives for the pool contributors to innovate in pool-unrelated areas. However, these kinds of pools are much more concerned with the hold-up problem, should a new implementation of one of the technologies involved turn out to be indispensable for the production of the contract-product at issue, which could freeze the whole pool's functioning mechanism in the absence of grant-back provisions. This policy is implemented at the cost of a reduced incentive for pool members to invest into the development of pool-related innovations.

In fact, pools composed of perfect substitute or complement technologies mostly represent a mere abstraction of the reality and can rarely be found in their "pure" form. Besides, apart from "grey areas" where clear-cut distinctions based on the nature of the technologies involved are not easily discernable, in the real world pools do not come "labelled" as consisting of complementary or substitute patents.

Indeed, in order to resist a stereotypical assessment of the nature of patent pools that often tends to be confined to merely formal grounds, such as the declared intents of the parties entering into the agreements, a deeper consideration of empirical evidences should be enhanced. The former, more rigid approach is in fact based on a tradition of mistrust towards pooling arrangements,[390] which were historically associated with horizontal, price-fixing, anti-competitive "cartels", and thus deemed to comprise substitute technologies, unless proven to be "innocent". On the contrary, nowadays we should advocate a more flexible and pragmatic evaluation of such business practices, taking into consideration the overall context in which they arise, also when examining the individual clauses that contribute to their overall appearance.

IV. Institutional Framework Governing the Pool

Finally, a last point to be dealt with concerns the institutional framework governing the pool, which covers the way in which such consortia are created and orga-

390 See in this respect the report traced by Gilbert R., "Antitrust for Patent Pools: A Century of Policy Evolution", Stanford Technology Law Review, April 2004, available at: http://www.law.berkeley.edu/institutes/bclt/stemcell/articles/gilbert_patent_pools.pdf

nised. Indeed, the importance of a good patent pool management should not be underestimated as the way in which those entities are run may consistently reduce the incidence of antitrust allegations.[391] The most important points may be summarized as follows:[392]

1. Independent Experts

Where independent experts are in charge of the assessment and administration of essential technologies to be included in a pool, it is more likely that competition authorities will be more indulgent in their legal assessment, since non-aligned administrators are better guarantors of impartiality, because the selection of the pooled technologies is likely to be based on price and quality considerations, rather than on personal convenience of association, as it may occur if the pool is administrated by the strongest patent holders themselves.[393]

2. Open and Indiscriminate Participation

When the participation process is open to all interested parties, ideally also representing different interests, it is more likely that the pooled technologies will be selected on the basis of price or quality considerations, as compared to if the pool is set up by a limited group of technology owners, where individual interests may eventually prevail over objective factors.[394] Accordingly, when persons representing different interests are managing the pool, it is more likely that licensing terms and conditions will be open and non-discriminatory, thus reflecting the real market value of the licensed technologies.

391 Specifically in: Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 230, it is stated that the way a patent pool is structured can very well reduce the risk of restricting competition and provide assurances to the effect that the arrangement is more favorably seen as pro-competitive.

392 For an outline on the point, see i.a.: Van Bael I., "Pool Management and Institutional Arrangements ", In: "Competition Law of the European Community", Kluwer Law International, 2005, p. 704 *et seq*.

393 Besides, see also Guidelines, *supra*, fn. 299, Sect. 4 "Technology pools", para. 233, stating that: "The Commission will take into account how experts are selected and what are the exact functions that they are to perform. Experts should be independent from the undertakings that have formed the pool. If experts are connected to the licensors or otherwise depend on them, the involvement of the expert will be given less weight. Experts must also have the necessary technical expertise to perform the various functions with which they have been entrusted. The functions of independent experts may include, in particular, an assessment of whether or not technologies put forward for inclusion into the pool are valid and whether or not they are essential".

394 *Id.,* para. 231.

3. Overseen Exchange of Sensitive Information

Another determinant factor is that in oligopolistic markets, as eventually reflected within a patent pool, exchanges of sensitive information, such as pricing and output data, may facilitate collusion. In such cases the extent to which safeguards have been put in place in order to preserve the exchange of confidential data may be closely investigated.[395] Also in this respect, an independent expert may play an important role by ensuring that such information, still necessary for the purposes of calculating and verifying royalties, is not unduly disclosed to undertakings that compete on affected markets.

4. Neutral Dispute Resolution Mechanism

Finally, it is important to take into account the dispute resolution mechanism envisaged when setting up the pool. Specifically, when this is entrusted to independent bodies, it is more likely that contentious processes will also be dealt with in a neutral, unbiased way.[396]

In conclusion, the observance of a few, basic sensible principles, as hereby outlined, may go a long way in ensuring "green light" for patent pools, establishing a record of good practices.

D. Selected EC Case Law on Patent Pools

As compared to the long history of intersection between antitrust and patent pools in the US, raising a broad range of competition issues with regard to the licensing of technologies, the jurisprudence of such cases in the EU is relatively small, although similarly instructive.[397] In the following, we will attempt to summarize some of the most significant proceedings before the European Commission's Competition Directorate General involving the legal assessment of technology pooling licensing agreements:

395 *Id.*, para. 234.

396 *Id.,* para. 235.

397 Charles River Associates, "Multiparty Licensing"- Report prepared for the European Commission's DG for Competition, April 2003, "History of Patent Pools and Competition Policy", p. 21 *et seq.* available at: http://www.europa.eu.int/comm/competition/antitrust/legislation/multiparty_licensing.pdf

I. Videocassette Recorders (VCR)

Although the number of multiparty licensing cases has been quite limited, it is clear that the European Commission has been quite cautious about the potentially anti-competitive aspects of certain restrictions in multiparty licensing for a very long time. In 1987, an agreement involving cross-licensing of patents was found to negatively affect competition within the European Community.[398] Specifically, Philips and Sony had entered into an agreement with other videocassette recorders (VCR) producers on a uniform application of technical standards for the system at issue. The cross-license covered royalty-free patents to ensure the compatibility of cassettes with recorders from different vendors.

However, the agreement provided that only the Philips complete system would be allowed, so that, consequently, any modification to the Philips system required the consent of all parties. Despite the improved interoperability of the cassettes with video machines of different producers, the Commission refused to grant exemption arguing that: "compliance with VCR standards led to the exclusion of other, perhaps better, systems. Such an exclusion was particularly serious given the market position enjoyed by Philips […] Restrictions were imposed upon the parties which were not indispensable to the attainment of these improvements. The compatibility of VCR video cassettes with the VCR video machines made by other manufacturers would have been ensured even if the latter had to accept no more than an obligation to observe the VCR standards when manufacturing VCR equipment".[399]

II. Advanced Photographic System (APS)

Taking a new approach, from the early 1990s on the Commission has unequivocally demonstrated that it also recognises and prize**s** the potentially pro-competitive effects brought about by technology sharing, such as the establishment of standards setting. As in most of the cases, no formal decisions were made on the notified agreement reported below, for instance, but the Commission sent the parties a so called "comfort letter", i.e. an administrative letter, thoroughly expressing its opinion.

Specifically, in July 1993 Canon, Kodak, Minolta, Fuji and Nikon notified the European Commission about their accord for the still under way development and further exploitation, under the terms of a cross-license, of the Advanced Photographic System (APS), a new industry standard, which involved the production of new types of cameras, films and photo-finish equipment.[400] The Commission has twice formally invited third parties to submit their observations on the proposed coopera-

398 Philips VCR, OJ No L 47, 18.1.1978, p.42 *et seq.*
399 Philips VCR, OJ No L47, 18.1.1978.
400 Notice in OJ C 68/3 of 5 March 1994.

tion. The parties to the agreement were all large players in the European and world market in cameras, lenses, colour roll films, colour photographic paper and single use cameras and as such were keen to ensure wide acceptance of APS as a new standard, as demonstrated by their commitment to granting licences to competitors. Here, the undertakings involved were primarily manufacturers, and their final aim was to generate revenues, essentially from their production, rather than from the licensing of their IP. The APS was commercially launched in April 1996, involving features that were improved to such extent that the parties expected it to effectively replace, at least to a substantial extent, the existing industry standard within the photographic industry in the long run.

Eventually, the Commission reviewed some aspects of the third party licensing in 1997, mainly as far as it related to the technical assistance given to licensees.[401] During the proceedings the parties complied with the Commission's requirements to ensure full competition, in particular by securing a fair and transparent licensing system, together with technical assistance to the benefit of prospective licensees. Besides, the co-operating parties agreed to change their initially notified agreements by granting licenses to third parties already two years before the date of the introduction of the APS into commerce, in order to ensure that the upcoming licensors would also be able to market licensed products in time to effectively compete with the named notifying parties. Following the outlined compromises, the Commission expressed its confidence that the conditions were "securing a transparent and fair licensing system".[402]

III. Digital Versatile Disc (DVD)

Similarly, in May 1999 an agreement involving the joint licensing of the newly developed Digital Versatile Disc (DVD) technology was submitted to the Commission's Competition Directorate General by Hitachi Ltd., Matsushita Electric Industrial Co. Ltd., Mitsubishi Electric Co., Time Warner Inc. and Toshiba Co. Practically, by way of compression, a DVD disc can generally store seven times as many video and audio signals as a compact disc, thus having evident advantages for users. The arrangement at issue covered the establishment of a patent pool embracing diverse applications of DVD technology, whereby patents are to be diffusely granted by way of a non-exclusive, fair and non-discriminatory license program to be unitarily administered by Toshiba.

The investigations lead by the Commission's competition services[403] indeed found that the patent pool under examination would likely promote economic and technical progress by allowing an efficient introduction and distribution of DVD

401 Notice in OJ 330/10 of 1 November 1997.
402 Press release IP/98/353 of 15 April 1998.
403 Press release IP/00/1135 of 9 October 2000.

technology. Most importantly, it was ascertained that the agreement did not contain unnecessary or excessive restrictions on competition. Finally, the Commission approved the pool, considering its overall beneficial effects on the consumers, thus granting a "comfort letter" under Art. 81(3) of the EC Treaty and thereby clearing the underlying agreement.[404]

IV. Moving Picture Experts Group (MPEG)

Other relatively recent notifications include the previously mentioned MPEG-2 pool, eventually cleared in 1998,[405] and the subsequent MPEG LA +5 pool, cleared in 2001.[406] As previously mentioned,[407] the MPEG-2 (Moving Pictures Experts Group) is an open standard for transmitting and storing video signals, providing a technique for eliminating redundant information and, consequently, saving transmission resources and space in storage media, such as optical discs. Both above-mentioned pooling agreements offered a single non-exclusive licence program and were unitarily administered by an independent entity, MPEG LA, based in the US city of Denver, Colorado. Furthermore, patent holders could offer licences for their patents outside the pool.

By clearing these agreements, the European Commission maintained that the pool had overall beneficial effects for the consumers and did not impose excessive or unnecessary restrictions on competition, therefore ultimately complying with the exemption criteria of Art. 81(3) of the EC Treaty.

V. Third Generation Patent Platform Partnership (3G3P)

Relatively recently, in November 2002, the European Commission's competition services, following the same balanced approach, eventually cleared the agreement among the so called Third Generation (3G) mobile equipment manufacturers (who refer to themselves as the "3G Patent Platform Partnership" or "3G3P"), involving a world-wide mechanism for evaluating, certifying and licensing essential patents for 3G mobile communications systems.[408] A positive administrative "comfort letter" was then issued in favour of the newly established 3G3P consortium, covering the creation of five 3G technology-specific platforms, fundamentally intended to determine and attest the essentiality of 3G patents, streamline licensing administration

404 Further details of the notification of the DVD Licensing Program were published in the Official Journal of the European Communities, 27 August 1999, vol. 242, p. 5 *et seq*.
405 Press release IP/98/1155 of 18 December 1998; Notice in OJ No 98/C 229/6 of 22 July 1998.
406 Notice in OJ 174/6 of 19 June 2001.
407 See Part I / B / 2 of this contribution, dedicated to The "MPEG LA" Case.
408 Press release IP/02/1651 of 12 November 2002.

and applying a price cap mechanism aimed at moderating the effects of high cumulative royalties.

The initiated antitrust proceedings go back to July 2000, when the newly established 3G3P and its eighteen members, consisting of both big manufacturers and major mobile operators,[409] notified the Commission about their agreements to pool their technologies together in order to create a consortium operating world-wide and designed to provide an open, voluntary and cost-effective framework for 3G mobile communication licensing services, ultimately intended to facilitate market entry and access to 3G technologies, thereby reducing the delays, costs and uncertainties invariably associated with the licensing of multiple patents.

In order to obtain antitrust clearance, pools should merely include essential patents, i.e. those that are indispensable for complying with a given technological specification. Consequently, as is implied by the very same concept of "essentiality", there should not be any substitute patents related to a given standard, hence all technologies should be reciprocally complementary, and the respective patent holders should not be competitors in the relevant market.

However, in the context of 3G standard setting, which took place under the guidance of the International Telecommunications Union (ITU), a certain degree of competitive concerns could not be avoided: in fact, the five families of standards that were eventually included under the 3G3P umbrella - encompassing separate air interface technologies[410] regrouped under the name of IMT-2000 (IMT standing for International Mobile Telecommunications and 2000 being the year when concerted acceptance of the main specifications to be incorporated into the 3G systems was eventually reached) - all represent alternative, i.e. substitute, technical solutions, thus potentially competing with each other, since consensus on a single global air interface standard could not be reached, and finally a compromise was opted for, the ultimate goal being attaining interoperability among the five separate air interface technologies and thereby allowing for global roaming and compatible 3G services.

Nevertheless, the alleged competition among the five substitute technologies encompassed by the IMT-2000 was in practice less compelling than in theory: in fact, it was undeniable that within certain regions one of the five technologies was widely prevailing, either due to consumers' dependencies on the already existing 2G legacy systems or to regulatory choice.[411] Anyway, given the potential or actual competition, among the five 3G technologies at issue, the 3G3P in its initial pattern seemed at least to some extent to form a prohibited, restrictive arrangement among market

409 Namely Alcatel, Cegetel, Electronics and Telecommunications Research Institute Korea, France Telecom, Fujitsi, Royal KPNN.V., LG Information and Communications, Matsushita, Mitsubishi Electric, NEC, NTTDoCoMo, Robert Bosch GmbH, Samsung Electronics, Siemens AG, SK Telecom, Sonera Corporation, Sony and Telecom Italia Mobile.

410 Respectively known as W-CDMA, CDMA2000, TD-CDMA, TDMA-EDGE and DECT.

411 On the point, see: Choumelova D., "Competition Law Analysis of Patent Licensing Arrangements - The Particular Case of 3G3P", Competition Policy Newsletter, Spring 2003, no. 1, p. 42, also available at: http://ec.europa.eu/comm/competition/publications/cpn/cpn2003_1.pdf

contenders, where their joint agreement on licensing conditions and royalty rates could have been marked as a price fixing attempt, as such caught by Art. 81 of the EC Treaty. This raised pressing concerns about the antitrust consequences of said practice, and in the course of 2001 and 2002 several amendments were introduced in the notified accord before the Commission. Indeed, the most crucial change was the establishment of five distinguished technology-specific platforms, each relating to the corresponding 3G interface, instead of one single platform for all selected interfaces, where the relevant patents were pooled together, as initially conceived.

Considerations related to the allegedly anti-competitive price setting mechanism in place were also overcome by the introduced amendments. In fact, the modified agreements eventually provided a default five percent maximum cumulative royalty rate, i.e. a "price cap", to be applied on each licensee and for each specific single 3G technology included under the IMT-2000. Besides, patent holders and third parties also left open the option between the standard pre-defined licensing conditions and the choice of entering into individual bilateral negotiations, according to their best convenience.

Now, taking into account its overall peculiarities and despite the quite significant resemblances, we should point out that interestingly there is a number of significant features distinguishing the 3G Patent Platform Partnership from a pure patent pool, which may be briefly highlighted as follows:

- The 3G3P patents are not exactly "bundled" together, because of the concurrent existence of the five separate technology platforms in place. Thus, there is no real comprehensive pooling of patents. Instead, licensees have the option, as we have just seen, to choose among the different technologies and, consequently, transactions can be concluded also on a bilateral basis, if the standard pre-defined licensing terms do not meet the parties' convenience within the particular setting determined on a case-to-case basis.
- Whereas in a patent pool a licensee typically enters into an agreement with the consortium itself, here there is no single licence between the platform, as such, and a given third party, since the 3G3P is technically divided into five distinguished units and, alternatively, bilateral arrangements can also be negotiated on an individual basis, according to the concrete circumstances in place.
- In the 3G3P the licensors do not assign their patents to the platform, as it is typically the case within a pool, which in this case rather has the function of an intermediary between patent holders and third parties, than of a truly representative entity acting on behalf of, and therefore substituting itself to, its associates; besides, here members always retain their rights to also conclude non-exclusive licensing agreements outside the 3G3P framework, an option which in a patent pool may or may not be inserted into an elective, additional clause, irrespective of its undeniable desirability for eventually overcoming competition concerns.

In conclusion, while assessing the compliance of 3G3P patent licensing arrangements with antitrust rules, the Commission finally had to ascertain that no unfair restriction of competition occurs among the different 3G technology-specific

platforms; that only essential patents are encompassed by each single platform in consideration; that no biased tying of patents occurs and that competition in related or downstream markets is not foreclosed; that further R&D is not discouraged by the arrangement under scrutiny.[412]

Nonetheless, the scope of the administrative comfort that has been conceded, and the ensuing clearance, is inherently limited to the notified agreements, as applying to the 3G3P membership at that time, and in no way it encompasses any other industry initiatives, such as decisions of 3G standard setting organisms and working groups, taking into particular account the novelty of 3G technologies at the time they were developed and introduced into the marketplace and the subsequent unpredictability of related 3G downstream product markets.

VI. Philips and Sony's CD Disc Licensing Program

In August 2003, after years of heated debates, the European Commission finally cleared a set of bilateral arrangements between Philips and Sony, establishing the worldwide CD Disc Licensing Program and regulating the firms' reciprocal rights and obligations.[413] Moreover, the related third parties' Standard License Agreement (the SLA 2003), covering essential patents to manufacture different specifications of pre-recorded CD discs, also eventually got antitrust clearance, pursuing from the recommended adoption of amendments to make it fully compliant with EU competition rules. This clearance marks the end of the Commission's rigorous inspection of the Philips and Sony CD Disc Licensing Program.[414]

In fact, the two companies had already been closely involved in cooperative research and development on the cutting edge of optical data storage technology since the 1970s, which resulted in joint patented inventions, eventually reaching a global dimension. At a time when magnetic tapes and vinyl discs were the dominating audio storage media on the marketplace, in the early 1980s, both firms commonly implemented the CD system standard specification, as part of an innovation program concerning digital audio recording, which was actually launched by the Electronic Industry Association of Japan.[415]

Actually, the close cooperation between Philips and Sony was first institutionalized in 1979, when the two undertakings concluded a cross-licence agreement to collaborate in the design and development of optical audio disc players and their

412 Choumelova D., *supra*, fn. 411, p. 43.

413 Press release IP/03/1152 of 7 August 2003.

414 Pena Castellot M., "Commission Settles Allegations of Abuse and Clears Patent Pools in the CD Market", Competition Policy Newsletter, Autumn 2003, no. 3, p. 56 *et seq.,* also available at: http://ec.europa.eu/comm/competition/publications/cpn/cpn2003_3.pdf

415 At that time the CD system was just one among several different alternative solutions advanced by other participants in the program, even if eventually the former prevailed over time. Pena Castellot M., *supra*, fn. 414, p. 58.

connected record media. That initial arrangement was then extended in scope and superseded by a series of subsequent more comprehensive arrangements, widening the sphere of collaboration quite beyond the original CD field. Pursuant to the above-mentioned concerted practices, in 1982 the to firms launched their worldwide CD Disc Licensing Program, to be primarily managed by Philips. As anticipated in the premises, a Standard License Agreement (SLA) was set up, containing the conventional contractual terms for prospective licensees.[416] Over the years, many different versions of the SLA followed.[417]

The first format introduced by Philips and Sony was the highly fortunate CD-Audio, which was launched in 1982 and soon replaced the analogue sound reproduction system thanks to its higher audio standards, as well as higher storage capacity and durability. [418] Subsequently, in 1984, the two companies developed the CD-ROM disc, basically a read-only storage medium for personal computers, eventually substituting the floppy disk. The CD standards and the ensuing licences were consequently extended to newly developed formats, which nevertheless didn't share the same enormous success of the first two. Ultimately, the adoption of the newly introduced specifications by music companies and consumer electronic producers was greatly encouraged by the broad availability of Philips and Sony's combined patents, both under reasonable and non-discriminatory terms, thereby avoiding the additional burden of multiple and time-costly negotiations.

Now, considering that Philips and Sony enjoyed a dominant position in the CD technology market, the geographical scope of which would encompass at least the European Union, we should analyse the possible instances of abusive behaviour under Art. 81 and 82 of the EC Treaty. In fact, against the background of such provisions, a number of doubtful practices in the management of the joint licensing program were identified. In particular, at least until 2000, when a major revision of the agreement at issue finally took place, the inventory of patents annexed to the SLA curiously neither comprised a list of countries for which each patent was awarded, nor their respective expiry dates. It has emerged, nevertheless, that a far more exhaustive patent inventory was already internally available well before 2000, but had still not been made publicly accessible. Moreover, expired or non-essential patents had not been systematically deleted from external inventories; consequently, since the same document was left unchanged for several years, without consideration to the validity or relevance of the embedded patents, third party licensees were accordingly still paying their respective royalties even for IP rights that had eventually expired years before.[419] In fact, pursuant to a rigorous assessment of essentiality of

416 For an overview on the licensing terms under consideration, see i.a.: Smith G., "Internet Law and Regulation", Business & Economics, 2007, p. 1198.

417 Pena Castellot M., *supra*, fn. 414, p. 56-57.

418 Pena Castellot M., *supra*, fn. 414, p. 56. A CD-Audio is a disc comprising audio information encoded in digital form, which is optically readable y a CD-Audio player.

419 This situation lasted until June 2001, when finally, following the expiration of the two main patents for that format in most of the countries where rights were granted, Philips and Sony

patents annexed to the SLA, that was finally conduced by an independent expert, it was found that merely four patents for CD-Audio, out of 44 included in the 1996 list, for example, were actually essential for the production of those discs.[420]

At last, an inquiry was launched after the European Commission received several complaints from manufactures of pre-recorded CD discs[421] asserting that both the bilateral arrangement between Philips and Sony and the various versions in use of the standard licence agreement (SLA) addressing third party licensees were in breach of Art.81 and 82 of the EC Treaty, having allegedly set up a patent pool that encompassed non-essential and expired IP rights and, consequently, fixed royalties at an unfair level. Actually, three complaints were raised, bringing together a total of twenty charging firms, representing a non-negligible quote close to 20% of all licensees within the territory of the European Union; nevertheless, the Commission's Competition Directorate General carried out a common assessment of all claims under examination.[422]

After discussing available options with the two firms' representatives and taking into consideration the cooperative attitude of the parties, a two-step solution was eventually contemplated: as a first stage, a limited window of opportunity for a satisfactory settlement was left open for both sides; then, once an acceptable bargain could be reached, subsequently to which complaints were withdrawn in June 2003, the second, final stage involved the removal of any unfair restriction contained in the SLA. Accordingly, Philips and Sony officially announced their new joint CD Disc Licensing Program, together with the amended "SLA 2003" to be offered to third parties for the remaining enforceable portions of Philips and Sony's patents.[423]

The content of the SLA 2003 may be summarized as follows:

- Licensees shall be left free to choose between the different kinds of CD discs available under the SLA and the essential patents required for the manufacture of each single type shall be specified;
- Only essential technologies, in respect to each sort of CD discs, shall be included in the patent lists annexed to the SLA, following a rigorous assessment to be carried out by an independent expert; any patents that can not pass the essentiality-test shall be promptly deleted from the relevant list of reference;
- Under the terms of the grant-back provision, licensees shall be only required to license back exclusively such patents that are deemed to be essential for the sorts of CD discs they have selected, both to the benefit of the consortium and the other licensees having opted for the same type of CD disc;

ceased charging royalties in respect of any remaining CD-Audio patents for those territories. Pena Castellot M., *supra*, fn. 414, p. 57.

420 Pena Castellot M., *supra*, fn. 414, p. 57-58.

421 Which are discs that include already content, such as music or software, provided by content-owners. Said manufacturers are in fact known in the business under the generic term of "replicators".

422 Pena Castellot M., *supra*, fn. 414, p. 58.

423 Pena Castellot M., *supra*, fn. 414, p. 56.

- Royalty payment obligations shall properly reflect both the territorial scope and duration of the patented technologies;
- All existing licensees shall be able to enter into the SLA 2003, which shall consequently govern all their forthcoming rights and obligations towards the pool, while substituting their prior standard license agreement; such switching shall not entail any further costs for the concerned licensees;
- The SLA 2003 shall terminate at the date of expiration of the last essential patent in the territory of reference and for the types of CD discs selected by the licensee.

Pursuant to the stipulation of the SLA 2003, Philips, which as already mentioned, is officially managing the joint licensing program, communicated to the Commission its intention to inform each licensee in the European Union in writing about the content of the new standard agreement; besides, as part of the same letter, the same licensees will be granted a one-time credit of 10.000 USD each for due royalties due.[424]

The Commission's competition services reviewed these new drafted agreements and finally reached the following conclusions:

- First, as far as the formal side is concerned, not only the SLA 2003, which is eventually concluded with each licensee in the form of an ordinary, although partly pre-defined, bilateral arrangement, but also Sony and Philips' joint CD Disc Licensing Program were deemed to be covered by the Block Exemption Regulation Concerning Certain Categories of Technology Transfer Agreements (TTBER 1996)[425] that was in force at that time before the advent of the new TTBER on May 2004.[426] In fact, the same conclusions would have been reached under the current TTBER, since, as rightly observed by the Commission, although agreements between the members of a patent pool are typically excluded from the block exemption, arrangements that have the pooling of technologies as their object, but are concluded between no more than two parties, on the contrary, may well be covered by the Regulation, as in the case under consideration;
- Second, as far as the substantial side is concerned, the SLA 2003, in the form that we have just analysed, was not regarded as appreciably restricting competition within the meaning of Art.81 (1) of the EC Treaty.

424 The points raised are outlined in: Press release IP/03/1152 of 7 August 2003.

425 Commission Regulation (EC) No 240/96 of 31 January 1996 on the application of Article 85 (3) [now Art.81 (3)] of the Treaty to certain categories of technology transfer agreements (TTBER 1996), OJ L 31, 9.2.1996, p. 2-13, as amended by the 2003 Act of Accession, and available at: http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=31996R0240&model=guichett

426 Commission regulation (EC) No. 772/2004 of 27 April 2004 on the application of Art.81(3) of the Treaty to categories of technology transfer agreements, (TTBER), OJ 2004 L 123/11, available at: http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&model=guicheti&numdoc=32004R0772

Consequently, a comfort letter was sent to Philips and Sony by the end of July 2003 definitely clearing their submitted agreements in view of the improvements introduced to the structure, administration and overall transparency of the program under consideration.

The case at issue illustrates how the Commission proved able to maintain an open and even proactive attitude towards the parties involved, being ready to accept and propose pragmatic solutions, as long as the final outcome can be regarded as equivalent to the likely result of a formal proceeding. Certainly, the chances of success of such an approach greatly depend on the nature of the infringement in question, on the respective positions of the firms involved and, ultimately, on the parties' cooperative attitude, adding to the European Commission's significant corpus of inquiries conducted in respect of patent pools.[427]

Interestingly, Philips' rights related to the CD's pool, as its consequent dominant position in the relevant market, have been recently challenged from an antitrust perspective, i.a. under Art. 82 EC, pursuant to an infringement lawsuit eventually brought up to the German Federal Supreme Court.[428] On the 6 of May 2009 a final judgement was rendered[429] upholding the decision of the lower instances[430] and eventually dismissing the defendant's "antitrust objections", which is basically the defence against a patent infringement allegation based on the asserted right holder's refusal to grant a license under fair, reasonable and non-discriminatory (FRAND) terms.[431]

In fact, while in principle the Court reaffirmed the admissibility of an antitrust defence for abuse of dominant position in case the holder of a standard-related patent refused to grant access to its technology under FRAND conditions[432], in the case at

427 Press release IP/03/1152 of 7 August 2003.

428 See: Bundesgerichtshof (BGH) – Mitteilung der Pressestelle, "Zwangslizenzeinwand im Patentverletzungsprozess grundsaetzlich zulaessig", Pressestelle des Bundesgerichtshof, 6 May 2009, n. 95, also available at: http://juris.bundesgerichtshof.de/cgi-bin/rechtsprechung/document.py?Gericht=bgh&Art=en&Datum=2009&Sort=3&Seite=8&nr=47897&linked=pm&Blank=1

429 Bundesgerichtshof, Decision of 6 May 2009, full text of the judgement available at: http://juris.bundesgerichtshof.de/cgi-bin/rechtsprechung/document.py?Gericht=bgh&Art=en&Datum=2009&Sort=3&Seite=8&nr=48134&pos=269&anz=1424&Blank=1.pdf

430 The case at issue was discussed at first instance in Mannheim, on 12 September 2002 (7 O 35/02), and in appeal in Karlsruhe, on 13 December 2006 (6 U 174/02).

431 For a legal analysis of said "antitrust objection" or "competion law defence" see i.a.: Schoeler K., "Patents and Standards: The Antitrust Objection as a Defense in Patent Infringement Proceeding", In: MPI Studies on Intellectual Property, Competition and Tax Law – Patents and Technological Progress in a Globalized World – Liber Amicorum Joseph Straus, 2008, vol. 6, Springer ed., p. 177 *et seq*.

432 Thereby the German Federal Supreme Court is also reaffirming its earlier approach in its *Standard-Spundfass* decision of 13 July 2004, IIC 2005, vol. 36, 741, available at: http://juris.bundesgerichtshof.de/cgi-bin/rechtsprechung/document.py?Gericht=bgh&Art=en&sid=1495bd745da66fbaf34feee7906eeb28&client=12&nr=30406&pos=7&anz=9&Blank=1.pdf.

instance said defence was declined on the ground that the applying licensee shall make an unconditional offer to the patent holder, to which the former shall feel bound, thereby acting as a "true licensee".[433]

Therefore, the patents encompassed by Sony and Philips' CD Disc Licensing Program, related to the CD technology that after the German Federal Supreme Court's decision became more widely known as "Orange-Book Standard",[434] were finally upheld, provided that licenses shall be granted under FRAND terms, a notion that nevertheless, still missing a clear statement of the courts as of its actual content, is still grossly left at the reasonable discretion of the right holder.

For an analysis of the legal implications of the decision, i.a.: Conde Gallego B., "Die Anwendung des kartellrechtlichen Missbrauchsverbots auf ‚unerlässliche' Immaterialgüterrechte im Lichte der IMS Health- und Standard-Spundfass-Urteile". In: GRUR Int., 2006, p. 16 *et seq*. For a wider, general approach on the issue see i.a.: Conde Gallego B., Mackenrodt M., Enchelmeier S. (Ed.), "Abuse of Dominant Position: New Interpretation, New Enforcement Mechanisms?", Berlin, Springer, 2008.

433 Bundesgerichtshof, Decision of 6 May 2009, *supra*, fn. 429, para. 29.

434 For a clear definition and a contextual analysis, see i.a.: Harrison R., "The Orange Book: The Relationship Between Patents and Standards", Tangible IP, Online Magazine, 11 June 2009, available at:
http://www.tangible-ip.com/2009/the-orange-book-the-relationship-between-patents-and-standards.htm

Chapter 5 Collaborative IP Mechanisms' Applications: Exploring New Frontiers of Life Sciences

A. Patent Pools and Biotechnology: Legal and Business Considerations

A growing number of concerns have been raised about the impact of intellectual property rights on biomedical innovation.[435] Even if there are no systematic empirical studies on this point, there is a certain anecdotal evidence of fragmented patent landscapes,[436] echoing from highly focused public health cases such as malaria vaccine development.[437] Indeed, it has often been suggested that cooperative agreements, as patent pools, where right holders agree to license their IP as a package, may well be an expedient to overcome the outlined problem.[438] The rationale for such collaborative arrangements is quite simple: by clearing the way to freedom to operate in a given technological field and by reducing the number of necessary negotiations to be undertaken by prospective third party licensees, transaction costs can be lowered and technology transfers facilitated. Yet, despite their attractive potential and the success of patent pools in other sectors, notably consumer electronics, they remain largely untested in biotechnology. Therefore, this last part of our contribution will be dedicated to the understanding and evaluation of the actual feasibility and convenience of the implementation of patent pooling mechanisms in life sciences.

The motivations for cooperation lay at hand**:** as IP portfolios of flourishing biotechnology industries are taking shape, transactional costs of increasing technology transfer can begin to account for a non-affordable portion of an average company's precious research and development expenditures. In fact, expensive negotiations, and the threatening exposure to even higher potential litigation's fees, constitute a

435 For a valuable contribution to the debated issue of patentability of biotechnological inventions, see i.a.: Drexl J., "La Brevettabilità delle Biotecnologie", In: Sciso, Elena ed.: L'OMC 1995-2005 - Bilanci e prospettive. Rom, LUISS University Press, 2006, p. 37 *et seq.*; Straus J., "Stellungnahme zu den vom Rechtsausschuss gestellten Fragen zu dem Entwurf eines Gesetzes zur Umsetzung der Richtlinie über den rechtlichen Schutz biotechnologischer Erfindungen", In: BT-Drucksache 15/1024, Deutscher Bundestag, 15. Wahlperiode, Rechtsausschuss, Protokoll der 57. Sitzung am 29. September, 2004, p. 214 *et seq.*

436 Garlappi *et al.*, "Public Sector Science and the Strategy of the Commons", Best Paper Proceedings, Academy of Management, 2002.

437 Fedson D., "Preparing for Pandemic Vaccination: An International Policy Agenda for Vaccine Development", Journal of Public Health Policy, 2005, vol. 26, p. 4 *et seq.*

438 Grassler F. *et al.*, "Patent Pooling: Uncorking a Technology Transfer Bottleneck and Creating Value in the Biomedical Research Field", Journal of Commercial Biotechnology, 2003, vol. 9, p. 111 *et seq.*

serious economic inefficiency that may dislocate fundamental resources from the "core-business" of biotechnology.

Given the complex and evolving dynamics of biotechnology research and development, operating within an area of particularly dense patent production, the industry's reliance on cooperative market-based technology transfer mechanisms, as embodied by patent pools or other private collective rights organizations, may be inevitable in the medium and long term. Having scrutinized the actual patent landscape as well as the prospective solutions, as diffusely outlined herein, the opportunities for future success may depend on the prompt acceptance and calibrated implementation of such collaborative IP strategies.

However, the successful stereotype that has emerged in the electronic and communication industries[439] cannot be blindly transposed as "successful receipt" and implemented on a one-to-one basis in the biotechnology sector, because we ought to take into due consideration the specific peculiarities that distinguish the latter from the former. Indeed, a new, distinctive patent pool model may likely arise within the life sciences domain showing particular features that are reflecting the different business context. Hence, the question that remains to be answered is how the structure and organization of a biotechnology patent pool should differ from the general model.

B. Pilot Experiences

I. Cases at Hand

In an attempt to provide a satisfactorily answer to the questions as to what extent the patent pool mechanism can be applied to genetic inventions and whether such a model may lead to the expected benefits, some illustrative "first hand" experiences of patent pools, as recently undertaken - and have proven viable - in the field of life sciences, will be reported.

1. Golden Rice

A seemingly instructive case on collaborative IP patterns of protection and on successful negotiation through patent thickets emerged in the field of agricultural biotechnology.[440] The Golden Rice Project was born out of an initiative of the Rock-

439 Aoki R. *et al.*, "Coalition Formation for a Consortium Standard through a Standard Body and a Patent Pool: Theory and Evidence from MPEG2, DVD and 3G", Institute of Innovation Research Working Paper, 2005.

440 Stanley P. *et al.*, "Intellectual and Technical Property Components of Pro-Vitamin A Rice (Golden Rice): a Preliminary Freedom to Operate Review", ISAAA Briefs No. 20, Ithaca, 2000, also available at: http://www.isaaa.org. For a more general discussion, see: Graff G. *et*

efeller Foundation, based on a widely recognised need for a sustainable biofortification program to solve the scourge of micronutrient deficiencies worldwide.[441] It was this project that brought together Prof. Ingo Potrykus, from the Institute of Plant Sciences at the Swiss Federal Institute of Technology (ETH-Zurich), and Prof. Peter Beyer, from the University of Freiburg, who in an exemplary collaboration created "Golden Rice" to help mitigate the problem of vitamin A deficiency in the world.[442]

In fact, they succeeded in genetically enriching rice grains with ß-carotene, the actual precursor of vitamin A, giving them the characteristic yellow colour that indeed lead to the name "Golden Rice".[443] Carotenoids (including beta-carotene) are natural plant pigments and are widely found in coloured fruits, carrots, and green vegetables. Plants do not contain Vitamin A, but only its precursor, pro-vitamin A (beta-carotene). Animals, including man, synthesise Vitamin A from carotenoids ingested through their diet. Hence, animal meat products contain Vitamin A. People living on a poor diet are at risk of becoming vitamin A deficient, which can lead to life-threatening illnesses. Indeed, only some carotenoids have pro-vitamin A activity and beta-carotene is the most common and important among them. Rice is the most important staple food for hundreds of millions of people in developing countries. Hence, delivery of beta-carotene with the help of Golden Rice could contribute to the reduction of chronic health problems caused by vitamin A deficiency (VAD). VAD is widely recognized to cause blindness, but more importantly, VAD exacerbates infections, including HIV-AIDS, measles, and other childhood diseases. This leads to an increased mortality rate, especially among children. UNICEF has estimated that 124 million children in the world are deficient in vitamin A.[444]

al., "Towards an Intellectual Property Clearinghouse for Agricultural Biotechnology", Agricultural Biodiversity and Biotechnology in Economic Development", May 2006, vol. 27, p. 387 *et seq.*

441 The project at issue has been followed by a big publicity and Golden Rice's properties were highly praised by: Time Magazine, "This Rice Could Save a Million Kids a Year", July 2000, vol. 156, no. 5
The Rockefeller Foundation has been widely acknowledge for its efforts of promoting access to key patented technologies, *i.a.*, ultimately in a report for the ICTSD (The International Centre for Trade and Sustainable Development) by: Barton J., "New Trends in Technology Transfer: Implications for National and International Policy", ICTSD Program on IPRs and Sustainable Development, February 2007, Issue Paper no. 18, p. 15, also available at: http://www.iprsonline.org/resources/docs/Barton%20-%20New%20Trends%20Technology%20Transfer%200207.pdf

442 Beyer P. *et al.*, "Golden Rice: Introducing the Pro-vitamin A Biosynthesis Pathway into Rice Endosperm", Science, vol. 287, p. 303 *et seq.*

443 Beyer P., *et al.*, "Why is Golden Rice Golden (Yellow) Instead of Red?", Plant Physiology, 2005, vol. 138, p. 441 *et seq.*

444 UNICEF Statistics, "Vitamin A Deficiency", available at: http://childinfo.org/areas/vitamina; For more information about the issue, see: http://www.goldenrice.org/Content3-Why/why3_FAQ.html

The process applied in Golden Rice production has become technically possible since the 1980s, when the techniques required to introduce, by means of transformation, and express genes in plants were developed. Regeneration of monocots, i.e. the group of plants that includes cereals, grasses, lilies etc, was harder to obtain than that of their dicot counterparts and was achieved by the end of the decade. However most of the science required to engineer the carotenoid pathway in the rice grain was developed only later in the 1990s.[445] Finally in 1999 the project entered into the operative phase of product development and the procedure for regulatory approval, required for the release of genetically modified plants into the environment, was undertaken. At the time when the scientific details of the rice were first published in 2000,[446] Golden Rice was considered a real breakthrough in biotechnology, as the researchers had engineered an entire biosynthetic pathway.

The fundamental step the promoters of the "Golden Rice" project had in mind was to transfer the product obtained for the benefit of developing countries for further breeding,[447] so that the new trait could be eventually introduced into the local varieties consumed. However, a "freedom to operate" survey, appropriately undertaken in order to get hold of the "status quo" of the technology market concerned under an IP perspective, already initially unveiled as many as approximately seventy patents, belonging to thirty-two different companies and research institutions, which could be embedded in the Golden Rice's technique.[448] Indeed, the promoters of the project found themselves facing a typical "patent thicket" situation, where overlapping IP rights are a common ground and multiple technology owners need to be addressed to obtain licenses.

In this case, the six key-patent holders were eventually approached to enter into a "sui generis",[449] i.e. non profit, technology pooling agreement, involving the crea-

445 For the history of the Golden Rice project see: http://www.goldenrice.org/Content1-Who/who2_history.html

446 Ye *et al.*, "Engineering the Provitamin A (beta-carotene) Biosynthetic Pathway into (carotenoid-free) Rice Endosperm", Science, 2000, vol. 287, p. 303 *et seq.*

447 For a wider, comparative perspective on the problem of breeder's access to protected biomaterial, see i.a.: Straus J., "Access to Patented Plant Material for Plant Breeders - The Problem and the German Solution, Recent Development of the Academic Disputes on the Intellectual Property Laws and the Competition Law", In: Japan Institute of Invention and Innovation, (Eds.): Publication of Articles in Commemoration of the 70th Birthday of Professor Dr. Monya, 2006, p. 1310 *et seq.*; Straus J., "Measures Necessary for the Balanced Co-Existence of Patents and Plants Breeders' Rights - A Predominantly European View", In: WIPO, UPOV (Eds.): Compilation of the 2002&2003 Joint Symposia Documents of the World Intellectual Property Organization (WIPO) and the International Union for the Protection of New Varieties of Plants (UPOV), Gen. 2005, p. 77 *et seq.*

448 Stanley P. *et al.*, "Intellectual and Technical Property Components of Pro-Vitamin A Rice (Golden Ricee): a Preliminary Freedom to Operate Review", ISAAA Briefs No. 20, Ithaca, 2000, also available at: http://www.isaaa.org

449 See: Parish R. and Jargons R., "Using the industry model to create physical science patent pools among academic institutions", Journal of the Association of University Technology Managers, 2003, p. 65 *et seq.*

tion of a private-public partnership between the inventors and the company Syngenta Seeds AG,[450] thereby allowing the "Golden Rice" promoters to grant licenses, free of charge, to the benefit of the targeted developing countries, even including the right of sub-license for the latter, in order to promote economic growth in those regions.[451]

In other words, Syngenta Seeds AG was able to negotiate access to all involved essential technologies for humanitarian purposes, consequently providing the Golden Rice Humanitarian Board with the right to sub-license breeding institutions in developing countries free of charge.[452] While the key technology for Golden Rice production was donated by the inventors, Prof. Potrykus and Prof. Beyer, the package of ancillary technologies licensed from Syngenta and required to engineer the trait into rice came from humanitarian donations by companies such as Bayer AG, Monsanto Co, Orynova BV, and Zeneca Mogen BV.

A humanitarian board, composed of internationally recognised experts from reputed institutions,[453] was established in the form of a voluntary association. The Humanitarian Project was sponsored by HarvestPlus (which in turn was funded by the Bill & Melinda Gates Foundation and the World Bank), the Swiss Development and Collaboration Agency and the Syngenta Foundation, together with local research institutes and several non-governmental organizations (NGOs) including the Rockefeller Foundation and the International Rice Research Institute (IRRI). This consulting body took over the strategic guidance of the project, with the purpose of assisting in the associated governance and decision-making process, as well as of helping the Golden Rice association to fulfil its major aim, namely reaching small farmers in the targeted developing countries. So far, approximately twenty master licenses have been granted to institutions mainly in developing Asian countries.

In practice, breeding institutions in developing countries may obtain a licence from the Humanitarian Board (so called "Humanitarian Use Licenses"). The consortium, in fact, had to define a cut-off between what is to fall under "humanitarian" versus "commercial" use: this figure was set at $10.000. Therefore, royalties shall be paid only in so far as a farmer or subsequent user of Golden Rice genetics makes more than $10.000 per year. Conversely, there is no fee demanded for the humanita-

450 Graff G. *et al.*, "The Public–Private Structure of Intellectual Property Ownership in Agricultural Biotechnology", Nat. Biotechnol., 2003, vol. 21, p. 989 *et seq*.

451 The initial research of Potrykus and Beyer was financially supported by the Rockefeller Foundation, together with the EU, the Swiss Federal Office for Education and Science (1996-2000), and the Swiss Federal Institute of Technology. Syngenta (formerly Zeneca) scientists contributed to the EU carotenoid research programme of which Golden Rice had been a part since 1996. Syngenta itself has supported the project with research and facilities since 2000. More recently funds also have also come from USAID, the Syngenta Foundation, HarvestPlus, and the Bill & Melinda Gates Foundation.

452 Syngenta Media Release, "Syngenta to Donate Golden Rice to Humanitarian Board", Oct. 2004, available at: www.syngenta.com

453 For a short biography of the Humanitarian Board's members, see: http://www.goldenrice.org/Content1-Who/who1_humbo.html

rian use of Golden Rice, where farmers are permitted to keep and replant seed.[454] Applications should be based on a breeding program as part of which the Golden trait is to be crossed in with conventional breeding into local varieties. Should no bio-safety regulations be in place in the target country, consideration must be given to an implementation strategy of a regulatory framework that would allow release of Golden Rice varieties in due time. In such a situation, it may be observed that even in the face of human misery that could be alleviated with a transgenic plant,[455] developing countries are still struggling with a political situation, which makes access to the needed technology very burdensome.[456]

For actual reference, access to IP rights was achieved for Golden Rice in the year 2000 and involved approximately six months of negotiations.[457] Subsequently, the required material transfer agreements (MTAs) were signed in 2001. The first Golden Rice field trial in the world was harvested in September 2004 and was carried out in collaboration with Louisiana State University,[458] as the USA is one of the few countries where field trials with transgenic plants can in principle be carried out if complying with an acceptable, well-defined amount of regulatory requirements. Preliminary results from the field tests, allowing a more accurate measurement of the nutritional value, have shown that field grown Golden rice produces three to four times more beta-carotene than Golden rice grown under greenhouse conditions.[459] Nevertheless, since targeted developing countries did not have bio-safety regulations in place, many years went by before Golden Rice could be finally planted in a field plot. In fact, a necessary condition attached to the main agreement with Golden Rice[460] licensees was that no field releases should take place in the absence of such a regulatory framework, causing a substantial delay for developing countries in most of the cases.

454 Golden Rice Project's details are available at: http://www.goldenrice.org

455 For a broader, deeper discussion on the legal protection accorded to transgenic plants from a European perspective, see i.a.: Straus J., "The Scope of Protection Conferred By European Patents on Transgenic Plants and on Methods for Their Production", In: Bakardjieva-Engelbrekt, A. / P.J. Nordell (Eds.): Festskrift in Honour of Marianne Levin, Stockholm, 2007, p. 639 *et seq*.

456 For a discussion on the policy implications, see: Lubbock A.C., "Public goods and public policy for agricultural biotechnology", 7th ICABR International Conference, Ravalli (Italy), June 29 to July 3, 2003.

457 Press releases on 16 May 2000; 22 January 2001; and 14 October 2004; also available at: http://www.syngentia.com

458 LSU Agricultural Center Communications, "Golden Rice Could Help Reduce Malnutrition", October 2004, available at: http://www.lsuagcenter.com/news_archive/2004/October/Headline+News/Golden+Rice+Could+Help+Malnutrition.htm

459 Reference available at: http://www.goldenrice.org/Content2-How/how8_tests.html

460 For more information about licensing Golden Rice, see: http://www.goldenrice.org/Content1-Who/who4_IP.html

In fact, critics of genetically modified crops, such as Greenpeace,[461] as well as environmental and anti-globalization activists, raised various concerns, objecting both to the general suitability and effectiveness of Golden Rice.[462]

In particular, one of the critical points raised in connection with Golden Rice was its inherent deception: it was indeed argued that Golden Rice is a "Trojan horse"[463] that would eventually open the door to more widespread use of genetically modified organisms (GMOs),[464] by exploiting a public health issue, ultimately to gain wider acceptance for the latter. In this respect, it has been claimed that Golden Rice is merely a marketing event serving the needs of profit-driven biotechnology firms attempting to consolidate their hegemony in the food market, providing for a much needed public relations boost at a time when genetic engineering is apparently under siege in Europe, Japan, Brazil and various developing countries.[465]

Here we ought to distinguish primarily between two quite closely connected, but different issues: the first regards the ownership of new biotechnologies in the hands of dominant firms, which could eventually create dependencies on the part of farmers or small, medium sized companies cultivating their lands; the second, on the contrary, involves the science of genetic engineering itself. However, with the advancement of knowledge and the development of new applications comes the danger of exploitation, as history may remind us. Nevertheless, this persistent problem, which certainly needs serious consideration with view to a resolution, also beyond the case of biotechnology, has to remain separate from the underlying science, as the implementation of genetic engineering, in our instance, does not necessarily imply the emergence of market monopolies.[466]

Therefore, blind anti-science propaganda might eventually divert the focus from the truly important task of ensuring that the effective advantages of genetically modified crops in adverse agricultural areas are not diminished by a neo-colonial exploitation of those in most urgent need of the technology, which shall instead represent

461 For the official website, see: http://www.greenpeace.org/international

462 See for all: Greenpeace, "All that Glitters is not Gold: The False Hope of Golden Rice", May 2005, also available at: http://www.greenpeace.org/raw/content/international/press/reports/all-that-glitters-is-not-gold.pdf

463 Erosion, Technology and Concentration Group (ECT, formerly RAFI), "Golden Rice and Trojan Trade Reps: A Case Study in the Public Sector's Mismanagement of Intellectual Property", RAFI Communiqué, September/October 2000, no. 65.

464 Shiva V., "The Golden Rice Hoax - When Public Relations Replaces Science", Norfolk Genetic Information Network, October 2000, available at: http://ngin.tripod.com/11.htm

465 The environmental risks reportedly inherent to genetically modified organisms and applying to Golden Rice relate to out-crossing and are described in: Chen L. J., *et al.*, "Gene Flow from Cultivated Rice to its Weedy and Wild Relatives", Annals of Botany, 2004, vol. 93, p. 67 *et seq.*; Chen J., *et al.*, " Can Transgenic Rice Cause Ecological Risks through Transgene Escape?", Progress in Natural Science, 2003, vol. 13, p. 17 *et seq.*; Kleter G., *et al.*, "Assessment of the Food Safety Issues Related to Genetically Modified Foods", Plant Journal, 2001, vol. 27, p. 503 *et seq.*

466 Social Issues Research Centre (SIRC), "A Rice Dilemma", February 2001, available at: http://www.sirc.org/articles/rice_dilemma.shtml

the main issue of concern.[467] Consequently, the view is taken that the moral crusade against genetically modified organisms shall not override primary public policy considerations. Indeed, it is the Greenpeace international coordinator on genetic engineering himself, Mr. Benedikt Haerlin, to have pointed to a distinct change of direction by stating that: "Golden Rice is a moral challenge to our position. It is true there is a different moral context, whether you have an insecticidal or pesticide-resistant GM, or whether you have a GM product that serves a good purpose".[468] Although this may not reflect the views of some of the most persistent Greenpeace's activists,[469] it is significant to note that this was actually the first time that the organization has publicly recognized that GM crops can indeed also serve a constructive cause.

Finally, it is believed that the balance to be drawn is a positive one, as the Golden Rice project may ultimately be regarded as a quite promising example of how both private and public organizations, in a combined effort, may find a constructive way out of the "patent thicket", overcoming the legal and operative uncertainty of overlapping IP rights, in order to attain a scope that goes beyond the economically oriented interests of the participating companies,[470] thus making further steps in the direction of addressing compelling nutritional shortages in developing countries.

Although it is still too early to assess the practical benefits of Golden Rice - since, as has been recalled, through the delays of the proper nutritional testing, the crop is not yet available for human consumption - this case definitely represents an outstanding illustration of a how a non-profit, humanitarian, and therefore "atypical" patent pool, acting through a single licensing authority in the framework of a collaborative IP mechanism, is pursuing, as we have considered, the main objective of ensuring and promoting free technological access to a quite promising product ad-

467 For a thorough legal discussion on the broader issue of patent protection of biomaterial and its actual global impact, see i.a.: Straus J., "Patents on Biomaterial - A New Colonialism or a Means for Technology Transfer and Benefit-Sharing?", In: Thiele, F. and Ashcroft R. (Eds.): "Bioethics in a Small World", Heidelberg, Springer ed., 2005, p. 45 *et seq.*

468 Steve C., "Greenpeace Promises Not to Halt Trials of GM Vitamin Rice" - Letter to the Editor by Harlein B., The Independent, February 2001, p. 2 *et seq.*, also available at: http://environment.independent.co.uk/article252062.ece

469 Although Greenpeace has never been comfortable with the charge that its food campaigns, led primarily by relatively well-fed people in the West, represent an elitist disregard for genuine suffering and malnutrition in less fortunate parts of the world. It has tried to fend off such challenges by describing them as nothing more than cynical PR for the multinational biotech companies – those who stand to profit very substantially from widespread acceptance of the GM crops, which they have developed. But the Golden Rice issue has always been different, primarily because it has arisen out of research by a charitable foundation, which has placed the technology at issue to the free disposal of poorer farmers. For the reference, see: Social Issues Research Centre (SIRC), "A Rice Dilemma", February 2001, available at: http://www.sirc.org/articles/rice_dilemma.shtml

470 Reminding that Golden Rice can still be licensed for a consideration to firms and individuals making commercial use of it raising above the defined threshold of USD $10.000 turnover per year.

dressing the needs of those regions where the economical and social conditions are more critical. Certainly, the Golden Rice case has been surrounded by a significant, even though to some extent controversial, deep public interest, which, in any event, may ultimately raise just the much-needed publicity that such types of collaborative mechanisms deserve.

2. SNPs

The acronym SNPs stands for single nucleotide polymorphisms,[471] which are DNA sequence variations that occur when a single nucleotide in the genome is altered.[472] SNPs are evolutionarily stable, i.e. not changing much from generation to generation, making them easier to track in population studies.[473] In fact, it is interesting to note that any two unrelated persons are the same to about 99,9% of their DNA sequences, where accordingly only the remaining 0,1% is important because it contains the genetic variants, which may eventually influence how people differ in their risk of disease, as well as their response to drugs[474] or other therapies.[475] Indeed, SNPs do not cause disease, but they can help determine the "likelihood" that someone will develop a particular disease, without wanting to minimize the concurrent role eventually played by environmental factors.

This makes SNPs of great value for biomedical research and for developing pharmaceutical products or medical diagnostics, as scientists believe that tracking SNPs maps will help them identify the multiple genes associated with such complex diseases as cancer, diabetes and some forms of mental illness such as depression. For instance, it is considered that said variations in the human genome can help catalogue the unique sets of changes involved in different cancers, making SNPs valuable research tools for improving cancer diagnostic and treatment planning.[476]

For this reason, several groups worked on finding SNPs sequences and ultimately created various SNP maps of the human genome. Among these were the US Human Genome Project (HGP)[477] and a large group of pharmaceutical companies, which

471 For reference, see the "SNP Fact Sheet", available at: http://www.ornl.gov/sci/techresources/Human_Genome/faq/snps.shtml

472 For example a SNP might change the DNA sequence AAGGCTAA to ATGGCTAA.

473 However, for a variation to be considered SNP relevant, it shall occur in at least 1% of the population.

474 Bentley D. *et al.*, "The HapMap Project and its Application to Genetic Studies of Drug Response", Pharmacogenomics Journal, vol. 4 (2), p. 88 *et seq.*

475 Even if scientists believe that others could predispose people to diseases or influence their response to a drug, it is known that many SNPs have no effect on cell function.

476 For more related information, see: US National Institutes of Health - National Cancer Institute, "Understanding Cancer Series: Genetic Variation (SNPs)", available at: http://nci.nih.gov/cancertopics/understandingcancer/geneticvariation

477 The National Human Genome Research Institute (NHGRI) led the National Institutes of Health's (NIH's) contribution to the International Human Genome Project. The first phase of

eventually established the so-called SNP Consortium.[478] In fact, it is not surprising that companies invested concurrent efforts in the tracking of SNPs because, on the one hand, the potential payoff for further research was high, and, on the other hand, the actual likelihood of duplication among the groups was small because of the great estimated number of about 3 million SNPs.[479] Indeed, these endeavours often took place within a collaborative setting, given the frequent interaction and the overall common goals of the institutions and research centres involved.[480] Some key systematic steps towards the attainment of the defined SNPs mapping goals may be summarized as follows:

- The Human Genome Project:[481] in 1998, as part of their five-year political plan, the US Department of Energy (DOE)[482] and the National Institutes of Health (NIH)[483] Human Genome Program established the first major institutional setting to identify and map SNPs human sequences, fundamentally aiming at cataloguing common variants in the coding regions of the most identified genes in order to create public resources of DNA samples and cell lines.
- The SNP Consortium:[484] in April 1999, ten large pharmaceutical companies and the U.K. Welcome Trust philanthropy announced the establishment of a consortium,[485] headed by Arthur L. Holden, to find and map approximately 300.000 common SNPs. The goal was to generate an extensive, publicly available map using SNPs as markers evenly distributed throughout the human genome. Two years later, a total number of 1,4 million SNPs, much more than originally planned, were discovered and released in the public domain at the end of

this project, which had as its primary goal the sequencing of the three thousand million base pairs that make up human genome, was successfully completed in April 2003. For more information, refer to the NHGRI official website at: http://www.genome.gov

478 These efforts have ultimately converged into the so called International HapMap Project, whose official website is available at: http://www.hapmap.org

479 International HapMap Consortium, "A Haplotype Map of the Human Genome", Nature, 2005, vol. 27, p. 1299 *et seq.*

480 See, for instance: Human Genome Project (HGP), "SNP Consortium Collaborates with HGP, Publishes First Progress Reports", Human Genome News, November 2000, vol. 11, n. 1-2, also available at: http://www.ornl.gov/sci/techresources/Human_Genome/publicat/hgn/v11n1/10snp.shtml

481 International Human Genome Sequencing Consortium, "Initial Sequencing and Analysis of the Human Genome", Nature, 2001, vol. 409, p. 860 *et seq.*; For more information, "All About The Human Genome Project (HGP)" is available at: http://www.genome.gov/10001772

482 For the official Department of Energy (DOE) website, see: http://www.energy.gov

483 For the official National Institutes of Health (NIH) website, see: http://www.nih.gov

484 For the SNP Consortium official website, see: http://snp.cshl.org (which precisely corresponds to the HapMap Project's website, which eventually took over the latter's goals, available at: http://www.hapmap.org)

485 The international member companies, which together committed at least $30 million, are APBiotech, AstraZeneca Group PLC, Aventis, Bayer Group AG, Bristol-Myers Squibb Co., F. Hoffmann-La Roche, Glaxo Wellcome PLC, IBM, Motorola, Novartis AG, Pfizer Inc., Searle, and SmithKline Beecham PLC. The Welcome Trust contributed at least $14 million.

2001.[486] As the initial SNP discovery phase of the TSC project was completed, the emphasis shifted to studying SNPs in populations to determine shared variants. Ultimately, the SNP consortium views its map as a way to make available an essential research tool that will spark innovative work throughout the research and industrial communities by enhancing the understanding of disease processes, thus facilitating the development of more effective medications.

- The HapMap Project:[487] in October 2002 endeavours to carry on SNP mapping goals were revivified and resumed by the inception of the newly named HapMap Project. Thanks to support provided by public funding a hundred million dollars of public-private international research effort were also built up accumulated.[488] The new venture aimed at speeding up the discovery of genes related to common diseases, such as asthma, cancer or diabetes, by comparing genetic differences between individuals. In particular, consortium members intend to compare groups of people with the targeted disease to groups of people without that disease in order to identify chromosome regions where the two groups differ in their haplotypes[489] that might contain genes affecting the personal predisposition for a given disease, by eventually developing a "haplotype map" of the human genome[490] (from which the name "HapMap Project" actually derives) describing

486 The International SNP Map Working Group, "A Map of Human Genome Sequence Variation Containing 1,42 million Single Nucleotide Polymorphisms (SNP)", Nature, 2001, 409, p. 928 *et seq.*

487 International HapMap Consortium, "The International HapMap Project", Nature, 2003, vol. 18, p. 789 *et seq.*; For the official HapMap project website, see: http://www.hapmap.org

488 Public funding for the effort will be provided by the Japanese Ministry of Education, Culture, Sports, Science and Technology in Tokyo; Genome Canada in Ottawa and Genome Quebec in Montreal; the Chinese Academy of Sciences, the Chinese Ministry of Science and Technology, and the Natural Science Foundation of China, all in Beijing. For the reference, see: National Institutes of Health News Advisory, "International Consortium Launches Genetic Variation Mapping Project - HapMap Will Help Identify Genetic Contributions to Common Diseases", Washington, October 2002, available at: http://genome.gov/10005336

489 A haplotype is a series of consecutive alleles on a particular region of a chromosome. Haplotypes are broken down every generation by a mechanism called recombination. However, it was observed that haplotypes in a population are longer than expected because recombination occurs preferentially in specific regions, thus creating "recombination hotspots" and "recombination cold spots", better known as haplotype blocks. Because alleles are correlated with each other in a haplotype block, knowing these structures in a population would enable researchers to infer unknown alleles without genotyping all of the SNPs. On the point see: Farkas D., "DNA from A to Z", American Association for Clinical Chemistry (AACC) Press, 2004, p. 58.

490 To create the HapMap, DNA will be taken from blood samples collected by researchers by regions of different population, i.e. in Nigeria, Japan China and the United States. The samples will be processed and then stored at the Coriell Institute for Medical Research in Camden, N.J., a non-profit biomedical research center that specializes in storing living cells and making them available to scientists for further study. See on the point: Sio-Iong Ao, "Data Mining and Applications in Genomics", Springer ed., 2008, p. 43.

relevant DNA sequence variations.[491] All data and relevant scientific information generated by the project will be released in the public domain, soon after they have been produced, without IP restrictions,[492] so that any researcher can access and freely use them for their scientific endeavours.

On balance, on the one side, it has been objected that, in general, SNPs mapping projects may raise some ethical issues that shall not be undermined.[493] Although the collected samples include no personal identifiers and the privacy risks connected to individual donors are minimal,[494] the fact that each sample is labelled by population and characterized based on respective haplotype frequencies, in order to allow comparisons, could raise risks of group stigmatization and consequent discrimination, should a higher frequency of a disease-associated variant be found in a population over-generalized to all or most of its members.[495] However, it is argued that the same statement might in fact be invoked for all statistical studies and should be no reason for refraining from pursuing research efforts, but rather for inducing to better regulate their actual implementation.

On the other side, SNPs mapping projects and data collection provide the scientific community with an effective "shortcut" to a great wealth of information, representing their prompt availability a huge saving in the studies of complex diseases. Besides, the collaborative endeavours catalyzed by the undertaking have fostered an open exchange of valuable research tools among scientists and institutions, ultimately providing the foundations and institutional support on which further innovation is based.[496]

In fact, although biotechnology companies have the reputation of being quite fiercely competitive, SNP mapping efforts represent a praiseworthy example of the

491 For more details, see: Altshuler D., "The Structure of Haplotype Blocks in the Human Genome", Science. 2002, 296, p. 2225 *et seq*.

492 Except that users have to agree on their turn not to reduce others' access to the data and to eventually share it only with interested parties agreeing on the same term, to preserve the project data remain within the public domain. For the terms of the HapMap project, see: http://hapmap.org/abouthapmap.html

493 International HapMap Consortium, "Integrating Ethics and Science in the International HapMap Project", Nature Reviews Genetics, vol. 5 (6), p. 467 *et seq.*

494 OECD, "Creation and Governance of Human Genetic Research Databases", OECD - Organisation for Economic Co-operation and Development, 2006, p. 43.

495 For supporting, see i.a.: Donovan A. et al., "The Human Genome Project in College Curriculum: Ethical Issues and Practical Strategies", Science, 2008, p. 71 *et seq.*; Knoppers B., "Populations and Genetics: Legal and Socio-Ethical Perspectives", Medical Genetics, Martinus Nijhoff Publishers, 2003, p. 92 *et seq*.

496 In this regard, TSC chairman Arthur Holden has publicly stated that: "We are very positive about the chance to work collaboratively with the HapMap effort to support the informatics aspects of the program, as well as to ensure that the resulting HapMap will be useful in both disease and pharmaco-genomic research", In: Press Release, "International Consortium Launches Genetic Variation Mapping Project - HapMap Will Help Identify Genetic Contributions to Common Diseases", NIH News Advisory, October 2002, available at: http://www.genome.gov/10005336

existing cooperative spirit typically preceding the formation of a patent pool.[497] Indeed, all parties working with SNPs for research, diagnostic or therapeutic purposes understood that they would all need access to a considerable number of said DNA sequence variations, as they represent essential research tools for their scientific endeavours. Thus, in order to avoid licensing problems related to acquiring rights to thousands of SNPs, firms and institutions involved decided to work together to form a consortium, thereby foregoing exclusive rights on human SNPs and placing all of their data in a public database, eventually undercutting future patenting efforts.[498]

On these grounds, it has been objected that the established SNPs Consortium, as well as its succeeding International HapMap Project,[499] could not be properly defined as a patent pool, but might be better characterized as an "anti-patent pool".[500] Nevertheless, independently of legal systematizations, the very fact that the consortium exists and that it is well established certainly indicates that also private firms from the field of biotechnology can work together to overcome licensing problems, pointing to positive chances for a mutually beneficial collaboration, showing in the case at issue that substantial economic benefits can be reaped from a cooperative strategy.

Anyway, we shall admit that even if the SNP Consortium is an outstanding evidence of the benefits of cooperation in life sciences, it cannot be generalized as a typical appropriate model for biotechnology patent pools. In fact, SNP patents - unlike patents on genes that code for useful proteins or genes that can be used in diagnosis - have very little practical value on their own, since said DNA sequence variations derive most of their value and usefulness from their ability to serve as research tools. Indeed, scientists need to use a quite big number of SNPs to make meaningful comparisons between genomes, thus requiring access to hundreds or even thousands of them.[501] The companies that formed the SNP consortium realized that they would benefit very little from exclusive control over a few SNPs, while they might reap far greater advantages from having non-exclusive access to thousands of DNA sequences.[502] Thus, the SNP consortium shows how self-interest and cooperation may

497 For supporting the point, see: Resnik D., "A Biotechnology Patent Pool: An Idea Whose Time Has Come?", Journal of Philosophy, Science and Law, January 2003, vol 3, p. 12-13.

498 Marshall E., "Drug Firms to Create Database of Genetic Mutations", Science, 1999, 284, p. 406 *et seq.*

499 For the official website, see: http://www.hapmap.org (previously: http://snp.cshl.org).

500 The assertion comes from: Resnik D., "A Biotechnology Patent Pool: An Idea Whose Time Has Come?", Journal of Philosophy, Science and Law, January 2003, vol 3, p. 12.

501 For an overview, see: Straus J., "Intellectual Property Rights in Human Genome Research Results - The US and European Approach - Common Problems, Different Solutions?", German-American Academic Council Foundation (GAAC) (Ed.), GAAC 4th Public Symposium "The Changing Character, Use and Protection of Intellectual Property", Washington, DC, December 3-4, 1998, Washington, D.C. 1999, pp. 85 *et seq.*

502 International HapMap Consortium, "A Haplotype Map of the Human Genome", Nature, 2005, vol. 27, p. 1299 *et seq.*; Venter J.C. *et al.*, "The Sequence of the Human Genome", Science, 2001, vol. 291, p. 1304 *et seq.*

well coexist under mutually advantageous terms, also within the traditionally highly competitive biotechnology sector.

Indeed, analysing the collective efforts developed around SNPs from a strategic perspective, it may be observed that the choice of joining a biotechnology patent pool might be compared to a business decision made in the context of a cooperative game:[503] right holders would enter into a consortium, if they think that the benefits of belonging to the pool will outweigh the risks in the long run. Still, some objective considerations may keep the candidate parties from taking that step: for instance, a company with patents related to a valuable protein is not likely to place it into the pool, because it would find it more economically convenient to exert its exclusive rights to gain more edge on the marketplace and, eventually, to cut out competitors, than to license it together with other patent holders retaining rights on complementary technologies. Therefore, it may be predictable that companies and universities might place some of their less worthy patents into the pool, while maintaining control over their more valuable IP assets.

Nonetheless, these factors are not automatically going to make the pool idea obsolete, because even under the given circumstances, the consortium could still play a beneficial role as long as the participating parties still contribute enough patents to serve a well-defined, comprehensive scope - possibly aiming at a particular niche of the market at issue or, more in general, like in the given case, enabling "freedom to operate", thus clearing the way to further innovations in a certain scientific field - while providing enough cooperative advantages, so as to maximize technology access and minimize transaction costs, as a means of self-sustainment or, eventually, for attracting prospective licensees.[504] In practice, if there are many patent holders that do not find it convenient to join together, the pool cannot represent a one-stop shopping entity with the related savings; therefore it may not constitute a particularly efficient licensing solution, because third parties may still need to negotiate with individual patent holders outside of the pool. For the considerations exposed, we may argue that the biggest challenge to forming and keeping a biotechnology patent pool going is in the first place economic, rather than legal, as the parties, when confronted with the choice of whether joining into a consortium, should be able to ascertain and foresee their long-term financial interests.

503 Harsanyi J., "Rational Behaviour and Bargaining Equilibrium in Games and Social Situations", Cambridge University Press, 1977.

504 Resnik D., *supra*, fn. 497, p. 13.

3. SARS

Another area in which the emergence of a "patent thicket" has been recently observed,[505] causing a certain level of alert, and in which the a patent pool solution has been advanced, relates to the biomedical field and, more specifically, to the severe acute respiratory syndrome (SARS) corona virus, where overlapping IP rights may dangerously lead to a "dead-end" situation.[506]

In the late months of 2002 an outbreak of severe atypical pneumonia was reported in patients from China's Guangdong province. Soon after that the disease, later known as the severe acute respiratory syndrome (SARS), spread to other Asian countries, Europe and North America, having a notoriously dramatic impact on people and economies worldwide.[507]

In March 2003, in response to the threatening outbreak of SARS, the World Health Organization (WHO)[508] invested its resources in setting up a network of laboratories and research institutions in order to contain the worldwide spreading of the feared disease by identifying its etiological agent. The undertaken efforts finally led to the isolation of the causative virus,[509] as well as the sequencing of its genome.[510]

The containment of SARS is a good example of the effectiveness of active scientific collaboration in isolating and containing such a disease outbreak. The WHO deserves much credit for achieving this, as it played a fundamental role in organizing the SARS network, as well as in disseminating clinical samples and ultimately defeating the outbreak.[511] As a result of these combined efforts, in July 2003 they announced that SARS had been finally dominated; in the following just a few isolated cases occurred, which in fact could be traced back to the exposure of laboratory personnel to the virus.

However, the potential grounds for a conflict arose following the contextual accreditation to two different research groups for respectively discovering the SARS genome independently from each other.[512] Besides, raising the likelihood of disputes about the respective IP legal boundaries even more, several of the contributing la-

505 Simon J. *et al.*, "Managing Severe Acute Respiratory Syndrome (SARS) Intellectual Property Rights: The Possible Role of Patent Pooling", Bulletin of the World Health Oranization, 2005, vol. 83, p. 707 *et seq.*

506 Gold R., "SARS Genome Patent: Sympton or Disease", The Lancet, 2003, vol. 361.

507 World Health Organization, "Severe acute respiratory syndrome (SARS)", Weekly Epidemiological record, 78, 2003, p. 81 *et seq.*

508 For the official website, see: http://www.who.int/en

509 Peiris J., *et al.*, "Coronavirus as a Possible Cause of Severe Acute Respiratory Syndrome", Lancet, 361, 2003, p. 1319 *et seq.*

510 Marra M., *et al.*, "The Genome Sequence of the SARS-Associated Coronavirus", Science, 300, 2003, p. 1399 *et seq.*

511 Simon J., *et al.*, *supra*, fn. 505, p. 707.

512 Rota P.A., *et al.*, "Characterization of a Novel Corona Virus Associated with Severe Acute Respiratory Syndrome", Science, 300, 2003, p. 1394 *et seq.*

boratories also filed patent applications embedding SARS genomic sequence data. Ultimately, further research led to the consequent filing of additional patent applications by a multitude of private and public sector entities operating in that biomedical field.

In particular, among the institutions, which were simultaneously involved in the research, we find the Bernhardt-Nocht institute (BNI), the British Columbia Cancer Agency (BCCA), the Centers for Disease Control and Prevention (CDC), the Erasmus Medical Centre (EMC) and the Hong Kong University (HKU). The involvement of multiple parties resulted in a fragmentation of patent rights incorporating the SARS genomic sequence across the different groups, creating a complex situation when it comes to sorting out the confines of the different contributions, which may eventually require the costly and time consuming intervention of the law courts. Just to give an idea of the dimension of the phenomenon, more than 160 hits have been displayed in a recent research database after feeding it with a request for SARS patent applications.[513]

To make the point: here numerous patent applications incorporating the genomic sequence of the severe acute respiratory syndrome, resulting in a fragmentation of IP rights, are in turn likely to adversely affect the development of products, in primis vaccines, to combat the disease.[514] Placing these patent rights in a pool to be licensed on a non-exclusive basis may be the way to overcome this impasse and set a good precedent for employing this type of collaborative IP mechanisms in other areas of health care, which is likely to lead to consistent benefits for the public health.

The economic conclusions that may be drawn from the legal uncertainty that results from the interface of overlapping IP rights do not leave much space for optimism: potential licensees of the SARS patents, who may wish to develop vaccines to protect the population against the disease, are likely to be discouraged from investing resources in that field. In fact, blurry legal boundaries concerning patent rights make investments risky, because in such a situation it is neither possible to predetermine the future cost of licensing the patent rights nor to make out whether there is going to be the effective possibility of licensing, as all necessary patents may not be available, if a subsequently identified right holder refuses to collaborate or grant a licence at a reasonable royalty rate.

In the case at issue, should for instance a single essential patent for vaccines against SARS be licensed only on an exclusive basis, the licensee with the right of exclusivity would be able to exclude other parties from selling their SARS vaccines, thus not only hampering competition, but also putting public health at risk. There-

513 Simon J., *et al.*, "Managing Severe Acute Respiratory Syndrome (SARS) Intellectual Property Rights: the Possible Role of Patent Pooling"- "Impact of Patent Applications on Stakeholders", Bulletin of the World Health Organization 83, 2005, p. 708 *et seq.*, also available at: http://www.who.int/bulletin/volumes/83/9/707.pdf

514 Fedson D., "Preparing for Pandemic Vaccination: An International Policy Agenda for Vaccine Development", Journal of Public Health Policy, 2005, vol. 26, p. 4 *et seq.*

fore, the counter-incentive for SARS vaccines producers is to postpone the decision on whether to invest in that domain, at least until the nebulous legal situation surrounding the patent rights concerned is cleared.[515]

Facing the problem, the World Health Organization set up a SARS consultation group in charge of identifying all relevant parties to be targeted, mostly institutions and research entities owning the essential patents, and of developing a strategy, in close collaboration with stakeholders, to address potential SARS related IP issues.[516]

Currently, the relevant parties to be involved in the IP collaborative scheme have been all identified and a gross agreement on the main issues at stake has been reached. At present, signing "letters of intent" has finally formalized the ongoing cooperation with highly qualified technical and legal experts assisting the parties during the chain of negotiations. Recalling the above-mentioned steps in the formation of a patent pool, at this point we may go back to the time immediately preceding the more thorough evaluation of patents - when the pre-set portions of royalties to be re-distributed within the pool are determined - on which the consensus of all parties has to be met, leading to the signing of the final patent pool consortium agreement. If the parties finally conclude a full agreement,[517] the resulting pool will be set up in the USA, possibly followed by attempts to also set up similar consortia elsewhere.

A pool comprising patents incorporating the genomic sequence of SARS, licensed out on a non-exclusive basis, would enable wide access to the development of vaccines and safeguard public health from possible future outbreaks of the disease. In fact, ensuring broad access under a given technology is one of the characterizing traits of a patent pool,[518] distinguishing it from bilateral negotiations, which are traditionally more limited in scope.

Indeed, the health care sector is not the only one facing fragmentation of IP rights, and lessons may certainly be learned from observing how other industries have solved similar problems, as positive experiences may be transposed into the field of biotechnology. In fact, patent pools have been dealing with such fragmentations, i.e. "patent thickets", for the past century and a half, offering a more flexible and voluntary mechanism, based on collaboration, as opposed to compulsory licensing, or similar "public use" provisions, ensuring access through government intervention. Practical examples of this latter are not unknown in the domain of life sciences: in October 2001 the US government publicly considered use of its powers

515 Gold R., "SARS genome patent: symptom or disease?", Lancet, 2003, p. 423 *et seq.*

516 Friedman Y., "Best Practices in Biotechnology Business Development", Logos Press, 2008, p. 134-135.

517 Takenaka T., "Patent Law: A Handbook of Contemporary Research Patent Law: A Handbook of Contemporary Research" -"Preemptive Pools" Edward Elgar Publishing, 2008, p. 715-716.

518 Clark J. *et al.*, "Patent Pools: A Solution to the Problem of Access in Biotechnology Patents?", White Paper commissioned by Q. Todd Dickinson, the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, December 2000, also available at: http://www.uspto.gov/web/offices/pac/dapp/opla/patent- pool.pdf

in the wake of the anthrax attacks. In the end drastic solutions could be avoided, as an agreement with Bayer for the use of its antibiotic Cipro was reached through co-operative negotiations.[519]

In the case at issue, the formation of a patent pool - as the next step in the cooperation reached through the signing of letters of intent - would send a powerful signal to potential licensees, i.e. vaccines manufacturers, that patent owners intend to make their IP rights available at reasonable, standard rates, reducing IP risks and in turn encouraging earlier investments in the patented technology in the field of product development.

The "net effect" generated by such a patent pool would be of great value for public health, not only for the diffusion of vaccines against SARS, but also for setting an influential precedent that may encourage the formation of analogous collaborative IP models in other big areas of life sciences which face similar issues of public concerns, such as avian influenza, malaria or tuberculosis, thus leading to increased dissemination of key technologies to combat these diseases.

In fact, the SARS case is an ideal one to set a precedent, also because of its relative simplicity. In particular, the characteristic traits of such cooperation may be currently highlighted as follows: [520]

- The technologies involved are at a similar, early stage of realization, i.e. patent applications, so that the prospective formation of a pool would not be complicated by old issued IP rights that are already entangled in parallel third-party agreements.
- Among the current patent applications, only a few are known to incorporate essential technologies for the purpose of the pool, thus leading to a relatively limited, contained and easily identifiable number of parties to be eventually involved in the cooperative scheme. The major parties to be addressed would in fact be four: the Centers for Disease Control and Prevention (CDC); Health Canada - holding the British Columbia Cancer Agency (BCCA)'s application; Versitech Ltd. - the technology transfer office of the Hong Kong University (HKU); CoroNovative BV - a spun out company of Erasmus Medical Centre (EMC).
- The identified parties are either public organizations or institutions with strong public vocations, i.e. pursuing general collective interests, therefore public health implications of SARS certainly give them a strong incentive to move forward.

It is noteworthy that collaborative steps actually undertaken in the SARS case have gained considerable public support. In particular, both the World Health Or-

519 Resnik D., "Bioterrorism and patent rights: compulsory licensure and the case of Cipro", The American Journal of Bioethics, 2002, p. 2 *et seq.*

520 Simon J., *et al.*, "Managing severe acute respiratory syndrome (SARS) intellectual property rights: the possible role of patent pooling"- "The case for using acute respiratory syndrome as a key precedent in health care", Bulletin of the World Health Organization 83, 2005, p. 709 *et seq.*, also available at: http://www.who.int/bulletin/volumes/83/9/707.pdf

ganization and the National Institutes of Health Office of Technology Transfer in the U.S[521] have positively assisted such cooperation: the former has issued a formal recommendation[522] for developing the SARS collaborative model further, the latter is backing the formation of such consortium and helping to develop an operative platform for the establishment of a pool.

Furthermore, two major law firms[523] expressed their support for the creation of such patent pool and, most importantly, are providing a pro bono service to evaluate the suitability of each patent application for incorporation into the consortium, as well as engaging into discussions with antitrust authorities and regulatory agencies to test the viability of such pooling agreement from a legal perspective.

4. HNPCC

Another peculiar case, which has raised great interest as to the possibility of adopting a collaborative IP scheme and in which the establishment of a patent pool is deemed to introduce considerable benefits for life sciences, is the one of the genetic disease known as hereditary non-polyposis colorectal cancer (HNPCC).[524] For this reason - although concrete steps for entering into an operative phases have not yet been undertaken - we will now turn our attention to this specific genetic disease and to the characteristics that make it particularly eligible for patent pool considerations, as they may be well applied by analogy when confronting similar diseases.

As we have already considered for the SNP[525] case in a more general way, genetic diseases are due to mutations in genes: in particular, such diseases can be either caused by a variety of mutations in one single gene, which is actually the case with

521 For the National Institutes of Health Office of Technology Transfer, see: http://ott.od.nih.gov/

522 For the whole text of the WHO SARS Consultation Group's Recommendation, see: http://www.who.int/vaccine_research/diseases/sars/events/2003/11/recommendations/en/

Note in particular under Point 6, Intellectual Property (IP) Considerations:

"Given the successful worldwide collaboration initiated by the WHO on the identification and control of the SARS CoV, the SARS consultation group has addressed the possible impact of SARS CoV-related IP issues on the further progress of this process. The SARS consultation group proposed that a strategy be developed, in consultation with stakeholders, to address potential SARS CoV-related IP issues and thus enhance development of intervention approaches. This strategy should aim to achieve consensus on SARS CoV IP issues for the benefit of public health".

523 The law firms involved are: Drinker Biddle & Reath LLP and Morgan Lewis & Bockius LLP. See: Simon J., *et al.*, *supra*, fn. 520, p. 710, also available at: http://www.who.int/bulletin/volumes/83/9/707.pdf

524 Van Overwalle G., *et al.*, "Patent Pools and Diagnostic Testing", "HNPCC Patent Pool: A Test for Diagnostic Testing?", TRENDS in Biotechnology, vol. 24, no. 3, 2006, p. 118 *et seq.*

525 Acronym for Single Nucleotide Polymorphisms (SNP). See the official website at: http://www.hapmap.org. The case, which presents significant similarities with the one now at issue, is dealt in greater depth is previous n. (2) of the hereby-reported pilot experiences for biotechnology patent pool.

HNPCC, or by one or more mutations in several genes. As far as HNPCC is concerned, its diagnosis in a particular family is partly based on molecular genetic testing for germline mutations in one of the mismatch-repair (MMR) genes; typically, patients are being tested for mutations in two or more out of some candidate genes. Nevertheless, other genes involved in the MMR pathway have been reported to be associated with HNPCC, and, most importantly, the number of genes identified as being involved in familiar colorectal cancer is expected to grow.[526]

The point here is that some of these newly identified genes might soon be included on the shortlist for routine testing;[527] consequently, as various patents have been filed, it is likely that genetic data necessary for testing HNPCC will be hindered by the presence of overlapping IP rights,[528] where legal boundaries are increasingly difficult to ascertain. As a patent thicket is manifestly arising, an HNPCC patent pool encompassing essential genomic patents may certainly help to overcome this impasse, thus making proprietary genomic data more accessible for clinical use.

The considerations introduced hereby, strongly advocating the creation of an HNPCC patent pool, may suggest that such a cooperation takes the form of a "dynamic model", with regard to both size and operating purpose, i.e. content of the pool, differing and remaining flexible over time: to be more specific, additional essential patents - e.g. relating to other genes with a role in the same pathology and on particular mutations of those genes - are to be included in the pool as they are granted; on the contrary, other expired or no longer essential patent rights shall not be maintained within the consortium.

Furthermore, the granting of licenses to a subset of patents is also recommendable: while some genetic laboratories offering testing for the clinical condition as a whole may be interested in the entire set of technologies offered by the pool, other more specialized research units may only desire to acquire a license to a subset of patents in the pool, typically corresponding to a specific subset of disease genes or mutations, which may be of particular interest in view of the geographical heterogeneity related to the distribution of different mutations. Besides, some smaller laboratories may want specifically to license only a particular gene or even a particular mutation for the purpose of the development of an antibody or another therapeutic or research tool, thus further restricting the field of operative interest to those delimited patent applications.[529]

526 For more details on the HNPCC disease, see:
http://www.genetests.org/servlet/access?db=geneclinics&site=gt&id=8888891&key=Q4npyENdaTo2B&gry=&fcn=y&fw=S9X0&filename=/profiles/hnpcc/index.html
527 Knoppers B. et al., "Human DNA: Law and Policy : International and Comparative Perspectives"- "Predictive Genetic Testing in HNPCC", Martinus Nijhoff Publishers, 1997, p. 183 *et seq.*

528 Van Overwalle G., *et al.*, "Patent Pools and Diagnostic Testing", "HNPCC Patent Pool: A Test for Diagnostic Testing?", TRENDS in Biotechnology, vol. 24, no. 3, 2006, p. 118-119.

529 For an overview or the clinical laboratories involved in HNPCC testing and their different roles, see:

In fact, the ability of patent pooling agreements to adapt themselves to different circumstances on a case-by-case basis may prove extremely valuable. Actually, as patent pools are characterized as voluntary IP mechanisms based on ongoing collaboration both among their members and with third licensees, they are typically amenable to any kind of arrangement, following the convenience and the peculiarity of the targeted market for the contracted product. Thus here, too, a patent pool solution is likely to prove very resourceful, if the business operators concerned seize the high potential benefits of such a collaborative approach.

II. Some Common Remarks

1. General Considerations

To draw some conclusions in the light of the "pilot experiences" that have been presented here, some fundamental issues have to be attentively addressed when further exploring whether the patent pool model, as we know it, may be amenable within the sphere of life sciences. In fact, a realistic implementation of such paradigm in life sciences should take into account the distinguishing features of the new economic environment in which a prospective consortium is to be shaped.

In this respect, the most noticeable traits characterizing the establishment of a biotechnology patent pool may be briefly outlined as follows:

- First of all, the life sciences industry is not as strongly conformed to technical standards,[530] as those, most notably, defining the electronic and communication sectors. For some authors this point represents an obstacle to the inception of a patent pool in the first place,[531] although it has also been compellingly argued that "standards" might just need to be re-defined bearing in mind the scopes of the industry at issue, for example as a pre-determined set of genetic mutations recognized by the international community.
- Secondly, universities and public institutions, rather than for-profit firms, may well represent the typical licensors, often holding key biotechnology patents, given their major, active role as researchers and innovators in the field.[532] There-

http://www.genetests.org/servlet/access?prg=j&db=genetests&site=gt&id=8888891&fcn=c&qry=2622&res=nous&res=nointl&key=Q4npyENdaTo2B&show_flag=c

530 For a critical discussion on the interface between patent pools and standards in biotechnology, see: Eversible T., "Patent Pools and Standard Setting in Diagnostic Genetics", National Biotechnology, 2005, 23, p. 937 *et seq*.

531 Aoki R. *et al.*, "The Consortium Standard and Patent Pools", The Economic Review, 2004, vol. 55, p. 346 *et seq*.

532 This phenomenon is particularly visible in the American system, where the commercialization of knowledge is frequently nurtured by the input of universities and research institutions, where the start-up process takes place before finding its way in the business. In this sense and more specifically on the emergence of the so-called "triple helix" model, linking universities, industries and governments for the purpose of fostering innovation, see: Etzkowitz H.,

fore, a biotechnology patent pool should promote public-private collaboration and eventually also encourage said institutions to participate in the consortium.[533] In this context, although more influential companies and government agencies may play a key role in launching and, possibly, partly financing the setting up of the initiative, it is important that the patent pool maintains its own character and independence, in terms of trustees and management. For this reason, it is fundamental that the consortium, once operating, may in the medium-long run rely on its own sources of auto-sustainment: concretely, the pool could be supported by contributions of its members, as consideration for the services provided, including an annual fee or, eventually, even a percentage of royalties received from the undertaken licensing activities - conceivably with an advantaged, discounted rate in order to facilitate the involvement of universities and public institutions that will likely play a minor role in the marketing and commercialization of the invention at issue.

- Finally, the end product incorporating the technologies contributed to the pool, characterized by a longer maturation cycle, may often not yet exist at the time of the consortium's creation, and rather be developed by the participating parties as a result of collaborative research and development's efforts.[534]

This last point is likely to make pool members more susceptible to the fear of a prospective antitrust scrutiny, because said longer product development phase, which is typically not yet initiated at the time of the pool establishment, renders the pre-assessment of the highly recommended "complementary" nature of the still to be patented technologies, which are to be eventually assembled, even more uncertain.[535]

As far as the premises for the establishment of a biotechnology pool are concerned, the necessary points to be checked may be summarized as follows:

- Multiple patent holders: pooling agreements are typically concluded to remove the "stacking" problem caused by a multitude of patents being owned by a variety of holders. Intuitively, the model therefore seems inappropriate when a

"The Triple Helix: University-Industry-Government - Innovation in Action", Business & Economics, 2008. For a wide assessment of public-private partnerships in a broad range of policy areas, see: Vaillancourt Rosenau P., "Public-Private Policy Partnerships", MIT Press, 2000.

533 For a legal and economic analysis of IP collaborative models in the context of life sciences, see i.a.: Schimmelpfennig D. et al., "Public-Private Collaboration in Agricultural Research: New Institutional Arrangements and Economic Implications", Wiley-Blackwell, 2000; Zilberman D. et al., "The Public-Private Structure of Intellectual Property Ownership in Agricultural Biotechnology", Nature Biotechnology, 2003, vol. 21, p. 989 *et seq*.

534 Gaulé P., "Towards Patent Pools in Biotechnology?", Innovation Strategy Today, April 2006, vol. 2, p. 123 *et seq*.

535 The need to avoid to pool "substitute" – as opposed to "complementary" – technologies is thoroughly analyzed when outlining the fundamental requirements prescribed by the patent pools guidelines in the different jurisdictions (i.e. EU, US and Japan) dealt with within the scope of this contribution.

single person or entity owns all the rights under a given technology, as for instance when one holder controls all patents relevant for the genetic testing for a particular disease.[536] Coherently, the biotech cases discussed here all involve multiple patents in the hands of a plurality of owners.

In this perspective, given their high potential for solving stacking licenses, patent pools may prove particularly helpful in those areas of genetic testing characterized by diseases caused either by multiple defects in a single gene or by one or more defects in a multitude of genes, for which complex genetic associations have been discovered, thus a larger thicket is likely to take shape.

- Collaborative attitude: patent pools strongly rely on the voluntary commitment of all patent owners; therefore they cannot offer a viable solution in all those cases where the technology holders are not open to grant licenses on RAND terms or, even, they do not wish to grant any license at all in virtue of their statutory exclusive rights.[537] Illustratively, in both the Golden Rice and the SARS instances, voluntary negotiations have been effectively undertaken and proven successful. Conversely, a "compulsory patent pool" - in which an administering body would seek a compulsory license for the essential technologies from all patent holders that do not voluntary engage in the pool - is in contradictions with the collaborative mechanisms that have emerged in the practice of those consortia.

In order to foster collaboration among different patent holders, a valuable incentive could be effectively provided by the emergence of standards for good practices in medical and laboratory genetics, which should be strongly encouraged. These standards are not the same as those conventionally defined within the electronic or the telecommunication sectors, but have instead to be understood, for instance when applied within the scope of genetic testing, either as a "set of mutations publicly recognized by the international scientific community" or "reflecting national and international best practice guidelines for genetic testing for a particular disease".[538]

- Financial coverage: finally the ultimate incentive for attracting all parties into a patent pool is the likelihood of making profit; in fact, in order for a consortium to prove effective, the right balance has to be achieved between the costs for financing the establishment of the pool - which may be very high, especially in the initial phases -on the one hand and, on the other hand, the prospects of generating an overall adequate revenue by collecting royalties on the contracted

536 Mars J., *et al.*, "Diagnostic testing fails the test", Nature, 2002, vol. 415, p. 577 *et seq.*

537 On the problem of deficient participation in patent pools, where it has been empirically demonstrated that between half and two-thirds of the eligible firms decide not to join the consortium, as conclusive founding, see more generally: Lerner J. *et al.*, "To Join or Not to Join: Examining Patent Pool Participation and Rent Sharing Rules", January 2008, available through the Social Science Research Network at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=945189

538 Ebersole J., *et al.*, "Patent Pools and Standard Setting in Diagnostic Genetics", National Biotechnology, 2005, 23, p. 937 *et seq.*

product. Under this aspect, it remains to be seen whether, for instance, diagnostic-gene consortia covering only one particular disease syndrome will reach such a balance. Ultimately, while, on the one hand, patent pools might constitute the ideal means for raising the visibility and accessibility of smaller genetic laboratories, thus increasing the amount of collected license fees and consequently bridging the gap between potential and actual revenue, on the other hand, it remains to be seen up to which extent small size patent pools will prove viable in the first place.

2. The Issue of Funding

This last point deserves particular consideration, as the perspective of gaining an economic and competitive edge is finally the drive for setting the whole pooling mechanism in going.[539] However, while commercial solvency is at a time a prerequisite and, for good times, also an incentive for a patent pool to stay viable, this is not the only and primary goal pursued by such collaborative entities.

Indeed, good tailored patent pools in the biotechnology field could well serve societal public health purposes, as well. This is well illustrated by the Golden Rice case, where the end product, duly enriched with ß-carotene, was transferred to developing countries at no cost in order to obviate nutritional deficiencies in those regions. That agreement was a superlative example of how private and public organizations dealt in a combined effort with the relevant patents by creating a non-profit humanitarian patent pool under a single licensing authority.[540] The possible public goal beyond the creation of a consortium is, in fact, the reason why, besides the patent holders typically involved as shareholders and financiers of the pool, various governmental and non-governmental institutions - such as the already frequently mentioned WHO,[541] the OECD[542] or the HUGO,[543] as well as professional entities, such as both the European and the American Society for Human Genetics[544] - might eventually act to promote, by means of substantial support, the effective establishment of patent pools in the life sciences domain. In this respect, the need for public subsidies for comprehensive biotechnology projects, serving also the cause of de-

539 For a discussion on the issue, see: Krattinger A., "Financing the Bioindustry and Facilitating Technology Transfer", IP Strategy Today, 2004, vol. 8, p. 1 *et seq*.

540 On the topic, see: Graff G., *et al.*, "The Public-Private Structure of Intellectual Property Ownership in Agricultural Biotechnology", National Biotechnology, 2003, 21, p. 989 *et seq*.; and Parish R., "Using the Industry Model to Create Physical Science Patent Pools among Academic Institutions", Journal of the Association of University Technology Managers, 2003, 15, p. 65 *et seq*.

541 The World Health Organization: http://www.who.int/en/

542 The Organization for Economic Co-operation and Development: http://www.oecd.org

543 The Human Genome Organization: http://www.hugo-international.org

544 See respectively: http://www.eshg.org and http://www.ashg.org/genetics/ashg/ashgmenu.htm

veloping nations, was ultimately advocated in a report for the ICTSD[545] on intellectual property and sustainable development issued in February 2007.[546]

From a practical angle, in order to fulfil the named public goals and to prevent the establishment of patent pools to become prohibitively expensive - especially for smaller and highly specialized entities and mainly as a result of the costly expertise required for the setting-up process - an appeal may be addressed to such public-profile and professional institutions to aid the creation of "key-patent pools", encompassing essential innovations for a given biotechnological domain, to overcome patent access barriers which may impair "vital" innovation. In fact, funding from such organization, while typically remaining within the scopes of their institutional goals, would reward IP collaborative efforts and at the same time provide a substantial platform for the establishment of such practices, thus supporting and effectively encouraging collaboration in this delicate scientific field at the crossroad between life and technology.

Indeed, already in the context of the above-mentioned STS Forum,[547] attention has been drawn on the fact that the benefits of science and technology are not reaching a major part of people in the world, where barriers to seizing the opportunities for using innovative solutions to solve global problems need to be removed. As it has been properly highlighted, because today problems are becoming increasingly complex against the backdrop of globalisation and international competition, they are beyond the control of any single country or of the scientific community alone, since for many issues an actual solution can only be found through changes in the social systems and mutual cooperation. Within this composite setting, the view is taken that funding by socially committed institutions, such as governmental agencies or non-profit foundations, may well represent an important catalyser for collaborative IP approaches, backing the establishment of said consortia particularly in those technological domains where public concerns priorities may become an issue.

In fact, whereas research and development itself is already a traditional area for investments, patent pooling mechanisms involved in the realization of innovative solutions still do not receive the same kind of consideration. Nevertheless, science, as a branch of knowledge, is inherently linked to its practical implementation in the marketplace, thus, in order to remove barriers to technology access, investments should also cover collaborative frameworks established to foster dialogue and exchange between firms and research institutions concurrently involved in specific technological endeavours.

545 The International Centre for Trade and Sustainable Development: http://www.ictsd.org

546 Barton J., "New Trends in Technology Transfer: Implications for National and International Policy", ICTSD Program on IPRs and Sustainable Development, February 2007, Issue Paper no. 18, p. 16, also available at: http://www.iprsonline.org/resources/docs/Barton%20-%20New%20Trends%20Technology%20Transfer%200207.pdf

547 Science and Technology in Society Forum, "Lights and Shadows - Fundamental Concepts", available at: http://www.stsforum.org/fp.htm

This is a less explored area for funding that, all the same, seems to present a great potential not only to encourage a more constructive cooperative spirit among patent holders, but also to promote the dissemination of scientific applications to ultimately benefit the public at large, through centrally managed collaborative IP mechanisms providing for standardized, fair and non-discriminatory conditions of access to the pooled technologies. Seemingly in accordance with these views, the STS Forum has expressed the need for "major investment in infrastructure",[548] as a concrete, institutional premise for effective, international cooperation. Therefore, investments for the progress of sciences should extend to embrace the operative, managerial framework, as constituted by the establishment of consortia, needed to optimise and spread technological achievements, eventually making innovative solutions not only possible, but also widely accessible.

From a wider perspective, the concrete prospects of implementing collaborative IP mechanisms have eventually brought into the limelight the potential for new rewarding opportunities. In fact, overcoming some traditional hostility[549] and acknowledging the economic and strategic importance won by collaborative IP licensing models, nowadays patent pools and collective rights management mechanisms have been attracting more and more interest also within the international arena, being addressed as possible solutions to the problem of highly fragmented patent rights, characterizing vast areas of the actual biotechnology landscape.

Indeed, the patent pool formula was explicitly mentioned as offering viable solutions also within the domain of life sciences, as affirmed at different formal occurrences by high-profile institutions such as the United States Patent and Trademark Office (USPTO) in 2000,[550] the Federal Trade Commission (FTC) in 2003[551] and the World Health Organization (WHO) both in 2005[552] and 2006.[553] On this latter occasion, in particular, the WHO suggestively concluded that: "patent pools of upstream technologies may be useful in some circumstances to promote innovation relevant to developing countries. WHO and WIPO should consider playing a bigger role in promoting such arrangements". Thereby, the opportunity of committing public funds

548 Atlas R., Speech at the Plenary Session "Emerging Infectious Diseases Requiring Global Solutions", Third Annual Meeting of the STS Forum, September 11, 2006, Kyoto, Japan, available at: http://www.stsforum.org/session_pdf/PL204-RonaldAtlas.pdf

549 In particular, referring to the old antitrust suspicion of arising anti-competitive concerns as a consequence of the aggregation of multiple rights, as examined more in general in the Introduction, when dealing with the interface between IP rights and antitrust law.

550 USPTO, "Patent Pools: a Solution to the Problem of Access to Biotechnology Patents?", United States Patent and Trademark Office, December 2000.

551 Federal Trade Commission, "To Promote Innovation: the Proper Balance of Competition and Patent Law", Report, October 2003, Executive Summary, available at: http://www.ftc.gov/os/2003/10/innovationrpt.pdf

552 WHO, "Genetics, Genomics and the Patenting of DNA: Review of Potential Implications for Health in Developing Countries", World Health Organization, Genetic Program, 2005.

553 WHO, "Public Health, Innovation and IP Rights", Report of the Commission on IP Rights, Innovation and Public Health, World Health Organization, 2006.

for promoting access to key-technologies, namely by setting up collaborative IP models, was also called upon.

In fact, obstacles to the freedom to operate within the delicate sphere of life science, and the consequent drag on vital innovations, need a quick response, especially when involving major public health cases, i.a. pandemics such as SARS[554] or swine influenza[555]. In this respect, the Organisation for Economic Co-operation and Development (OECD)[556] provides an influential forum to deal with such issues: in fact, within the OECD the governments of the leading market democracies work together to address the economic, social and governance challenges of globalisation, as well as to exploit its opportunities, by offering a setting to compare policy experiences, seek answers to common problems, identify good practice and co-ordinate domestic and international policies.[557]

In such setting, a workshop dedicated to "Genetic Inventions, IP rights and Licensing Practices" was hosted in Berlin at the beginning of 2002: here substantial consideration was given to whether clearing house-type mechanisms may be an appropriate solution to facilitate patent access and whether they may be also successfully applied to the life sciences field, with a view to the feasibility and challenges of such an undertaking.[558] Indeed, the central question addressed was whether and to which extent patent pool and similar models could be applied to genetic inventions, and subsequently whether such collaborative IP schemes may lead to the expected benefits, in view of optimising the resources available within a particular industry.

In an attempt to fully address the issue, the OECD subsequently hosted a workshop specifically dedicated to collaborative models to ensure IP access, with a particular focus on the role of patent pools, patent clearinghouses and other collaborative schemes in the field of biotechnology and human health.[559] Taking steps from

554 Simon J., *et al.*, "Managing severe acute respiratory syndrome (SARS) intellectual property rights: the possible role of patent pooling", Bulletin of the World Health Organization 83, 2005, p. 707 *et seq.*, also available at: http://www.who.int/bulletin/volumes/83/9/707.pdf

555 For an outline of the recent outbreak, see i.a.: Centers for Disease Control and Prevention, "CDC Health Update: Swine Influenza A (H1N1) Update: New Interim Recommendations and Guidance for Health Directors about Strategic National Stockpile Materiel", Health Alert Network, April 2009, also available at: http://www.cdc.gov/swineflu/HAN/042609.htm; for an overview, see: http://en.wikipedia.org/wiki/Swine_influenza

556 For the OECD homepage see: http://www.oecd.org

557 Twenty countries originally signed the Convention on the Organization for Economic Co-operation and Development on 14 December 1960. Since then a further ten countries have become members of the Organization. The Member countries of the Organization and the dates on which they deposited their instruments of ratification can be found at: http://www.oecd.org/document/58/0,2340,en_2649_201185_1889402_1_1_1_1,00.html

558 Organization for Economic Co-Operation and Development (OECD), "Genetic Inventions, Intellectual Property Rights and Licensing Practices", Report of a workshop organized by the OECD Working Party on Biotechnology, Berlin, January 24-25, 2002, available at: http://www.oecd.org/dataoecd/42/21/2491084.pdf

559 International Workshop on "Collaborative Mechanisms: Ensuring Access", Washington D.C., December 8-9, 2005. For an outline of the discussions arisen, see: http://www.oecd.org/document/9/0,3343,en_2649_34537_39406921_1_1_1_1,00.html

the experience of patent pools in fields other than life sciences, the convening parties closely focused on the potential of establishing positive technology pooling practices in the field of biotechnology, particularly for genomic and genetic applications. In this respect, in order to ultimately ascertain how access to biotechnological innovations may be facilitated, the viability of collaborative IP models in life sciences has been closely scrutinized and their positive potential for implementation has been eventually acknowledged.[560]

Finally, in alignment with the view expressed by such internationally representative institutions, the belief is shared that companies positioned at the forefront of this rising collaborative IP trend, shall they prove able to strategically implement said cooperative strategies in compliance with the expected competitive standards, are going to shape the next era of commercial developments, hence paving the way towards new, inspiring opportunities. Undoubtedly, opportunities also come along with challenges, but based on the learning and good practices established in this domain, as partly outlined through this contribution, this shall be a path worthy to follow.

560 The conclusions endorsed by the OECD about the positive potential of such collaborative IP mechanisms may be placed on the same line with those already reached through a previous workshop: Organization for Economic Co-Operation and Development (OECD), "Genetic Inventions, Intellectual Property Rights and Licensing Practices", Report of a workshop organized by the OECD Working Party on Biotechnology, Berlin, January 24-25, 2002, available at: http://www.oecd.org/dataoecd/42/21/2491084.pdf

Chapter 6 The Alternative Approach of Clearinghouses: Distinctive Features and Applications in Biotechnology

A. Defining Characteristics

Clearinghouse mechanisms might constitute another approach to facilitate access to technological domains characterized by a high density of patent rights.[561] Actually, the concept of a "clearing house" has gained more popularity in the entertainment industries, notoriously for the distribution of music, movies, software and similar products, as well as for the subsequent collection of the royalties connected with copyrights, from which the conventional term of "collecting societies" derives.[562]

In a more general IP context, clearinghouses are basically administering facilities for the management of rights on behalf of their owners.[563] Specifically relating to patent rights, the term might effectively bring to mind the underlying target of "clearing" the way through the "patent thicket" of overlapping IP rights, where such entities may act as intermediate agents between the multiple patent owners and the prospective licensees in the marketplace.[564]

Drawing a consequent parallel with "tangible goods", a clearinghouse may resemble a real estate agency: in fact here, other than in a patent pool, the right owners are not contractually bound to each other, but only by way of respective mandates to

561 For a comprehensive review and comparison of patent pools and intellectual property clearinghouses, as systems for promoting efficient access to licensable IP, thereby enhancing a market for technology, see: Aoki R., "Promoting Access to Intellectual Property: Patent Pools, Copyright Collectives, and Clearinghouses", R&D Management, March 2008, vol. 38, issue 2, p. 189 *et seq*.

562 In fact, the term "clearing house" originally comes from banking practices and refers to the mechanism by which cheques and bills are exchanged amongst members of the bank in order to finally transfer only the net balance in cash. Nowadays, the concept has gained a wider meaning as relating to any mechanism whereby providers and users of goods, services or information are suitably matched. See in this respect: Krattinger A., "Financing the Bioindustry and Facilitating Biotechnology Transfer", Ithaca NY, USA, BioDevelopments-International Institute Inc., IP Strategy Today, 2004, vol. 8, p. 1 *et seq.*

563 IP clearinghouses have made the object of attention of several recent studies, such as: Van Overwalle G. *et al.*, "A Clearinghouse for Diagnostic Testing: the Solution to Ensure Access to and the Use of Patented Genetic Inventions?", Bulletin of the World Trade Organization, 2006, vol. 84, issue 5, p. 352 *et seq.*; OECD, "Genetic Inventions, Intellectual Property Rights and Licensing Practices: Evidence and Policies", 2002, available at: www.oecd.org/dataoecd/42/21/2491084.pdf; Graff G. and Zilberman D., "Towards an Intellectual Property Clearinghouse for Ag-biotechnology", IP Strategy Today, 2001, vol. 3, p. 1 *et seq.*

564 In fact, the idea of a clearinghouse as "a middleman in the market for technology that facilitates exchanges between IP owners and IP users" has been also expressed by: Aoki R., *supra*, fn. 561, p. 195.

the administering entity. Accordingly, the distinct technology holders, only independently from each other and pursuant to different patterns and level of commitment, entrust the management of their rights to the clearinghouse, this latter serving as sole unitary point of reference towards third parties and potential licensees willing to engage in negotiations to eventually purchase one or more licenses, choosing from the clearinghouse's "catalogue" of available offers.

Therefore, it would not be completely correct, and somehow misleading, to refer to "members" of a clearinghouse - in the same way as you are normally not considered a "member" of a real estate agency for the mere fact that you put your house on sale or renting it out by entrusting it to such administering facility. Indeed, the concept of a membership normally presupposes a certain "communion of intent" among the participants, as is for instance the case when entering a patent pooling agreement. In this respect, although some high-profile academics that closely studied such licensing schemes have expressly referred to both patent pools and clearinghouses as "collaborative models for facilitating access to gene patents",[565] the latter attribute does not seem appropriate in this context. In fact, if on the one hand it is true that the patent owners represented by a clearinghouse have entrusted it with some competences in relation to their individual IP rights, certainly on a voluntary basis, on the other hand the alleged "collaboration", if we may call it that way, would be eventually limited to the particular relationship between the single patentee and the clearinghouse, within the scope of the respective administering mandate. Thus it would rather appear that a proper collaboration, which embraces an active and cooperative inter-connection among the patent holders involved, is not given here.

Nonetheless, clearinghouses remain a potentially valuable mechanism for promoting and facilitating access to key patented technologies - and are on this ground accordingly included within the scope of the present contribution. In fact, facilitating and promoting access to a patented technology is a honourable goal in itself, particularly within an inevitably "imperfect" market. As has also been pointed out in a recent academic report,[566] it is to be expected that so called "information asymmetries" and uncertainties over the value, breath and validity of patents represent factual "trade barriers" and can ultimately represent obstacles to the actual conclusion of agreements between patent owners and potential licensees, thereby impairing potentially successful technology transactions.

Such "market imperfections" - impairing the communication between different market players, for instance on the availability and request of given technologies,

565 See the Presentation held by Van Overwalle G., "Collaborative Models for Facilitating Access to Gene Patents: Patent Pools and Clearing Houses", Centre for Intellectual Property Rights of the University of Leuven, Utrecht, CIER-lectures, February 2006, also available at: http://www2.law.uu.nl/priv/cier/nl/documentatie/CIER%20lezing%2015-02-2006%20Utrecht.pdf

566 Gaulé P., "Towards Patent Pools in Biotechnology?", CEMI Report, April 2006, p. 12. Also available at: http://infoscience.epfl.ch/getfile.py?recid=85505&mode=best

respectively, i.e. in terms of "offers" and "demands" - interfere with potentially gainful negotiations that would otherwise occur in an ideal, perfectly functional and transparent marketplace. Because this situation is eventually detrimental to innovation and technological advancements, hindering the well functioning of economic transactions, this contribution values mechanisms and common practices, such as patent pools and clearinghouses, that may in different ways facilitate the conclusion of such transactions, by conveniently "matching" market's offers and demands, by ensuring non-discriminatory access to available key technologies.[567]

In this context and in order to explore the viability and convenience of such models, concrete examples of clearinghouses, particularly dealing with patented technologies in the field of life sciences,[568] will be provided in the following sections of this contribution.

B. Models and Applications

In the following section this contribution will explore and distinguish a certain number of IP collecting society models. Accordingly, we will provide some selected instances of actual or considered applications of such models dealing with patented technologies, as established in the field of life sciences.[569] The current different templates identified in the next paragraphs will be subsequently complemented by some concrete instances of how these have been implemented in practice.[570]

567 In this respect, clearinghouses have been effectively accredited for providing a "matching service" of varying degrees of sophistications between IP owners and users, ultimately by: Aoki R., *supra*, fn. 561, p. 202.

568 For a broad overview and analytical assessment on the matter, see i.a.: Hope J. et al., "Cooperative Strategies for Facilitating the Use of Patented Inventions in Biotechnology", In: Rimmer M., "Patent Law and Biological Inventions", Federation Press, 2006, Law in Context, vol. 24, p. 85 *et seq.*

569 For an overview, see i.a.: Rimmer M., "Patent Law and Biological Inventions" – "Clearing House Mechanisms", Science, The Federation Press, 2006, p. 93 *et seq.*: Graff G. *et al.*, "Towards an Intellectual Property Clearinghouse for Agricultural Biotechnology", Agricultural Biodiversity and Biotechnology in Economic Development, May 2006, vol. 27, p. 387 *et seq.*

570 For a detailed systematization of clearinghouses, refer to: Van Overwalle G., *et al.*, "Models for Facilitating Access to Patents on Genetic Inventions", Nature Reviews - Genetics, Nature Publishing Group, February 2006, vol. 7, p. 143 *et seq.* Moreover, for a complementary view, mainly distinguishing two bigger functional types of clearinghouses, namely "Informational Clearinghouses" and "Licensing Clearinghouses", depending on whether or not they provide licenses to IP users directly, see: Aoki R., "Promoting Access to Intellectual Property: Patent Pools, Copyright Collectives, and Clearinghouses", R&D Management, March 2008, vol. 38, issue 2, p. 196 *et seq.*

I. Information Clearinghouse

The first and simplest model we ought to take into consideration is the information clearinghouse, which provides a common platform for exchanging technical information and mostly includes data related to the IP status of the technologies involved, if they are covered by a patent or even a published patent application. Whereas said information mechanisms are relatively easy to set up, they require constant maintenance and updating, as is notoriously the case for all sorts of databases in order for them to be a truly valuable source of current information.

Although this type of clearinghouse represents the simplest form of IP administration and is quite limited in its purpose - mainly providing convenient access to a big variety of patent data, while leaving further contractual deals and business approaches to the free initiative of interested parties – in principle the value of its basic, fundamental role, namely enhancing the "visibility" of related data, shall not be undermined.[571] Nevertheless, taking a pragmatic approach, given the very defined scope of the model in consideration, its effective usefulness will greatly depend both on an extensive coverage of patent-related data and on the reliability of the status of the information provided.

1. Biosafety Clearing-House

Within the framework of the Convention on Biological Diversity (CBD),[572] signed at the Earth Summit in Rio de Janeiro in 1992 and entered into force on 29 December 1993,[573] whose main objective is to promote national strategies for the conservation and sustainable use of biological diversity, a noteworthy initiative was the establishment of a so-called "Clearing-House Mechanism" (CHM)[574] to ensure that governments world-wide are granted access to the information and technologies they need for their work on biodiversity.[575] Indeed, pursuant to Art. 18 of the Con-

571 On information clearinghouses, see i.a.: Skorohod O., "Biotechnology Transfers and Models Facilitate Access to Biotechnological Inventions", In: Friedman Y. "Best Practices in Biotechnology Business Development", Logos Press, 2008, p. 129.

572 Convention on Biological Diversity, 5 June 1992, complete text available at: http://www.biodiv.org/doc/legal/cbd-en.pdf ; for an overview of the articles, see: http://www.cbd.int/convention/convention.shtml

573 For the reference, see: http://www.cbd.int/history

574 For a complete introduction to the Clearing House Mechanism, see: http://www.cbd.int/chm/intro

575 On the issue of biodiversity from an IP perspective, see i.a.: Straus J., "Biodiversity and Intellectual Property", in: Hill K.M., Takenaka T. and Takeuchi K. (Eds.), Rethinking International Intellectual Property -Biodiversity & Developing Countries, Extraterritorial Enforcement, the Grace Period and other Issues, CASRIP Publication Series No. 6, Seattle, 2001, p. 141 *et seq.;* Straus J., "Biodiversity and Intellectual Property", Yearbook of AIPPI, 1998, IX, p. 99

vention,[576] its mission shall be the promotion and facilitation of technical and scientific cooperation within and between countries, also encouraging the participation of indigenous communities, by developing a global mechanism for exchanging and integrating information on biodiversity.[577]

In this context, an important step has been the creation of a central portal in order to support the Cartagena Protocol on Biosafety, adopted on January 2000 and entered into force on 11 September 2003, which integrates the CBD[578] by supplementing it with some special precautionary provisions about living modified organisms (LMOs) resulting from modern biotechnology.[579]

Accordingly, Article 20 of the Biosafety Protocol[580] established a Biosafety Clearing-House (BCH) as part of the Clearing-House Mechanism (CHM) of the Convention on Biological Diversity (CBD), in order to:

- Facilitate the exchange of scientific, technical, environmental and legal information on, and experience with, living modified organisms; and
- Assist parties to implement the Protocol, taking into account the special needs of developing country Parties, in particular the least developed and small island developing States among them, and countries with economies in transition as well as countries that are centres of origin and centres of genetic diversity.

The BCH fulfils its mandate by providing a dynamic platform where information is registered through the Management Centre and where it can be easily searched and retrieved.[581]

Therefore, the BCH well fits the role-model of an information exchange organism, providing for a "one-stop shop" where users can readily access or contribute relevant biosafety-related data. Nevertheless, a peculiarity is that BCH is organized in the form of a decentralized system, as the users themselves may effectively update information through an authenticated, online system to ensure timeliness and accuracy.[582]

et seq., also available at:
http://www.law.washington.edu/Casrip/Symposium/Number6/Straus.pdf

576 For the full text of Article 18, see: http://www.cbd.int/convention/articles.shtml?a=cbd-18

577 For more information, see: http://www.biodiv.org/chm/default.aspx

578 In particolar, Art. 19, para. 3 of the Convention provides that: "The Parties shall consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity". For the full text of the article, see: http://www.cbd.int/convention/articles.shtml?a=cbd-19

579 For a complete introduction on the Caratgena Protocol on Biosafety, see: http://www.cbd.int/biosafety

580 For the full text of the article, see: http://bch.cbd.int/protocol/text/article.shtml?a=cpb-20

581 For a complete introduction on the Biosafety Clearing-House (BCH) and its modalities of operation, see: http://bch.cbd.int/about

582 McLean K., "Bridging the Gap between Researchers and Policy-Makers: International Collaboration through the Biosafety Clearing-House", Environmental Biosafety Research, 2005, vol. 4, p. 123 *et seq.*

The Secretariat of the Convention, based in Montreal, Canada, has been established to support the goals of the Convention, as well as of its Protocol. One of its main tasks is to provide administrative assistance to member governments in the implementation of the various programmes of work, to coordinate with other international organizations and, eventually, to collect and disseminate information.[583]

On balance, some tangible, positive results have been shown through the establishment of so-called "National Focal Points" (NFP) to the CHM, who shall ensure the implementation of the Convention at different national-levels.[584]

Finally, allowing a more comprehensive, objective appraisal of the goals effectively attained by the organization, once a year the Secretariat reports on the operation of the Biosafety Clearing-House. In this context, primary data, such as the number and regional distribution of NFPs, as well as the account of records made available through the BCH, are made freely accessible through a public online platform. In particular, here detailed reports on the activities and partnership arrangements that have been entered into, as well as feedback provided by Parties and other Governments on their experiences with the operation of the BCH, are also available.[585]

This transparent approach permits an easy, straightforward appraisal of the usefulness and success of the clearinghouse mechanism in consideration, which - although certainly investing a mere "enabling role" towards third party organizations wishing to access relevant technological data or, eventually, to enter into profitable partnerships - shall be ultimately "measured" against the tangible results effectively attained.

2. CAMBIA's Patent Lens

As far as biotechnology matters are more closely concerned, there are specific life sciences search sites and databases, such as Patent Lens,[586] offering a platform to gather biotechnology-related information worldwide. Said platform has been established within the framework of the so-called CAMBIA's BIOS (Biological Innovation for Open Society) Initiative and provides a full-text searchable database of European, US and PCT based patents in the domain of life sciences, eventually complemented with educational and advisory services.

583 For an outline of the Secretariat of the Convention on Biological Diversity and its tasks, see: http://www.cbd.int/secretariat

584 The progress on the establishment of such national partnerships can be monitored on the BCH website at: http://www.cbd.int/chm/partners

585 The public portal on BCH's reports and reviews is freely accessible at: http://bch.cbd.int/about/reporting_bch.shtml

586 For related information, see: http://www.cambia.org/daisy/bios/50 or http://www.patentlens.com/daisy/patentlens/patentlens.html

CAMBIA (acronym for "Centre for the Application of Molecular Biology to International Agriculture")[587] is an international, independent, non-profit plant biotechnology research institute, founded in 1992 and based in Canberra, Australia, whose stated goal is to create new enabling tools to foster innovation in life sciences while maintaining a spirit of collaboration.[588] In fact, in Spanish and Italian, CAMBIA means "change", and it might be assumed that this meaning shall be at the very heart of its mission.

More specifically, CAMBIA's BIOS Initiative aimed at exploring new R&D paradigms, practices and policies for addressing neglected priorities of disadvantaged communities by fostering local commitment to achieve long-lasting solutions for the challenges of food security, agricultural productivity, human and animal health and natural resource management.[589]

Because open innovation starts with and depends on "transparency" in the patent system, CAMBIA's Patent Lens intend to provide tools to make the patent landscapes more intelligible, eventually to help focusing paths that lead to freedom of co-operation. Indeed, these tools include an independent, public good global resource which points to patent documents from the EPO, the USPTO and the PCT, covering more than 5,5 million documents in a format that is fully integrated and searchable, and receiving regular updates of additional patent applications by subscriptions also from national offices and the WIPO.

In the context of CAMBIA's broader mission, Patent Lens ought to be integrated and coordinated with other important services offered by its umbrella organization in the biotechnology domain, such as BioForge and BiOS Licenses, to which we will dedicate the proper attention in the following.[590]

Nevertheless, endorsing a certain dose of pragmatism, it is clear that the effective utility of this sort of initiatives, based on the exchange of information, greatly depends on the quality and on the level of accuracy of the information collected, as well as on its coverage, both in terms of relevant technologies gathered and, eventually, of active users appealed. Unfortunately, on this fundamental level, it is difficult to make a comprehensive assessment, missing a reliable feedback.[591]

587 For the official website, see: http://www.cambia.org

588 The BIOS (Biological Innovation for Open Society) Initiative has been supported by public-oriented institutions, *in primis* the Rockefeller Foundation.

589 For a critical assessment of the underlying business model, see i.a.: Elkington J. et al., "Leading Sustainable and Scalable Change", "Democratizing Technology", In: "The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World - Leadership for the Common Good", Harvard Business Press, 2008, p. 137 *et seq*.

590 For a descriptive overview, see: http://www.cambia.org/daisy/cambia/home.html

591 This evaluation follows a personal attempt to gather tangible, practical evidence by specifically addressing the representatives of the organization in order to provide for reliable references supporting the institutional goals proclaimed. Regrettably, the feedback received has been evasive and non-satisfactory in this respect.

II. Technology Exchange Clearinghouse

The second model identified is the so-called technology exchange clearinghouse, representing a more advanced stage with respect to the paradigm of a simple information clearinghouse and basically inspired by the widespread Internet business-to-business (B2B) basic scheme. B2B stands for transaction activities between two business entities, as generally opposed to B2C, i.e. business-to-consumer, involving a transaction between a business, on the one hand, and a consumer, on the other hand.[592] Although the term B2B could also be used for conventional commerce, it normally refers to the exchange of goods or services between companies over the Internet, mostly in connection with e-commerce and advertising, when targeting businesses rather than end-consumers. B2B platforms may encompass not only commodity exchanges and wholesale supplies on the Internet, but virtual auctions, as well.

In fact, a technology exchange clearinghouse represents a sort of further development of the previous model, as described above.[593] Indeed, such entity not only administers the collection and exchange of current information on available technologies in a given domain, so as to facilitate access and retrieval of relevant IP data, but also actively encourages the partnering between technology holders and prospective licensees by providing the input and professional counsel in order to initiate negotiations to reach a licensing agreement, coupled by optional more comprehensive mediating and managing services - thus reproducing a business-to-business (B2B) scheme, as outlined above.[594]

1. BirchBob

An example of global technology exchange model is BirchBob,[595] an Internet platform established in 2003 that seeks to bring together offers and demands for innovative technologies, complemented by specific services devoted to tracking and facilitating contacts between patent holders and interested third party investors. The aim ultimately pursued is to assist corporations in identifying the innovations and

592 For an outline on the B2B business method in as cooperative business model, see i.a.: De Maio H., "B2B and Beyond: New Business Models Built on Trust", John Wiley and Sons, 2001.

593 For a clear outlook on the model at hand, see i.a.: Skorohod O., "Biotechnology Transfers and Models Facilitate Access to Biotechnological Inventions", In: Friedman Y. "Best Practices in Biotechnology Business Development", Logos Press, 2008, p. 127 *et seq*.

594 For a broader analytical assessment on the model adopted, see i.a.: De George R., "The Ethics of Information Technology and Business", Foundations of Business Ethics, 3, Wiley-Blackwell, 2003.

595 The name "BirchBob" shall be a tribute to Birch Bayh and Bob Dole, authors of the Bayh-Dole Act (USA, 1980), as reported in: http://www.birchbob.com/corporate.htm. For the official home page, see: http://www.birchbob.com/index.asp

technology partners to create strategic "R&D Alliances", thereby fostering business developments.

Specifically, BirchBob shall assist in purchasing, selling or licensing IP innovations in the marketplace, respectively, as well as eventually structuring collaborative R&D projects by establishing "ad hoc" business partnerships. This institutional goal shall be facilitated through a network for active technology producers, available in 52 countries, including corporate entities. Indeed, BirchBob's current database relies on more than 40.000 technologies from about 2,000 organizations worldwide.[596] Additionally, complementary services include prior art searches, valuation and benchmarking of IP rights, incubation of R&D and spin-off projects, as well as their structuring and management.

Eventually, such entity considers itself as a sort of "innovation gateway" using its global network to screen and foster new business or scientific opportunities, eventually providing professional expertise as well as operational support. [597] However, tangible evidence is missing as to which strategic R&D alliances, in concrete, were fostered as direct a result of BirchBob's proclaimed endeavours. In fact, an attempt to gather some practical feedback in this respect was frustrated by the claimed need of protecting private, confidential information, which is not entirely convincing when considering the positive implications of such partnerships in terms of publicity and purported effectiveness of BirchBob's engaged networking efforts.[598]

2. Pharmalicensing

Now, as far as specific healthcare technology platforms are concerned, both Pharmalicensing[599] and TechEx[600] shall be mentioned, as divisions of the UTEK Corporation, a leading, market-driven technology transfer firm specifically providing online support for partnering and licensing of biopharmaceutical solutions, ulti-

596 As reported in: Skorohod O., "Biotechnology Transfers and Models Facilitate Access to Biotechnological Inventions", In: Friedman Y. "Best Practices in Biotechnology Business Development", Logos Press, 2008, p. 129.

597 For an outline of BirchBob's R&D approach, see: http://www.birchbob.com/BBWEBMANAGE/page.asp?id={73BC571C-F6C0-4EC9-8E11-D770F92EDE2C}

598 This evaluation follows a personal attempt to gather tangible, practical evidence by specifically addressing the representatives of the organization in order to provide for reliable references supporting the institutional goals proclaimed, i.e. to assist corporations in identifying the innovations and technology partners to create strategic R&D alliances, thereby fostering business developments. Regrettably, the feedback received has been evasive and non-satisfactory in this respect, claiming the need of protecting private, confidential information.

599 For the official site, see: http://pharmalicensing.com

600 For the official site, see: http://www.techex.com

mately aimed at enabling public companies to acquire innovative technologies from universities and research laboratories[601].

The former is since January 2008 a unit of UTEK Europe Ltd., a business development company based in York, in the UK, implementing an open innovation business model to foster strategic partnerships. Mainly Pharmalicensing relies on a patent database where the profiled out-licensing and in-licensing needs shall reflect the current market demands, giving a real-time transparent representation of the partnering opportunities being offered.[602]

The advertised opportunities are provided directly by the participating companies themselves, who shall be able to "profile" their out-licensing capabilities in a corresponding directory using a standardized intelligible form.

On the other hand, seekers of technology and IP products may use the website free of charge to identify their needs by searching the available offers, as well as to "profile" their in-licensing needs, thereby allowing potential technology owners to eventually identify new options for their licensing strategy.[603]

In this way, interested parties shall be able to make direct contact, using the online platform to exchange further information, evaluate each other, negotiate and conclude deals off-line.

The model has in fact proven quite successful,[604] as shown by the great numbers of publications and users of such facilities embracing a great variety of professionals from the IP field, including - aside from major pharmaceutical and biotech corporations - business development and licensing strategists, CEOs, intellectual asset managers, brokers, IP consultants and patent lawyers, extending the range of possible business transactions.[605]

601 Prandelli E. et al., "Collaborating with Customers to Innovate: Conceiving and Marketing Products in the Networking Age", Edward Elgar Publishing, 2008, p. 102.

602 For a portrait of the organization and a detailed description of its approach and functioning, focusing on the benefits of early stage strategic partnerships and licensing outsourcing, see: Pharmalicensing, "Early Stage and Discovery Deals: Strategy, Structure and Payment Terms", Pharmalicensing, 2 ed., 2006; Ranson P., "Legal Aspects of Outsourcing Contracts in the Pharmaceutical Industry: A practical guide", Pharmalicensing, 2006.

603 For an outline of the business model adopted, see i.a.: Austin M., "Business Development for the Biotechnology and Pharmaceutical Industry", "Profiling and Searching for Opportunities", Gower Publishing, 2008, p. 65 *et seq.*

604 For a case-study report of successful business practices fostered by Pharmalicensing, see: http://pharmalicensing.com/files/pdf/Pharmalicensing_Case_Studies.pdf

605 The business developments and the technology alliances promoted by the Pharmalicensing have been broadly outlined and analytically reported in: Pharmalicensing, "The Licensing Agreement in Pharmaceutical Business Development", Pharmalicensing, 3 ed., 2007.

3. TechEx

Like Pharmalicensing, TechEx, standing for "Technology Exchange", operates on the basis of a network of assembled IP resources, offering an online technology exchange platform where members can identify and introduce innovative solutions that are available for partnering.[606] However, it is characterized and distinguished by its major expertise in the biomedical industry.

Founded at Yale University, TechEx has been acquired by UTEK Corporation in May 2002. Its peculiar business model is aimed at facilitating the identification and acquisition of external technologies by clients in exchange for their equity in order to obtain a strategic marketplace advantage, while allowing the research institutions concerned to enjoy 100% of the incoming royalties. [607]

In this respect, TechEx is a source for emerging technologies in the biomedical field built on a proprietary communication platform called ScienceMatch, which is embedded in the online exchange platform that is used by technology holders as an extension of their licensing and business development efforts. The technologies at hand are compared to the interests of biotechnology development organizations to ensure a fast communication of biomedical breakthroughs.

Currently, the organization features thousands inventions from over 600 corporations and about 350 research institutions.[608] In this respect, TechEx has been portrayed as an accomplished example of "virtual knowledge broker",[609] although traceable, tangible results in terms of biotechnologies, bearing a certain market value and developed pursuant to TechEx's involvement in this domain, are not specifically identified.[610]

4. PIPRA

Finally, in the area of clearinghouse models promoting biotechnology exchange, a special attention is dedicated to PIPRA, standing for Public Intellectual Property Resource for Agriculture.[611] PIPRA is in fact grouping universities, foundations and non-profit research institutions and its major purpose is to make agricultural tech-

606 For the official website, see: http://www.utekcorp.com

607 For an accurate outline of its functioning, see i.a.: Kulakowski E. et al., "Research Administration and Management", Jones & Bartlett Publishers, 2006, p. 741-742.

608 Prandelli E. et al., *supra,* fn. 601, p. 103.

609 *Id.,* "Virtual Knowledge Brokers", p. 93 *et seq*.

610 This evaluation follows a personal attempt to gather tangible, practical evidence by specifically addressing the representatives of the organization in order to provide for reliable references supporting the institutional goals proclaimed, i.e. facilitating the identification and acquisition of biotechnologies by clients. Regrettably, the feedback received has been evasive and non-satisfactory in this respect.

611 For the official website, see: http://www.pipra.org

nologies more easily available,[612] in particular for development and distribution of subsistence crops for humanitarian purposes in the developing world, on the one hand, and specialty crops in the developed world, on the other hand.[613]

Subsequently, the organizational model adopted has been stretched to other neighbouring areas, encompassing also energy, water and healthcare new technology applications,[614] as well as providing, aside its core business, an extensive series of complementary services related to IP assessment and education, in order remain competitive by meeting the evolving needs of its growing institutional network.[615]

PIPRA's original mandate is enabling access to patented technologies in order to overcome burdensome barriers to new crop developments,[616] where patenting of agricultural biotechnologies has expanded at a faster pace over the last decades. Indeed, publicly supported research continues to play a primary role in this sector. This is particularly true in developing countries, where public sector research institutions are nearly the exclusive innovative force. However, said institutions have not yet developed the basic skills and infrastructure to effectively manage their in-house IP resources, thus confronting them with the problem that their research programs are hampered at the application stage, being unable to actually transfer their developed technologies for private sector's implementations.

In this respect, PIPRA's primary objective is to promote access to agricultural technologies developed by public or private non-profit research institutions for both humanitarian and neglected commercial purposes, seeking to solve large-scale intellectual property issues through a collaborative approach among its member institutions, basically based on a common agreement to share their technologies and research tools with each other and, eventually, make them available for third interested parties on equitable and non-discriminatory conditions.[617] In other words, PIPRA is an organization committed to the strategic management and administration of pa-

612 For an introduction of PIPRA and its underlying philosophy, see i.a.: Boettiger S., Schubert K., "Agricultural Biotechnology and Developing Countries: The Public Intellectual Property Resource for Agriculture (PIPRA)", Biodiversity and the Law: Earthscan, 2007; Benkler Y., "The Wealth of Networks: How Social Production Transforms Markets and Freedom, Yale University Press, 2006, p. 338 *et seq.*

613 For an outline on PIPRA's business model, see i.a.: Blakeney M., "Public Intellectual Property Resource for Agriculture", "Intellectual Property Rights and Food Security", CABI, 2009, p. 231 *et seq.*

614 Although concrete of successful applications in this respect is still missing, on account of the relatively recent expansion of PIPRA in these new areas.

615 A current overview and description of PIPRA's range of activities can be found at: http://www.pipra.org/en/about.en.html.
On the new broader approach adopted, see also: Boettiger, S. and B. Wright, "Opportunities and Challenges for Open Source in Biotechnology", Innovations 1(4), MIT Press, 2007.

616 On the problem of access to agricultural biotechnology and the contribution of PIPRA, see i.a.: McManis C., "Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge", Earthscan, 2007, p. 13 *et seq.*

617 More in general see in this respect, i.a.: Atkinson R. et al., "Intellectual Property Rights: Public Sector Collaboration for Agricultural IP Management", Science, 2003, p. 174 *et seq.*

tents owned by its member institutions whose inspiring guideline consists in encouraging the broadest possible applications of existing and emerging agricultural technologies, mostly promoting the use of genetically modified crops.[618]

Nevertheless, PIPRA does not subscribe to a single philosophy or approach in addressing IP issues.[619] Instead, PIPRA chooses to employ a wide range of available IP management strategies, including open sources or, eventually, reasonable and non-discriminatory licensing conditions. PIPRA pragmatically adopts a rather flexible "modus operandi" for each individual case and selects the best available tools to tactically achieve the goals of the specific project dealt with, recognizing that technologies may have to be sourced from a broad range of public and private technology developers having their own strategic objectives and priorities to be met.

At the outset, discussion about PIPRA started when the McKnight[620] and Rockefeller Foundations,[621] both of them philanthropic institutions, identified in some critical IP issues a potential, but severe impediment to the delivery of research results and information to their intended recipients, namely poor farmers in developing countries. In the course of this debate, it became apparent how the same problematic issues were having a restrictive impact on the flow of agricultural biotechnology when it comes to smaller specialty crops, which have historically been an important domain of study for public researchers.

A deeper analysis of the situation came to the conclusion that indeed almost 25% of US biotechnology innovations in the field of agriculture had been created thanks to the successful efforts of public and non-profit institutions. In fact, whereas on the one hand their common "public values" spoke in favour of a positive perspective on a "collaborative solution" to tackle the increasingly evident problem outlined here, on the other hand the targeted portfolio of inventions was highly fragmented across said institutions.[622]

The ensuing discussions favourably pointed to the benefits of "collaborative efforts" to identify and consequently regroup these jeopardized IP rights in order to develop a common framework of new biotechnologies incorporating the relevant innovations originating from said public sector institutions. These deliberations eventually led to the creation of PIPRA, which was charged with the concrete realization of these high-level objectives. In fact, the view is taken that the success of

618 Along the same line and supporting PIPRA's collaborative approach, see i.a.: Tansey G. et al., "The Future Control of Food: A Guide to International Negotiations and Rules on Intellectual Property, Biodiversity and Food Security", Earthscan, 2008, p. 193 *et seq.*

619 PIPRA Executive Committee, "PIPRA, the Public Intellectual Property Resource for Agriculture - A Public Sector Collaboration for Agricultural IP Management: Enabling Access to Intellectual Property for the Development of Improved Crops", Intellectual Property Management in Health and Innovation - A Handbook of Best Practices, Sample Chapters, October 2006, p. 113 *et seq.*, also available at: www.ipHandbook.org

620 For the official website, see: www.mcknight.org

621 For the official website, see: www.rockfound.org

622 Along this line, see: Atkinson R. et al., "Intellectual Property Rights: Public Sector Collaboration for Agricultural IP Management", Science, 2003, p. 174 *et seq.*

such initiative largely depends on the peculiarity of the agricultural sector, which is widely characterized by the support through public funding,[623] that helps to overcome what I would call the "valuation impasse", i.e. the deadlock situation typical of private investors having committed important economical resources of their own to the technologies eventually developed and, therefore, being rather reluctant to enter into the assessment phase that is preceding a collaborative agreement. From this perspective, agriculture seems indeed to be a sort of "privileged niche" for the here-by-tested experimental feasibility and prosperity of technology pooling and, more generally, cooperative models within the wider biotechnology domain.[624]

Besides, we should not neglect the consideration, mostly taken for granted, that food, as the product of agriculture, is fundamental to serve primary humanitarian purposes, therefore calling in first place for collaborative solutions, which are, for this very reason, generally underpinned by substantial public assistance, eventually materializing in the collective frameworks under consideration here. Taking a slightly different, but complementary approach, some authors have expressed the view that "PIPRA's framework was successfully adopted by so many universities in part because the financial stakes in agriculture are relatively low and Land Grant Universities have a long history of publicly minded technology transfer in this sector".[625]

The question now is whether incentives exist for non-profit research institutions to sustain such collaborative framework in a technology sector other than agriculture, with higher stakes involved, such as most notably the biomedical sciences. Actually, in order to tailor an effective, profitable solution for the specificity of each situation, the development of collaborative IP management strategies targeting the needs of publicly funded research institutions is strongly recommended. Indeed, the view is taken that the path towards scientific innovation is going through large-scale, multi-institutional projects requiring the employment of collaborative schemes to profitably manage their IP outputs, while overcoming individual barriers to the access to key-technologies. Concretely, a starting point as a condition for some of the major publicly funded research projects may be to require the prior effective development of multi-institutional strategies of IP management, going beyond the eventual acknowledgement of joint inventorship. Finally, IP-specialized agencies should generally start to pay greater attention to the necessary coordination to enable the broadest access of research outputs, thus fostering the establishment of technology clearinghouses in sectors threatened by the emergence of "anti-commons", to ul-

623 Graff G., *et al.*, "The Public–Private Structure of Intellectual Property Ownership in Agricultural Biotechnology", Nature Biotechnology, 2003, vol. 21, p. 989 *et seq.*

624 Graff G., *et al.*, "Towards an Intellectual Property Clearinghouse for Agricultural Biotechnology", "Agricultural Biodiversity and Biotechnology in Economic Development", May 2006, vol. 27, p. 387 *et seq.*

625 Bennett A., *et al.*, "Bayh-Dole: if we knew then what we know now - Anticommons effects", Nature Biotechnology, March 2006, vol. 24, n. 3, p. 322.

timately ensure that the public may continue to fully benefit from the innovations generated by publicly funded research.

Now, as far as PIPRA's activities are concerned, the main task assumed is addressing IP policy concerns all the way through the creative chain up to the development and eventual commercialisation of the final IP asset, focusing on the priorities of public research activities in both developed and developing countries. Therefore, we are not dealing with an ordinary IP administrative entity here, as is the case with a typical clearinghouse, because PIPRA is also actively engaged in the patent policy debate concerning, to a broader extent, the equitable allocation of technology assets worldwide. Thus, the main benefit provided is the reduction of IP hurdles that exist along the path from research, through development to final distribution, consequently minimizing diversion of valuable resources from the core R&D activities that are to be carried on.[626]

From a practical standpoint, first of all PIPRA assists scientists by primarily providing easy access, through an up-to-date comprehensive database, to information concerning the ownership and current availability of key technologies, i.e. their licensing status, commonly employed in the area of agriculture. The collection of relevant scientific data is coupled by in depth professional assistance and counselling on IP related issues, such as preliminary valuation of intangible assets and analysis of the legal boundaries of patent claims.

Moreover, PIPRA is committed to the widespread commercialisation of the public research results contributed by its member organizations, thus actively marketing their IP portfolio and, consequently, assisting in the negotiations of licenses between the represented patent holders and potential third parties licensees. In fact, in response to the previously mentioned emergence of "anti-commons" problems generated by scattered and fragmented IP rights in the hands of separate owners, the association is adopting an explicit policy of so called "publicly minded licensing", employed to strategically address IP impediments to the research and development of subsistence crops for the poorest countries. Indeed, rightly recognizing the important incentives and legal guarantees provided by the patent system in promoting technology transfer and commercialisation, PIPRA has provided its member institutions with the effective framework and operative tools to collaboratively manage their IP assets, reconciling both individual and public interests.

However, the provided "assistance" is, as this term suggests, merely a complementary and optional service provided by the administering body, relying on a specific case-by-case request of the patent holder. In other words, PIPRA - reflecting the model role of a technology exchange clearinghouse, as previously outlined and illustrated by examples of the organizations above - does not take the place of patent holders in the negotiation process towards third parties, but merely acts on their side in an auxiliary role, with the declared intent of supporting licensing transactions leading to globally beneficial technology transfers. Under this profile, a substantial

626 PIPRA Executive Committee, *supra*, fn. 619, p. 114.

point of general differentiation shall be highlighted between a clearinghouse, on the one hand, and a patent pool whose administrator, on the other hand, is typically empowered with contractual activities, having as their object the pooled technologies as a whole, on behalf and for the benefit of the patent holders constituting the consortium.

On the basis of the PIPRA database, opportunities for "complementary technologies" to be bundled together are identified in order to enable the stipulation of combined licenses, i.e. "one stop licensing", embracing all essential patents involved.[627] Whereas under this aspect strong resemblances with patent pools are evoked, as well, the two situations cannot be any further assimilated. In fact, here the technologies are not "necessarily bundled", unlike in the case for a patent pool in which the IP contributions from the pool members to a "unitary package" represent a binding, constitutive condition of the consortium itself.[628]

Besides promoting commercialisation, on the one hand, PIPRA is also committed to humanitarian applications of agricultural biotechnologies, on the side of developing countries.[629] In fact, it is well recognized that purchasing IP rights increase the cost of product development, which in its turn makes it harder for private firms to sustain investments addressing the needs of smaller or unprofitable markets. In practice, when innovations developed with public funding are exclusively licensed to private companies, the latter will be frequently unable to make the product, which incorporates the technologies at issue, available for low-income markets. In order to face this problem, organizations, such as PIPRA, have adopted a range of licensing strategies, which reserve rights for humanitarian uses of patented technologies to support product developments and distributions also within less competitive markets.[630]

Indeed, while addressing primary goals of public health and global economic well-being, PIPRA has used its membership base to develop and promote a licensing language aimed at the reservation of rights for humanitarian commercial development benefiting poor and underserved societies. Accordingly, a peculiar "humanitarian use reservation of rights" approach has been introduced. To be specific, such clause is to be inserted in agreements concluded by PIPRA member institutions,

627 As reported, i.a., in: Kloppenburg J., "First the Seed: The Political Economy of Plant Biotechnology, 1492-2000
Science and Technology in Society", University of Wisconsin Press, 2005, p. 332.

628 On the point, see i.a.: Reichman J. et al., "International Public Goods and Transfer of Technology Under a Globalized Intellectual Property Regime", Cambridge University Press, 2005, p. 300-301.

629 Ronald P. et al., "Tomorrow's Table: Organic Farming, Genetics, and the Future of Food", Oxford University Press US, 2008, p. 147.

630 On the point: Hope J. et al., "Cooperative Strategies for Facilitating the Use of Patented Inventions in Biotechnology", In: Rimmer M., "Patent Law and Biological Inventions", Federation Press, 2006, Law in Context, vol. 24, p. 98-99. Along the same line, i.a.: Benkler Y., "The Wealth of Networks: How Social Production Transforms Markets and Freedom, Yale University Press, 2006, p. 338 *et seq*.

namely universities and non-profit entities, in order to particularly preserve "an irrevocable, non-exclusive right in the Invention/Germplasm for humanitarian purposes".

Quoting the specific licensing language employed, "such humanitarian purposes shall expressly exclude the right for the not-for-profit organization and/or the developing country, or any individual or organization therein, to export or sell the germplasm, seed, propagation materials or crops from the developing country into a market outside of the developing country where a commercial licensee has introduced or will introduce a product embodying the Invention/Germplasm. For avoidance of doubt, "not-for-profit organization and/or the developing country, or any individual or organization therein, may export the Germplasm, seed, propagation materials or crops from the developing country of origin to other developing countries and all other countries mutually agreed to by licensor and licensee". Ultimately, it is specified that: "Humanitarian Purposes means (a) the use of Invention/Germplasm for research and development purposes by any not-for-profit organization anywhere in the World that has the express purpose of developing plant materials and varieties for use in a Developing Country, and (b) the use of Invention/Germplasm for Commercial Purposes, including the use and production of Germplasm, seed, propagation materials and crops for human or animal consumption, in a Developing Country".[631] Therefore, PIPRA's licensing language uses a distinct "territorial division of rights" which separates commercial markets in developed countries from those in developing countries, where humanitarian use finds its way.[632]

Finally, one should also mention the education and training activities in which PIPRA is involved, developing training materials and taking active part in workshops concerning both developed and developing countries IP matters. At present, the organization is engaged in facilitating the design and testing of a plant transformation vector with maximal freedom-to-operate, with as many components as possible either from the public domain or owned by PIPRA members with pre-arranged licensing terms, allowing the vector to be distributed on a royalty-free basis in order to realize humanitarian purposes.

Now, as far as the impacts of PIPRA's activities are concerned, we should mention that currently about 50 universities and non-profit institutions have joined the organization, showing a particularly strong presence in the US and a noticeable, increasing trend in membership.[633] Overall, the data representing the agricultural portfolio of PIPRA's member institutions comprise over 7.000 patents and patent appli-

631 For the exact language, see: http://www.pipra.org/docs/HumResLanguagePIPRA.doc

632 Actually, there exist also other options to achieve similar goals which have been carefully documented by the Science and Intellectual Property in the Public Interest (SIPPI) program, as outlined in: Brewster A., *et al.*, "Facilitating Humanitarian Access to Pharmaceutical and Agricultural Innovation", Innovation Strategy Today, 2005, vol. 1, p. 203 *et seq.*

633 A full list of PIPRA current members and their Memorandum of Understanding can be found at: http://www.pipra.org/en/about.en.html#members

cations from more than 40 countries, searchable in the organization's database by a variety of fields, including their licensing status.

Ending with some closing general remarks about PIPRA, we ought to highlight its role model function as an high-profile organization, that is active in the domain of agricultural biotechnology, which has the major aim to implement a practical framework to create "commons" of previously fragmented public sector IP portfolios, ultimately in order to address goals of greater commercialisation, as well as reservation of rights to ensure that the humanitarian cause can be achieved. These high-profile objectives echoed throughout the international technology transfer community, so that PIPRA is now widely perceived as a model IP collective mechanism that may eventually be emulated in other technology sectors in general, and for life sciences in particular.[634]

Nevertheless, to a more scrutinizing, result-oriented assessment, going beneath the "popularity" gained on account of the humanitarian goal proclaimed by such organization, which has certainly assumed noteworthy dimensions, practical and traceable evidence as to new technologies that have been actually brought to developing countries, showing a positive impact on their economies, could not be gathered.[635] In fact, although in this respect the direct inquiry addressed to the representatives of the organization has been evaded, mostly on account of the merely "enabling" role function of PIPRA into facilitating networking initiatives aimed at making public sector's technologies more accessible for the benefit of developing countries, it shall be undisputed that the establishment of successful practices in this area, as well as instances of positively applied technologies, resulting from PIPRA's networking endeavours, would certainly confirm the effectiveness and usefulness of such initiative in the first place, which unfortunately this contribution cannot fully corroborate.

III. Royalty Collection Clearinghouse

The third model to be taken into consideration is the royalty collection clearinghouse,[636] the most advanced one in terms of services provided, namely comprising

634 Along the same line and for a wider policy perspective on PIPRA's initiative and alike, see i.a.: Wright B., "Agricultural Innovation after the Diffusion of IP Protection", "Institutional Initiatives to Encourage Biotechnology Innovations", In: Kesan J., "Agricultural Biotechnology and Intellectual Property: Seeds of Change", CABI Publishing Series, 2007, p. 12 *et seq.*

635 This evaluation follows a personal attempt to gather tangible, practical evidence by specifically addressing the representatives of the organization in order to provide for reliable references supporting the institutional goals proclaimed, i.e. helping public sector technologies to have an impact on developing countries' economy. Regrettably, the feedback received has been evasive and therefore non-satisfactory in this respect.

636 Van Overwalle G., *et al.*, "A Clearinghouse for Diagnostic Testing: the Solution to Ensure Access to and the Use of Patented Genetic Inventions?", Bulletin of the World Trade Organization, 2006, vol. 84, issue 5, p. 352 *et seq.*

some fundamental features of the technology exchange prototype, i.e. partnering technology holders with prospective licensees and eventually initiating the respective negotiations, while combining them with the additional, peculiar prerogative of cashing royalty fees from users on behalf of IP holders.[637]

Similarly to what happens in a patent pool, according to the comprehensive scheme characterizing such type of clearinghouse, the collected royalties will then be re-allocated by the managing entity to the individual patent holders pursuant to a pre-set proportional formula. However, while in a pool the aggregated patents are directly inter-connected with each other, ideally forming a unitary package of complementary technologies, in a clearinghouse the administering entity typically represents the only "point of attachment" for the different right holders, who do not engage in any reciprocal right or obligation.

Classic examples of royalty collection clearinghouses typically refer to the copyright rather than the patent domain, as is indeed the case for many national representative agencies. Copyright collecting societies aim to represent right holders' interests before prospective licensees, usually as part of a statutory scheme, by handling the outsourced function of right management. The underlying idea is that individual management and eventual enforcement is not always appropriate or effective, given the number and arisen complexity of uses involved, therefore right owners typically transfer rights to conclude non-exclusive licenses to collecting societies; collect and then re-distribute respective royalties; pursue enforcement; enter into reciprocal arrangements with other collecting societies and act as lobbying interest groups. Just to quote some representative examples of copyright collecting societies, we may recall the ASCAP (American Society of Composers, Authors and Publishers),[638] the JASRAC (Japanese Society for Rights of Authors, Composers and Publishers)[639] and other country-based agencies, which are normally national members of the CISAC (International Confederation of Societies of Authors and Composers).[640]

Taking into account the thriving experience matured by collecting societies in copyright management, it has been advocated that the model should also be exported into other IP sectors,[641] by supporting the establishment of royalty collection clearinghouses in the field of patents and genetic inventions.[642] Unfortunately, at present

637 Merges R., "Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations", California Law Review, 1996, vol. 84, p. 1293 *et seq.*

638 For the official website of ASCAP, see: http://www.ascap.com

639 For the official website of JASRAC, see: http://www.jasrac.or.jp/ejhp/index.htm

640 For the official website of CISAC, see: http://www.cisac.org

641 For a broader debate on the topic, see: Reichman J., "Legal Hybrids Between the Patent and the Copyright Paradigms", Columbia Law Review, 1994, p. 2432 *et seq.*

642 Organization for Economic Cooperation and Development (OECD), "Genetic Inventions, Intellectual Property Rights and Licensing Practices - Evidence and Policies", "Private and Public Approaches to Access", 2002, p. 72 *et seq.*, also available at: http://www.oecd.org/dataoecd/42/21/2491084.pdf;
Graff G. *et al.*, "Towards an Intellectual Property Clearinghouse for Agricultural Biotechnol-

no working example of the model actually exists, although a praiseworthy attempt to realize such institutional framework has been conduced through the design of the Global Bio-Collecting Society (GBS).[643] In fact, the undertaken project to realize a royalty collection clearinghouse in life sciences did not materialize in the end because no consensus could be achieved among the right holders involved and the needed political support was missing.

The Global Bio-Collecting Society was conceived as an international enforcement agency to coordinate operative work at a national level, functioning as a fair and equitable exchange model for indigenous knowledge between knowledge holders (i.e. indigenous group) and knowledge users (i.e. life science industry) in the commerce of biodiversity.[644] Specifically, it was supposed to be a sort of private collective management institution monitoring the use of traditional knowledge and, consequently, issuing licenses to users and redistributing the collected fees to the respective indigenous groups, as legitimate right holders, in proportion to the extent to which their knowledge is commercially exploited by others. In this regard, it has been rightly observed that even if, for instance, a biologist once described a community's use of the medical effects of a plant in an academic journal without asking permission, this does neither mean that the community has abandoned its property rights over that knowledge, which therefore cannot be treated as "public domain", nor its responsibility to ensure that that knowledge is used in a culturally appropriate manner.[645]

The project of a Biocollecting Society to manage and coordinate efforts at a global level was advanced by Prof. Drahos, of the Australian National University, who first suggested that a property rights-based institution should be established in order to reduce transaction costs, while improving the international enforcement over traditional knowledge and biodiversity related rights,[646] thus generating trust in the market between the holders and prospective commercial users, i.e. licensees.

As we mentioned, the Global Biocollecting Society has been shaped on the model of the collecting societies commonly operating in the copyright domain.[647] However, while the latter are mostly active at the national level, the former shall have been an

ogy", Agricultural Biodiversity and Biotechnology in Economic Development, May 2006, vol. 27, p. 387 *et seq.*

643 Drahos P., "Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Bio-Collecting Society the Answer?", European Intellectual Property Review, 2000, vol. 6, p. 245 *et seq.*

644 Van Overwalle G. *et al*, *supra*, fn. 636, p. 352 *et seq.*

645 Dutfield G., "Protecting Traditional Knowledge: Approaches and Proposals", Feb. 2003, vol. 7, issue 1, p. 13 *et seq.*

646 For the protection of biodiversity, see also: Straus J., "Biodiversity and Intellectual Property", in: Hill K.M., Takenaka T. and Takeuchi K. (Eds.), Rethinking International Intellectual Property -Biodiversity & Developing Countries, Extraterritorial Enforcement, the Grace Period and other Issues, CASRIP Publication Series No. 6, Seattle, 2001, p. 141 *et seq.*

647 Reichman J., *supra*, fn. 641, p. 2432 *et seq.*

international institution.[648] From a legal perspective, its peculiar mandate would be the implementation of the Convention on Biological Diversity',[649] particularly in relation to the protection of traditional knowledge itself. The Convention at issue was in fact adopted at the World Summit in Rio de Janeiro in 1992 and entered into force one year later. For the first time in international law, it recognized that the conservation of biological diversity is "a common concern of humankind", as well as an integral part of the development process. Its three main goals are the conservation of biological diversity (or biodiversity); the sustainable use of its components; and, finally, the fair and equitable sharing of benefits arising from genetic resources.[650]

From a practical perspective, the Global Biocollecting Society shall have been a repository of community knowledge voluntarily submitted by traditional groups and communities: submissions would foster a dialogue between the public involved and interested companies to gain access to relevant information, eventually resulting in fair commercial transactions allowing the lawful exploitation of genetic resources and traditional knowledge in the hands of indigenous populations. Finally, to improve the chances of successful negotiations to benefit local communities, the Global Biocollecting Society could have also provided a range of additional services, such as the market monitoring for the effective commercial uses of the traditional knowledge at issue, as well as an independent dispute settlement body to sort out eventual controversies.[651]

In general, although the Global Biocollecting Society model was constructed to encourage arrangements between indigenous groups and industries exploiting the traditional knowledge at issue and, as we have seen, never actually came to substantial application, it has been argued that the advanced concept could be re-read more broadly and implemented into the more classical IP holder and IP user, i.e. licensee, situation.[652]

The crucial question that eventually caused the collapse of the project was, in fact, mainly the one of finding the needed funds:[653] in this regard, initial reference

648 Drahos P., *supra*, fn. 643, p. 245 *et seq*.

649 Convention on Biological Diversity, June 1992, available at: http://www.biodiv.org/doc/legal/cbd-en.pdf

650 For policy-related issues, visit the Convention's official website homepage at: http://www.biodiv.org; for a broader debate on the topic, see *i.a.*: Pena-Neira S., Dieperink C. *et al.*; "Equitability Sharing Benefits from the Utilization of Natural Genetic Resources : The Brazilian Interpretation of the Convention on Biological Diversity", presented at the 6th Conference of the Parties of the CBD in The Hague, 19th of April 2002.

651 Dutfield G., *supra*, fn. 645, p. 13 *et seq*.

652 Van Overwalle G. *et al.*, "Models for Facilitating Access to Patents on Genetic Inventions", Nature Reviews - Genetics, Nature Publishing Group, February 2006, vol. 7, p. 143 *et seq*.

653 Leesti M. *et al.*, "Institutional Issues for Developing Countries in Intellectual Property Policy Making, Administration and Enforcement", Commission on Intellectual Property Rights, 2002, Study Paper 9, also available at: http://www.iprcommission.org/home.html. In this wide-ranging study of institutional issues related to IP in developing countries, it was shown that institutional organizations, such as the WIPO, the EPO and the World Bank were providing some significant development assistance, but more could be done to improve donor co-

was made to key institutions, such as the World Intellectual Property Organization (WIPO),[654] the Food and Agriculture Organization of the United Nations (FAO)[655] or the World Bank,[656] to build up a joint initiative. Besides, inspiration was drawn from said institutions, as well as from classic copyright collecting societies, to the extent that such entities are able to independently earn incomes from the services provided to the private sector, thus carving out an autonomous way for auto-financing themselves. Nevertheless, the lack of the strong political support necessary in the initial process at last determined the breakdown of the undertaking.[657]

From an overall perspective, a royalty collection clearinghouse mechanism may be more complicated to establish, in comparison to the less engaging clearinghouse models previously analysed. However, once in place, it could operate more effectively by facilitating the collection and distribution of IP royalties, which would take place within a centrally managed, comprehensive procedure. Still, the clearinghouse model under consideration would only be fruitful, from a business viewpoint, if on the one hand there is an effective need to carry on commercial transactions involving the patent rights administered by the clearinghouse, i.e. within the technological sector at issue, and, on the other hand, a significant number of patent holders or, ideally, an entire branch of industry would participate.[658]

IV. Open Source Clearinghouse

Another approach to the "anti-commons" issue, dealing with the fundamental problem of access to overly scattered and fragmented IP rights in the hands of separated, multiple patent owners, is modelled on the "open source" paradigm, which has notoriously first gained popularity within the software industry. In fact, institutions sympathising with such alternative model generally provide "open", i.e. royalty-free, access to targeted assembled technologies, eventually also patented ones, through an "open source" license, which namely subtracts the technologies at issue from private, exclusive appropriation by building a "commons" of contributed IP rights under the terms of the agreement, typically strengthened by a "grant-back"

ordination. The specific recommendations on the point were in fact used as a reference when addressing the creation of a Global Biocollecting Society.

654 For the official website, see: http://www.wipo.int/portal/index.html.en

655 For the official website, see: http://www.fao.org

656 For the official website, see: http://www.worldbank.org

657 Drahos P., "Towards an International Framework for the Protection of Traditional Group Knowledge and Practice", UNCTAD-Commonwealth Secretariat Workshop on Elements of National Sui Generis Systems for the Preservation, Protection and Promotion of Traditional Knowledge, Geneva, February 2004

658 See in this sense: Van Overwalle G. *et al.*, *supra*, fn. 652, p. 143 *et seq.*

provision, thereby further expanding the initial technology pool and consequently preventing the emergence of eventual blocking patents on improvements.[659]

1. Science Commons - A Creative Commons' project

Now, although not specifically limited to biotechnology, a peculiar and remarkable model of worldwide technology exchange promoting the implementation of "open source", i.e. royalty-free approach, in the scientific field is certainly represented by the Science Commons.[660] Since this project, launched in early 2005, has been brought into existence thanks to a successful initiative of the Creative Commons,[661] with which it indeed shares many significant resemblances deriving from the same fundamental inspiring principles, we will start introducing the latter.[662]

Expressing an innovative approach to copyrights, Creative Commons (CC) is actually a non-profit organization, whose tools, since its inception in 2002 and in response to the stand-off between the content industries and the online communities, are provided completely for free. They offer "flexible" copyright licenses for creative works, basically substituting the rigid "all rights reserved" default-concept of traditional copyright with an open and far more adaptable "some rights reserved" principle, following the by contrast called "copy-left" approach.[663]

Indeed, the spectrum of possibilities between full copyright, i.e. "all rights reserved", and the public domain, i.e. "no rights reserved", can be readily defined on a case-by-case basis through a "some rights reserved" approach, pursuant to the artist's individual choice between the standardized licensing options provided within the Creative Commons platform, under which an author basically agrees to give away its work for free, on the condition that, if he so wishes, some of his exclusive rights remain preserved. These could typically be resumed in the following points: the

659 Boettiger S., Burk D.L., "Open Source Patenting", Journal of International Biotechnology Law, 2004, vol. 1, p. 221 *et seq.* According to the authors: "The open source and free software movements have used self-perpetuating copyright licenses to maintain open access to publicly distributed software. This model of licensing has now migrated to the field of biotechnology, where patents rather than copyrights dominate proprietary rights. Consequently, a model for open source patenting or free biotechnology presents a constellation of legal issues not typically found in previous open source licensing. This paper discusses several of these issues, including the nature of the rights transferred, the activities that may trigger the terms of the license, and the legal prohibitions on certain forms of licensing".

660 For the official website, refer to: http://sciencecommons.org

661 For the official website, refer to: http://creativecommons.org

662 Indeed, also from an institutional standpoint, Science Commons - which is housed at and receives material support from the Massachusetts Institute of Technology (MIT), with whom it shares space, staff and inspiration - is overseen in its activities by members of the Creative Commons board.

663 For a general outline, see: Garlick M., "A Review of Creative Commons and Science Commons", Educause Review, September/October 2005, vol. 40, no. 5, p. 78 *et seq.*

right of attribution, the prohibition of unauthorized commercial use or derivative works and, eventually, the obligation to distribute derivative works only under licensing terms that are identical to the original ones.[664] Practically, through sites and databases linked to Creative Commons a user can search for audio, images, text, video and educational material that can be freely shared online without restriction, using means of digital distribution, like Peer-to-Peer networks, with the author's given consent, and thus completely legally.[665]

Beyond copyrights, Science Commons aims to expand the Creative Commons' mission into the realm of scientific and technical data. Indeed, as the latter does with copyright issues regarding the use of protected material, the former primarily aims to encourage technology transfer by stimulating IP owners to take up standardized licensing terms inspired to transparency and openness in the use of biotechnologies, thus mostly implementing a royalty-free approach, basically inspired by the same "open source" community ethos which is gaining more and more ground within the software industry. For this reason, Science Commons may be seen as a model, in which technology exchange and an open source clearinghouse are combined: in fact, said organization does not merely link offer and demand, i.e. partnering technology holders and prospective licensees by providing the setting to eventually initiate negotiations, as all other considered examples of technology exchange clearinghouses do, but it additionally pursues the goal of promoting the adoption of standardised, transparent technology licensees, to a large extent conforming to a so-called "open access" approach, on a global scale.[666]

Concretely, Science Commons' constitutive intent is "promoting innovation in science by lowering the legal and technical costs of the sharing and reuse of scientific work" and by "removing unnecessary obstacles to scientific collaboration by creating voluntary legal regimes for research and development".[667] Their overall goal is therefore to encourage stakeholders to create – through standardized licenses and other means that we will properly consider in the following – common areas of free access and inquiry, i.e. a so called "science commons", built out of private agreements.

Among other things, the Science Commons Data project[668] explores ways to promote broader access to scientific data, taking greater advantage of the World Wide Web. In fact, promoters of this initiative have voiced some concerns about current expansive trends in intellectual property law as far as databases are concerned, mainly intervening through the creation of "sui generis" protection systems,

664 For more details, refer to: http://creativecommons.org/about/licenses

665 For more details on the licensing terms adopted, see, for example, for the distribution of music: http://www.jamendo.com/en/static/artists_why

666 For an overview on the particular debate on the important role of universities and research institutions for access to medicines, see: Nelsen L., "The Role of University Technology Transfer Operations in Assuring Access to Medicines and Vaccines in Developing Countries", Yale Journal of Health Policy, Law and Ethics, 2003, vol. 3, p. 301 *et seq.*

667 For the exact opening quotation from their official website, see: http://sciencecommons.org

668 For more details, see: http://sciencecommons.org/data

thus imposing new legal limits on the sharing of data both among scientists and with the general public.

Where IP protection applies to databases,[669] the Scientific Commons aim at encouraging the adoption of Creative Commons licenses, as examined in more detail above, subject to the right holder's consent, in order to foster the royalty-free diffusion to scientific data. Besides, one major goal in enhancing access to scientific data has been identified in the coordination of technical resources and research opportunities in a digitally networked environment so as to maximize the data's public utility.

This may be partly achieved by developing network standards[670] to facilitate research cooperation and by creating a collaborative platform linking to relevant databases covering targeted scientific domains.

In fact, Science Commons are not building a self-administered database of free-licensed content, as they believe in the Internet rather than a centralized information bank controlled by a single organization.[671]

Accordingly, they are not collecting content for a new, central database, but are building tools so that the semantic web can identify and sort databases, providing free access to users, in a coherent decentralized manner.

Increasingly, various sorts of data are indeed being stored in formats that computers can understand and manipulate, allowing databases, through particular web interfaces, to communicate. This enables the extraction and interpretation of data from different sources and the creation of entirely new data products and services.

In biotechnology research, for instance, rather than creating centralized monolithic databases, scientists could interrogate existing databases, wherever the data are held, weaving together, in hypothesis, all the relevant data on a species, from its taxonomy and genetic sequence to its geographical distribution.

Moreover, such decentralization would help to solve the problem that databases are often the fruits of individual or lab research projects that unfortunately are vulnerable to the vagaries of funding. Accordingly, although discipline-specific databases have an indisputable role, science also needs to capitalize on large common

669 About the problem of data access, the Journal of the American Medical Association published a study in 2002 describing a world where 47% of academic geneticists had been rejected in their efforts to secure access to data or materials related to research by other academics. This represented an increase from 34% from a previous study in the mid 1990s. For the integral study, see: Campbell E., *et al.*, "Data Withholding in Academic Genetics: Evidence from a National Survey", Journal of the American Medical Association (JAMA), April 2002, 287, p. 1939 *et seq*.

670 For an overview on the legal and policy debate on the merits of promoting IP in connection with network standards, see most recently, i.a.: Mackenrodt M., "Assessing the Effects of IP Rights in Network Standards", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 80 *et seq*.

671 See: Benkler Y., "The Wealth of Networks: How Social Production Transforms Markets and Freedom", Yale University Press, 2006.

repositories for data, whose preservation is guaranteed, and in which the data can easily be used by anyone.

However, the functioning of such web services is certainly also dependent on computers being able to freely retrieve data, without access barriers, in real time. On the one hand, scientists can be well justified in wanting to retain privileged access to data in the collection of which they have heavily invested, with publications mostly pending; on the other hand, there are also huge amounts of data which do not need to be kept behind walls and which could be, in hypothesis, made available under a Creative Commons licence, allowing their seamless access by computers, without prejudices for their owner.[672]

2. BioBricks Foundation

The BioBricks Foundation (BBF)[673] - a not-for-profit organization founded by engineers and scientists from the Massachusetts Institute of Technology (MIT), Harvard, and the University of California at San Francisco (UCSF) with significant experience in biotechnology research - provides for an example applying the free, collaborative Science Commons' philosophy to data access, thus also reflecting the model of an open source clearinghouse.

The BBF encourages the development and use of technologies based on BioBricks, i.e. standard DNA parts that encode basic biological functions. Using BioBricks, they claim that a synthetic biologist or biological engineer can already, to some extent, program living organisms in the same way a computer scientist can program a computer. In conformity with the Science Commons' philosophy, the DNA sequence information and other characteristics of BioBricks are made available to the public, free of charge, via the MIT's Registry of Standard Biological Parts.[674]

Indeed, BBF's stated goals are to encourage the development of codes of standard practices for the access of scientific data, as well as to implement legal strategies to ensure that BioBricks remains freely available to the public both to use and improve existing sequences and to contribute to new developments, thereby contrasting the growing trend of biotechnologies being tied up through patents held by different companies, which makes the design of integrated biological systems, that use these technologies, very difficult.

Finally, BBF believes that having a shared pool of basic biotechnology functions would help innovation and growth in the life sciences industry as a whole. In fact, although there is no "Microsoft" of biological engineering to fight, as is instead the case for the Open Source Community within the strongly bi-polarized structure of

672 Editorial, "Let data speak to data", Nature, December 2005, vol. 438, p. 531 *et seq.*
673 For the official website, see: http://bbf.openwetware.org
674 For the website, see: http://parts.mit.edu/registry/index.php/Main_Page

the software industry, supporters of the Science Commons ethos still hope to see biological engineering develop differently than the latter: in this respect, early establishment of a biological commons to be shared by industry as well as individual researchers might help to prevent the "us vs. them" attitude that occurred for software.

Nevertheless, concrete evidence about successful BioBricks-based technological applications is maintained as confidential and, therefore, a more far-reaching assessment on the practical merits of such initiative could not be reached within the scope of this contribution.[675]

3. CAMBIA's Biological Open Source (BiOS)

The Biological Open Source (BiOS) initiative[676] falls under the institutional umbrella of CAMBIA,[677] the same Australian-based, not-for-profit plant biotechnology research centre that has also boosted the Patent Lens[678] free-accessible biotechnology database, which has been already briefly outlined when analysing some illustrative, practical applications of the simpler information clearinghouse scheme within the domain of life sciences.

The present initiative aims to build a "protected commons" of biotechnologies, i.e. a collaborative environment to share and contribute to innovations,[679] by adopting non-exclusive, royalty-free licensing terms and thereby attempting to extend the so called "open source" paradigm, as already broadly established in the software industry, to the domain of life sciences.[680]

In fact, the open source model can be seen, in general terms, as a business practice based on the free sharing of technologies among all those who agree to stick to non-restrictive contractual terms, also as far as further related improvements are

675 This conclusion follows a personal attempt to gather tangible, practical evidence by specifically addressing the representatives of the organization in order to provide for reliable references supporting the institutional goals proclaimed. Regrettably, the feedback received has been evasive and therefore non-satisfactory in this respect.

676 For the official website, see: http://www.bios.net/daisy/bios/home.html

677 For the official website, see: http://www.cambia.org/daisy/cambia/home.html

678 For the official website, see: http://www.patentlens.net/daisy/patentlens/patentlens.html

679 Nevertheless, a personal attempt to gather tangible, practical evidence by specifically addressing the representatives of the organization in order to provide for reliable references supporting the institutional goals hereby proclaimed has remained unfulfilled. Indeed, the feedback received has been evasive and non-satisfactory in this respect.

680 The term "open source" refers to software whose source code - i.e. the human readable code as opposes to the only computer readable binary "object code" - is published and made available to the public under a license that permits users to study, change, and improve the software, and to redistribute it in modified or unmodified form. It is often developed in a public, collaborative manner. For more information, see: http://opensource.org; For a thorough analysis on the open source model and ethics, see i.a.: Hope J., "Biobazaar: The Open Source Revolution and Biotechnology", Harvard University Press, 2008; Raymond E., "The Cathedral and the Bazaar", O'Reilly Media, 1999.

concerned and towards all who have subscribed to the same conditions, i.e. within the community.[681] Besides, promoters of the initiative under consideration, aside from actively fostering a collaborative work environment among researchers, are advancing their tenets directly by making their own IP rights in the area of plant biotechnology available according to the same terms of their BiOS licenses.[682]

In other words, scientists adopting BiOS licenses may still own patents on their inventions, but cannot keep others from employing or eventually building innovative solutions based on the core-technologies at issue, i.e. they agree not to assert exclusive rights against the licensor or other licensees within the "protected commons".[683] In fact, instead of paying royalties, contractual parties to the BiOS project are to adhere to legally binding conditions, at the outset, in order to obtain a license and access to the shared technology platform: in brief, what is provided with open access has to be further maintained and redistributed on the same terms, as licensees shall not appropriate the fundamental "kernel" of the technologies at issue exclusively for themselves. The underlying idea of the employed licensing scheme is in fact explicitly inspired to the widely employed open source software's General Public License (GPL),[684] actually taken as a benchmark by the BiOS promoters.

However, from a critical point of view and pursuant to its self-perpetuating character, alongside similar models, the GPL has been described by its opponents as being "viral", because its conditions require that all modified versions of the software must in turn be licensed under the GPL.[685] Besides, if licensors adhering to the "protected commons" scheme should desist from claiming royalties for all innovations based on BiOS technologies - by the way, regardless of the substantial weight the latter actually had on the subsequent invention - then the arising question shall be the one of whether there are any incentives left to spur further innovations at all, with the connected non-negligible research and development costs. In other words, if we cut out the regular sources of income coming from prospective licensing fees, how can valuable R&D expenditure, aside from considerable patent expenses, be covered in the first place? In fact, even maintaining that research barriers are lowered because of the free access provided by the sharing platform in place, high patenting costs cannot be neglected, and this aspect seems to have been quite under-

681 For a general overview, see: Perens B., "Open Sources: Voices from the Open Source Revolution", O'Reilly Media, 1999; Lerner J., Tirole J., "Some Simple Economics of Open Source", Journal of Industrial Economics, 2002, vol. 50, no. 2, 197 *et seq*.

682 Sheridan C., "Out to Break Biotech's IP Stranglehold", Science Business, June 2006, p. 1 *et seq*.

683 For an outline on BiOS' business model, see i.a.: Van Caenegem W. et al., "Biological Innovation for Open Society", "Intellectual Property Policy Reform: Fostering Innovation and Development", Edward Elgar Publishing, 2009, p. 143 *et seq*.

684 For the General Public License terms, see GNU's official website at: http://www.gnu.org/licenses

685 Mundie C., "The Commercial Software Model", Speech Transcript, Prepared Text of Remarks, The New York University Stern School of Business, May 2001, also available at: http://www.microsoft.com/presspass/exec/craig/05-03sharedsource.mspx

mined when affirming that the BiOS platform is also perfectly suitable for patented technologies.[686]

Ultimately, the claim of the BiOS supporters that companies can make money out of the end product and services as an alternative to the licensing of the underlying IP (which they call mere "tools of innovation")[687] seems quite naive, as it completely overlooks the fact that when a newly released biotechnology is left to the free disposal of others, competitors may well come out with very similar, if not identical, products taking a rather unfair advantage of the long and costly research and development already done by others. In fact, here a key difference to the software industry is that it is actually hard to make money out of the end product or services, i.e. the developed biotechnology, without enforcing the underlying IP rights, as one is closely connected with the other;[688] the successful business enterprises based on the open source software model, on the other hand, seemingly found a real opportunity of success in the fact that, although software and hardware are closely inter-related, the latter has a market on its own and represents a commercially viable means of distribution for the former, as the IBM case proves.[689]

Moreover, although BiOS licenses are purportedly available at no cost, for-profit licensees are anyway charged with maintenance fees which are due to access the BiOS platform, as it is expressly claimed that "it is costly to maintain an exchange of materials and improvements, and to develop […] an information technology commons so that licensees can share biosafety and improvement data and collaborate on working around barriers to innovation. Thus, BiOS licenses are associated with a Technology Support Agreement, in which we ask for-profit licensees to pay some of these costs, at rates related to size of the enterprise […]. Other than cost recovery for material handling non-profits are not asked to contribute".[690] This statement appears quite inconsistent with the otherwise at first glance widely advertised "free access" to the technologies at issue and it seems to apply different measures to the higher costs associated with the patenting, on the one hand, and to the claimed service delivery costs, which are certainly lower, on the other hand, resulting in the exclusive unjustified sacrifice of the former.

Ultimately, a great deal of confusion seems to have been misleadingly introduced as far as the use of the term "open access" is concerned. Indeed, "open" and "free" access are not necessarily synonyms,[691] as licenses may well be open to all interested parties, for instance under fair and non-discriminatory (RAND) terms, without therefore having to be definitely royalty-free. Both business types can in fact co-

686 For details, see: CAMBIA BiOS Initiative - Proposal, Implementation Phase 2006 - 2008, January 2006, available at: http://www.bios.net/daisy/bios/2029/version/1/part/4/data

687 CAMBIA BiOS Initiative - Proposal, Implementation Phase 2006 - 2008, January 2006, p. 4, available at: http://www.bios.net/daisy/bios/2029/version/1/part/4/data

688 Bearing otherwise the risk of so-called "free-riders" misappropriating your invention.

689 For more information, see: http://www-128.ibm.com/developerworks/ibm/library/i-osource1

690 For the reference, see: http://www.bios.net/daisy/bios/licenses/398/2535.html

691 For more details, see the definition of free software, as opposed to mere open source software, available at: http://www.gnu.org/philosophy/free-sw.html

exist in a competitive environment, and the condition of being "open" is certainly not a prerogative of the free model only.

Finally, a few words still need to be said regarding the fundamental differences between such a peculiar mechanism - hereby assimilated to an open source clearing-house - and a patent pool. In this regard, BiOS promoters contend that while patent pools are usually open only to a selected group of players who already own enough technology to trade it against others for privileged access, thus purportedly being inaccessible to any player or industry that does not have any leverage, the BiOS patent portfolio, by contrast, shall be available for anyone agreeing on the BiOS licensing terms.[692]

In fact, this assumption seems to be strongly misleading because it appears to put technology contributors (i.e. pool members) and third parties (i.e. licensees) on the same plan. Indeed if, on the one hand (i.e. as far as pool members are concerned), it is true that a patent pool needs to target only defined market players in order to ideally include only essential, complementary technologies, thereby avoiding anti-trust issues, on the other hand (i.e. as far as licensees are concerned), it is not equally true that a patent pool makes any difference as to the third parties with whom it eventually enters into routine bilateral licensing agreements, where fair and non-discriminatory (RAND) terms are typically implemented to comply with competitive conditions.

In this respect, the most apparent difference between a patent pool and a BiOS-alike platform is that, in the latter, there is no real distinction of treatment between initial contributors and interested licensees: as soon as you wish to get access the so called "protected commons", you are asked to subscribe to the same participation terms of its contributors: namely, in exchange for according you the right to view, use and eventually modify the technologies at issue - instead of charging you with royalty fees - they ask you to endorse the obligation of granting back to the Community all improvements deriving from the BiOS technologies under the same conditions.[693]

On the other hand, in a patent pool, so called "grant back" clauses, if at all, apply exclusively to the patent pool's members and are typically limited to essential, complementary technologies that directly relate to the pooled package; third party licensees, instead, are not concerned with such obligations, as their only commitment consists in complying with the negotiated royalties according to the standards terms of the bilateral agreement. In this perspective, the BiOS platform appears as a sort of "floating pool", encompassing all derivative improvements based on the originally contributed applications, therefore progressively expanding its "technological mass".

692 CAMBIA BiOS Initiative - Proposal, Implementation Phase 2006 - 2008, January 2006, p. 29, available at: http://www.bios.net/daisy/bios/2029/version/1/part/4/data

693 CAMBIA BiOS Initiative - Proposal, Implementation Phase 2006 - 2008, January 2006, p. 28 *et seq.*, available at: http://www.bios.net/daisy/bios/2029/version/1/part/4/data

In this respect, the view is taken that a collaborative consortium, as a patent pool, proposing affordable and non-discriminatory licensing terms, may well achieve objectives at least partly comparable to those of an open source clearinghouse, i.e. ensuring wide (i.e. "open", but not necessarily also "free") access to the relevant technologies for the benefit of interested third parties. However, at the same time, patent consortia other than the examined open source model are also employing auto-financing mechanisms to recoup the costs undergone independently, through their own generated royalty flow, without having to rely on some alternative forms of public funding to subsidize their own existence in the first place.

Chapter 7 Conclusions: the Way Forward

Confronted with the several and somehow inevitable "flaws" encountered in the different patent regimes, whose seamless functioning is frequently hampered by an intricate web of overlapping rights, the view is here represented that licensing strategies involving the cooperation of multiple patent owners may well represent a constructive solution to clear the way through the "patent thicket",[694] by enabling participating parties to gain "freedom to operate" within closely interrelated technological domains.

While much of the otherwise engaged discussions call for the need of legislative interventions, involving an "external", whole-comprehensive reform of the delicate patent system's architecture,[695] this contribution invites to focus on "internal" strategies that can be carried forward by the patent holders themselves, by tactically joining their forces.[696]

Indeed, while on the one hand, legislative interventions aimed at improving the patent "bureaucracy", for instance by advocating a faster and more selective granting procedure,[697] remain more difficult to put in place, mostly due to their broader

694 Patent pools have been expressly proposed as a way firms can address the overlapping patents' problem by a number of authors, among which the most notorious are Priest (1977), Merges (1999) and ultimately Shapiro (2000), this latter having coined the term "patent thicket" itself. See in this respect: Shapiro C., "Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standards-Setting", University of California at Berkeley, March 2001, also available at: http://www.haas.berkeley.edu/~shapiro/thicket.pdf

695 For a current and comprehensive study on the current patent reform and harmonization efforts in place, see i.a.: Straus J., and Klunker N., "Harmonisierung des internationalen Patentrechts", In: GRUR Int., 2007, Nr. 2, p. 91 *et seq*.

696 Along the same line, i.a.: Hope J. et al., "Cooperative Strategies for Facilitating the Use of Patented Inventions in Biotechnology", In: Rimmer M., "Patent Law and Biological Inventions", Federation Press, 2006, Law in Context, vol. 24, p. 87. Quoting the reported author's main statement: "At the outset, we assume that wholesale reform of the patent system is both inappropriate and impractical. Rather, a measured approach is necessary, reflecting the delicate balance of innovation […] We see a benefit in expanding patent owners' repertoire to include industry-driven mechanisms that may be more finely tuned to the needs of particular industry participants or group of participants. Such mechanisms may be adjusted to take account of trial and error learning in specific industry contexts, and may engender greater commitment on the part of industry than involuntary, 'top down' regulation".

697 Indeed, the need of improving the overall administration of the patent offices' filtering patent application procedure worldwide, which is certainly more than consistent, have been again recently and persuasively advocated *i.a.* by: Straus J., "Is There a Global Warming of Patents", The Journal of World Intellectual Property, vol. 11, no. 1, p. 58 *et seq* .
In particular, sharing a widely felt pragmatic approach, there the author argues against the critical comparison between the raise into patent applications and a "global warming of patents", fundamentally disputing that since the growing patent trends registered worldwide have some strong economic and legal grounds, the solution to contain the final output shall

scope and inevitable political strings, on the other hand, patent pools and similar collaborative business strategies are hereby embraced as a convenient, more flexible alternative to overcome the unwanted impasses of our patent regime.

In this respect, the view is taken that sustainable improvements can effectively be achieved aside from legislative reforms, when right holders choose to link their resources into cooperative licensing strategies, thus clearing "pathways" through the "patent thicket". Given their "voluntary" nature, such solutions evidently offer substantial advantages over a complex, often politically influenced legislative reform, entailing a lengthier and more rigid procedure.

Therefore, since the problem of "blocking patents" and "holding up" situations, more and more often encountered in highly concentrated technological domains, could not be easily obviated at the source, through a radical reform of the patent system, this contribution purposely embraces the current market trends, in the attempt to define and bring forwards "best practices" for collaborative business strategies.

Accordingly, within the delineated scope of this dissertation, while in principle different types of collaborative IP models can be envisaged in the technological domain, the focus is specifically brought on patent pools and clearinghouses mechanisms, where selected patterns established in both domains are more closely analysed.

In comparison, drawing some conclusions from the practical applications outlined, patent pools appear to offer an additional advantage when confronted with technology clearinghouses. In fact, although a pool may have to pass a closer antitrust scrutiny in order to prove pro-competitive, as of today it basically remains the only model soundly set up. Indeed, the real value and effectiveness of most clearinghouse mechanisms remain to be proved when applied to patent rights, since practical, tangible evidences of successful innovations and/or partnerships fostered through the networking endeavours of such institutions are not easily traceable.[698]

In the context of collaborative IP applications, at the core of this contribution special attention is dedicated to strategic business alliances promoting access to key innovations within life sciences. Here, the concrete prospects of implementing such cooperative schemes have brought into the limelight the potential for new rewarding opportunities.

In this domain, the motivations for cooperation lay at hand**:** as IP portfolios of flourishing biotechnology industries are taking shape, transactional costs of increasing technology transfer begin to account for a non-affordable portion of an average company's precious research and development expenditures. In fact, expensive negotiations, and the threatening exposure to even higher potential litigation's fees,

not consist in a general overhaul of the patent system, but in a more efficient management of its international administration.

698 This evaluation follows a personal attempt to gather tangible, practical evidence by specifically addressing the representatives of the organizations outlined in order to provide for reliable references supporting the respective institutional goals proclaimed. Regrettably, the feedback received has been evasive and therefore non-satisfactory in this respect.

constitute a serious economic inefficiency that may dislocate fundamental resources from the "core-business" of biotechnology.

Nevertheless, it has been shown that the patent pool's stereotype that has emerged in the electronic and communication industries[699] cannot be blindly transposed on a one-to-one basis in the biotechnology sector, considering the peculiarity of the industry at issue. Accordingly, elements of novelty have been properly outlined in the assessment and application of the general collaborative IP formula in the domain of life sciences.

In this respect, some illustrative "first hand" experiences of biotechnology patent pools and clearinghouse mechanisms have been reported, although most of these projects may still be classified as in a "pilot" phase, since few cases have reached the necessary "maturity" for a conclusive judgement on the sustainability of such implementations.

The case studies hereby outlined, covering some selected examples of both relatively established and experimental collaborative IP practices involving patented technologies, have been evaluated within the relevant regulatory framework on the base of the competitive parameters at hand. In particular, the legal analysis engaged has covered both the EU and the US regimes, in an attempt to find a common ground for the comparative assessment of patent pooling mechanisms.

In fact, in consideration both of the intertwined effects of national regulations and of the business importance gained by such collaborative practices, whose impact tends to go beyond individual geographical borders, the undergone evaluation has been primarily developed through a comparative perspective.

In the US the relevant legislative reference is the Department of Justice and Federal Trade Commission's Antitrust Guidelines for the Licensing of IP ("IP Guidelines"), issued in April 1995.[700] These marked the beginning of a progressively matured and more balanced approach towards pooling agreements, thereby overcoming the preconception of patent pools as "legal monopolies"[701] and eventually introducing a new evaluation procedure based on the so-called "Rule of Reason".[702]

699 Aoki R. *et al.*, "Coalition Formation for a Consortium Standard through a Standard Body and a Patent Pool: Theory and Evidence from MPEG2, DVD and 3G", Institute of Innovation Research Working Paper, 2005.

700 U.S. Department of Justice and Federal Trade Commission, Antitrust Guidelines for the Licensing of IP, April 1995, available at www.usdoj.gov/atr/public/guidelines/ipguide.htm

701 The preconception of patent as "legal monopolies" can today be rejected as false and misleading on the base of the factual consideration that, other than in the true case of a legal monopoly, alternative technologies that do not infringe the patent may well coexist in the marketplace, as provided by competitors. For an overview on the issue, see i.a.: Serafino D., "Early Pools Associated with Monopolies and Cartels (1856-1919)" in "Survey of Patent Pools Demonstrates Variety of Purposes and Management Structures", Knowledge Ecology International Studies, June 2007, p. 9, at: http://www.keionline.org/content/view/69/

702 This advocates the adoption of a contextual and pragmatic approach in the evaluation of the overall pro- and anti-competitive effects of a patent pooling agreement. On the "Rule of Reason", see: Sec. 4 "General principles concerning the Agencies' evaluation of the rule of reason" of the U.S. Department of Justice and Federal Trade Commission, Antitrust Guidelines

These IP Guidelines, complemented by a joint report dedicated to "Antitrust Enforcement and IP Rights: Promoting Innovation and Competition", released in April 2007,[703] outline the competitive approach of the US federal antitrust agencies with regard to technology licensing issues. Such Guidelines, being the first of their kind, clearly represent the modern "archetype" on which the assessment of patent pools is still based nowadays.

The position endorsed is indeed based on the cardinal assumption that preserving the incentive for both creative efforts (trough patent law) and competition (trough antitrust) is fundamental for the progress of society. This principle of balance was indeed already incardinated in the FTC's report of October 2003: "To Promote Innovation: the Proper Balance of Competition and Patent Law",[704] according to which: "competition and patent stand out among the federal policies that influence innovation",[705] thus in a reciprocally complementary role.

Analogously, in the EU the analysis is essentially centred on Art. 81 of the European Community Treaty (EC Treaty), addressed to undertakings, which basically prohibits certain anti-competitive agreements and concerted practices to the extent that they may significantly affect trade between EC member states, thereby delineating the power of intervention of the European Commission in the first place. The agreements caught by such prohibition shall be automatically void, except if they can be individually exempted pursuant to the criteria of the last paragraph, when fundamentally it can be proved that the long term pro-competitive effects of the agreement outweigh its first accused anti-competitive restraints, thus resulting into an overall positive balance.[706]

However, because such case-by-case exemption entails a lengthy and costly procedure, the European Commission eventually has issued a "Technology Transfer Block Exemption Regulation" (TTBER),[707] which entered into force on the 1st of

for the Licensing of IP, April 1995, available at: www.usdoj.gov/atr/public/guidelines/ipguide.htm

703 U.S. Department of Justice and Federal Trade Commission, "Antitrust Enforcement and IP Rights: Promoting Innovation and Competition", Joint Report, April 2007, available at: http://www.ftc.gov/reports/innovation/P040101PromotingInnovationandCompetitionrpt0704.pdf

704 Federal Trade Commission, "To Promote Innovation: the Proper Balance of Competition and Patent Law", Report, October 2003, available at: http://www.ftc.gov/os/2003/10/innovationrpt.pdf

705 See: Executive Summary, p. 1 et seq. in: Federal Trade Commission, "To Promote Innovation: the Proper Balance of Competition and Patent Law", Report, October 2003, available at http://www.ftc.gov/os/2003/10/innovationrpt.pdf

706 With respect to said"efficiency goal" of Art. 81 and 82 EC, the complementarity of IP and competition law's protection has been recently supported also by: Kolstad O., "Competition Law and IP Rights – Outline of an Economic-Based Approach", In: Drexl J. ed.: Research Handbook on Intellectual Property and Competition Law, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, 2008, p. 3 *et seq.*

707 Commission regulation (EC) No. 772/2004 of 27 April 2004 on the application of Art.81(3) of the Treaty to categories of technology transfer agreements, OJ 2004 L 123/11 (TTBER),

May 2004, where all agreements falling within the so called "safe harbour" of said regulation are exempted in "block", so altogether and automatically, thereby overcoming the need of separate, individual exemptions.

Nevertheless, since the TTBER only applies to technology transfer agreements involving two undertakings, patent pools represented by more parties could not directly benefit from the block exemption and were therefore subsequently covered by some Guidelines on the Application of Article 81 of the EC Treaty to Technology Transfer Agreements.[708] Basically, these were inspired by the same principles underlying the TTBER, which sustain the whole delicate architecture on which the competitive assessment of patent pools and similar practises is built. As observed throughout the comparative analysis hereby conducted, such Guidelines are in line with the fundamental approach anticipated by the US federal antitrust authorities.

As it has become apparent when taking into consideration the legislative framework for the assessment of patent pooling mechanisms, the focal point keeps on turning around the interface between intellectual property rights and antitrust law. In fact, the strive towards an "equilibrium" between patent and competition law, whose evolution has been retraced along with the legislative history of the multiparty licensing agreements in consideration, represents the aim of this contribution.

In this respect, when retracing the legal treatment of patent pools and similar collaborative practices under the major patent regimes considered, the attempt to achieve a balanced assessment, by weighing the different underlying interests involved, has been indeed a constant common challenge.

Nowadays, a positive signal may be detected in the internal consistency among the antitrust regulations of the systems outlined, where the view is taken that a given proximity may be perceived.[709] In fact, fundamentally the relevant provisions at issue seem aligned on similar principles, thereby overcoming most of the conflicts traditionally ascribed to IP and antitrust law.

Nevertheless, just as the antitrust authorities are catching up with the assessment of patent pools and assimilated multiparty agreements in their simplest form, these are becoming increasingly complex, thus giving way to new, still unexplored issues. In this respect, in order to be prepared and keep pace with common arising chal-

available at:
http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&model=guicheti&numdoc=32004R0772

708 Commission Notice - Guidelines on the Application of Article 81 of the EC Treaty to Technology Transfer Agreements, O.J. C 101 , 27 April 2004, Section 4 "Technology Pools", available at:
http://europa.eu.int/eur-lex/lex/Notice.do?val=358871:cs&lang=en&list=343592:cs,343498:cs,358871:cs,287758:cs,282404:cs,256769:cs,224308:cs,222857:cs,215479:cs,215452:cs,&pos=3&page=1&nbl=50&pgs=10&checktexte=checkbox&visu=#texte

709 This view was also expressed in: Armillotta M., "Japanese Guidelines on Standardization and Patent Pools Arrangements: Practical and Legal Considerations under the Current Antimonopoly Act – A Global Perspective", Institute of Intellectual Property, Book Series, October 2008.

lenges, the view is taken that it is of outmost importance that the competent bodies present a united front, keeping aligned in order to reach consistent solutions.

Indeed, only through coordinated endeavours, inspired to a certain dose of pragmatism and reaching beyond the peculiarity of individual cases and national borders, the solutions provided may prove truly viable on the long-term, thereby better serving the fundamental cause of innovation also on a global scale.

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