

Introduction

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1. ACCESS IN A PARTICIPATORY NETWORKED ENVIRONMENT

Events related to intellectual property (IP) laws appear as prominent news items with increasing frequency.¹ Their common thread is a growing concern, almost an anxiety, about the ability to access and use information and the far-reaching implications of a restricted flow of information.²

In a knowledge-based economy, knowledge is the *output* of the production process and therefore constitutes the basis for wealth generation and economic growth. The inevitable counterpart is that knowledge

¹ Street demonstrations in a number of European countries against the ratification of the Anti Counterfeiting Trade Agreement (ACTA) by the EU Parliament: Thousands take to streets across Europe. <http://www.bbc.co.uk/news/technology-16999497>; Internet blackouts in the US voicing opposition to the Stop Online Piracy Act (SOPA) <http://www.theverge.com/2012/1/18/2715300/sopa-blackout-wikipedia-reddit-mozilla-google-protest>; a Cambridge professor initiating an organized boycott of Elsevier due to exorbitantly high prices for subscriptions <http://thecostofknowledge.com>; the smart phone war waged in at least 10 different jurisdictions among the leading market share holders in the industry, and so on.

² The terms 'information' and 'knowledge' will be used interchangeably for purposes of the present writing, but it should be noted that scholarly literature differentiates them. R.L. Ackoff, From Data to Wisdom, *Journal of Applied Systems Analysis*, Volume 16, 1989, pp. 3–9, classified the content of the human mind into the following categories: data, information, knowledge, understanding and wisdom, a system also referred to as the DIKW hierarchy or the 'knowledge pyramid'. In general, 'information' is defined as material that has some relational connection with other information, responding to questions such as who, what, where, when and why, and 'knowledge' as a collection of information intended to be useful. D. Beldiman, *Functionality, Information Works and Copyright*, Yorkhill Law Publishing, 2008, p. 42; *see also* R. Kampf, Chapter 9 of this volume.

also forms the necessary *input* into the process of knowledge production and wealth generation. To function efficiently, these processes require a massive, unrestricted flow of information and knowledge, sufficient to satisfy the growing input needs of the new, distributed model of knowledge production brought about by digital technology.

Digital technology has caused the physical means of producing knowledge, including production, processing storage and communication, to drop to a price level that makes them widely accessible to individual actors. Individual creativity can thus develop outside established hierarchical structures and play an increasing economic role.³ Web 2.0 technology has further facilitated knowledge production, by providing platforms that allow large numbers of loosely associated individuals to participate in the production process.

There seems to be little dispute that networked technology is headed towards even greater distributed use of physical means and even broader participation and production of knowledge.⁴ These dual dynamics tend to fuel each other: efficiencies in knowledge production will increase physical production capabilities, which, in turn will produce more knowledge, only to enhance physical capabilities, and so on, in an ongoing symbiotic progression. At a macro level, therefore, the dynamics of a massively participatory networked environment can be expected to exert pressure towards convergence of the 'universe of existing information, knowledge'⁵ and free flow of information within the network. This aggregation of knowledge, would lead to facilitated access and

³ Y. Benkler, *The Idea of Access to Knowledge and the Information Commons: Long-Term Trends and Basic Elements*, in A. Kapczynski and G. Krikorian (eds), *Access to Knowledge in the Age of Intellectual Property*, Zone Books, 2010, p. 227; A. Stazi and M. Marzetti, Chapter 7 of this volume; F. Gault and E. von Hippel, *The Prevalence of User Innovation and Free Innovation Transfers*, MIT Sloan School of Management Working Paper #4722-09, 2009, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1337232; C. Baldwin and E. von Hippel, *Modeling a Paradigm Shift: From Producer Innovation to User and Open Collaborative Innovation*, *Organization Science*, 2011, Vol. 22, Issue 6. <http://dl.acm.org/citation.cfm?id=2071327.2071330&coll=DL&dl=GUIDE&CFID=209151292&CFTOKEN=87524186>.

⁴ As cloud computing becomes prevalent and information and knowledge become part of 'big data'. *See also* L. Lessig, *Remix: Making Art and Commerce Thrive in the Hybrid Economy*, Penguin Books, Ltd., 2008; A. Stazi and M. Marzetti, Chapter 7 of this volume; Y. Benkler, *supra* note 3.

⁵ Y. Benkler, *The Wealth of Networks. How Social Production Transforms Markets and Freedom*, Yale University Press, 2006, p. 469.

greater efficiency in the use of knowledge in the production of further knowledge.⁶

The pressure towards convergence is resisted by restrictions placed on the flow of information for reasons of social policy, IP laws being perhaps the most significant. IP laws were largely born from the realities of the 18th and 19th centuries. As the 21st century advances, they are increasingly criticized as being out of step with technological capabilities and unable to meet the information needs of a globalized economy.⁷ Many see IP laws as an impediment to the free flow of information. Calls are multiplying for the adaptation of IP laws to the knowledge-based economy's needs for massive knowledge input.⁸

IP laws are conventionally rationalized by the risk of market failures or inefficiencies. This is so because underprotection of intangible goods is feared to lead to an undersupply of information products.⁹ Nevertheless, as scholarly literature points out, the risk of dysfunctionality may also arise from overprotection of intangibles.¹⁰ Overprotection may produce an 'inverse' form of market failure, because development often hinges on the input of knowledge and the ability to access and use existing

⁶ See generally Y. Benkler, *supra* note 3; L. Lessig, *supra* note 4.

⁷ 'Could it be true that laws designed more than three centuries ago with the express purpose of creating economic incentives for innovation by protecting creators' rights are today obstructing innovation and economic growth? The short answer is: yes. We have found that the UK's intellectual property framework, especially with regard to copyright, is falling behind what is needed'. Professor Ian Hargreaves, *Digital Opportunity – A Review of Intellectual Property and Growth*, May 2011, <http://www.ipo.gov.uk/ipreview-finalreport.pdf>

⁸ L. Lessig, *supra* note 4; James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, *Law and Contemporary Problems*, 2003, Vol. 66, pp. 33–64; see also J. H. Reichman and R. L. Okediji, *When Copyright Law and Science Collide: Empowering Digitally Integrated Research Methods on a Global Scale*, 96 *Minnesota Law Review*, 2012, Vol 96, p. 1362.

⁹ W. Landes and R. Posner, *The Economic Structure of Intellectual Property Law*, Harvard University Press, 2003, p. 12–13.

¹⁰ R.M. Hilty, *Compulsory Licensing to Facilitate Access*, Presentation at *The Access Challenge of the 21st Century: Emerging Issues in Intellectual Property Laws and Knowledge Governance*, Bucerius Law School, May 18, 2012. Yochai Benkler, explains this dysfunctionality on the ground that individuals, who have 'the practical capacity and insight to do something interesting with information', are separated from the universe of existing information resources. Their authority to act in conjunction with these resources is curtailed by restrictive knowledge regimes. This undermines the efficiencies enabled by the confluence of the networked environment and human creativity. Y. Benkler, *supra* note 3, p. 227.

protected intangibles.¹¹ Restricted access to information resources risks ‘starving’ innovation and placing potential new areas of innovation, to the extent they are based on protected technologies, off-limits to follow-on invention, investment and growth. The ‘access challenge’ of the 21st century can therefore be framed as the tension between fragmentation of knowledge as a result of strong IP laws, and the interest in the free flow of information. This tension also reflects the polarization of diverging interests and the lack of an overarching ideological rationalization to help reach long-term, sustainable solutions to knowledge governance issues. Conventionally, access has been justified based on distributive justice grounds.¹² However, economic efficiency and the overall welfare that result from an improved flow of information could serve as an alternative rationale, or at least as an important consideration in weighing access-related policy questions. Accepting this premise, a knowledge governance policy oriented towards convergence of knowledge would take into account such factors as the economic efficiencies that arise out of convergence of the universe of existing knowledge, the benefits associated with free accessibility, as well as the cost of resisting such convergence, in the form of reduced innovation, growth and welfare.¹³

From a pragmatic standpoint, the question arises how this process of convergence can be assisted and shaped to ensure that it in fact results in a flow of information that does not restrict creation and innovation. Opposing forces are at work. On the one side, significant interests seek protection of investment made into R&D and production of information goods that are easily copied. This results in pressure for stronger IP laws and enforcement at both national and international level. In the long term, if not adapted to the needs of the knowledge-based economy, this

¹¹ R.M. Hilty, *supra* note 10.

¹² See A. Kapczynski and G. Krikorian (eds), *Access to Knowledge in the Age of Intellectual Property*, Zone Books, 2010; J. Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, *Law and Contemporary Problems*, 2003, Vol. 66, issue 1; L. Lessig, *Code: And Other Laws of Cyberspace*, Basic Books, 2005; L. Guibault and B. Hugenholtz, *The Future of the Public Domain*, Kluwer Law International, 2006.

¹³ Yochai Benkler points out that at the broad macro level of social practices, policies which go against this trend have failed. Y. Benkler, *The University in the Networked Economy and Society*, in *The Tower and the Cloud*, R. N. Katz, (ed.), EDUCAUSE, 2008, p. 53. Copyright history of the past few decades has taught us that ‘law should not be used to delay creative destruction. It is unstoppable. When and where law were used to protect passé industries and technologies the whole society ended up paying a much higher toll’. A. Stazi and M. Marzetti, Chapter 7 of this volume.

approach is likely to lead to a fragmented rather than a converging universe of knowledge, at the expense of future ability to innovate.¹⁴ On the other side, it is clear that pathways towards openness are evolving in some areas. For instance, open access and intellectual commons movements have gained considerable momentum in recent years.¹⁵ Business models are evolving as well: entertainment content distribution is moving, albeit slowly, in a direction of widespread accessibility, by way of models that do not involve prohibitive transaction costs and seem to withstand legal challenges.¹⁶ Governments are also starting to pay attention to common platforms and cloud solutions for easier access to data.¹⁷ Yet other pathways are described in the chapters of this book.

The process of ‘opening’ in these and other sectors can be assisted by the development of a sound theoretical framework that provides guidance

¹⁴ See Y. Benkler, *supra* note 13, p. 53; A. Stazi and M. Marzetti, Chapter 7 of this volume.

¹⁵ See L. Guibault, Chapter 2 of this volume. See also the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, 2003, http://oa.mpg.de/files/2010/04/berlin_declaration.pdf; the Washington Declaration, September 2011, <http://infojustice.org/washington-declaration>. Research commons are being established: see P. Suber, Open Access Overview, Research on Institutional Repositories: Articles and Presentations, 2010, Paper 45; P. Suber, Open Access, MIT Press, 2012, <http://digitalcommons.bepress.com/repository-research/45>; J. H. Reichman, T. Dedeurwaerdere, P. F. Uhler, Global Intellectual Property Strategies for the Microbial Research Commons: Governing Digitally Integrated Genetic Resources, Data and Literature, Cambridge University Press, forthcoming 2013; publicly accessible repositories of educational material are being established: see Connexions, a repository of educational materials at Rice University, <http://www.oercommons.org/community/rice-university-connexions>; MIT OpenCourseware, <http://ocw.mit.edu/index.htm>, the Salman Khan Academy <https://www.khanacademy.org/>

¹⁶ WNET, *Thirteen v. Aereo, Inc.*; *Am. Broad. Cos., Inc. v. Aereo, Inc.*, Docket Nos. 12-2786-cv, 12-2807-cv, US Court of Appeals for the Second Circuit, April 2013. Services that offer access to content on terms and at a cost that is generally accessible to the average user, usually on a subscription basis, a trend started by Apple iTunes and now encompassing a variety of providers for diverse services, including live streaming of audio and video content such as Spotify, Aereo, and Hulu.

¹⁷ For example, the European Public Sector Information Platform, <http://epsiplatform.eu>. With interest in access to and re-use of public sector information, many countries have established central data platforms as single-entry points to simplify public access, such as the UK, www.data.gov.uk or www.data.gov.fr.

from a legal and governance standpoint.¹⁸ This is where the present book fits in. Its chapters will examine some of the challenges to access and will explore the shaping of legal solutions that facilitate the flow of information. The remainder of this Introduction will serve to place the individual chapters into context.

2. ACCESS TO INFORMATION IN THE PUBLIC SECTOR AND IN SCIENTIFIC RESEARCH

2.1 An Illustration of the Access Problem – Public Sector Data

A telling illustration of the hurdles to the free flow of information can be found in the area of public sector data, a massive accumulation of data that are being generated by or at the behest of the public sector on an ongoing basis.

As explained by Marco Ricolfi,¹⁹ geographic information data collected by the public sector, first made popular by applications such as GoogleMaps, can, for instance, also find use in navigation systems, logistics, and the growing number of location-based mobile services. Meteorological data have applications in farming and climate change monitoring and control. Land (cadastral) data are useful to real estate transactions and evaluations, archive and museum data can be applied for managing and preserving artifacts, stimulating tourism etc.²⁰

These data are being collected by public entities in the course of performance of their regular public tasks. Accordingly they are generally objective, reasonably accurate and cross-sectoral and thus lend themselves to re-use across diverse sectors of the economy. By their nature, data are non-rival in both production and consumption: data sets can be combined to serve as inputs for downstream products, and they can be consumed by multiple users simultaneously.²¹ Given ever-growing computing capabilities, the value-added applications of such data have incalculable potential of innovation and economic growth. Because these data are generated in the course of public entities' ordinary tasks and their generation is paid for with public funds, the commonly cited

¹⁸ Such framework should take into consideration developments in technology.

¹⁹ M. Ricolfi, Chapter 1 of this volume.

²⁰ Ibid.

²¹ Ibid.

incentive rationale for copyright protection does not apply here. Perhaps for this reason the US has opted to make these works accessible to the public.²²

In Europe however, access to public sector data depends on the national laws of the member States, including copyright or *droit d'auteur* laws and *sui generis* database protection laws. The data themselves are generally not copyright protectable due to lack of originality,²³ except where the selection and arrangement of data, tables and compilations satisfy the originality requirement.²⁴ Even absent copyright protection, electronic data collections are subject to the *sui generis* database protection laws, in case substantial investment in the obtaining, verification and presentation of the data can be shown.²⁵ Whether the criteria for protection are met must be determined on a case-by-case basis. Certain types of data are further subject to privacy and personal data protection laws. These laws operate on a national basis and are far from uniform.

From a practical standpoint, most public sector data are locked into legal 'silos'. Their legal inaccessibility is thus compounded by lack of platform interoperability, media obsolescence and other technological obstacles. A developer seeking to build, for instance, a location-based EU-wide traffic condition application, would have to obtain copyright, database right and personal data clearances in each individual country. In addition, the developer would have to tackle the complexities and expense of technology. It is easy to see how potential developers could be daunted into non-action. The end effect is that the efficiencies of convergence of information cannot be realized and the economic and social benefits of developing such applications would be lost.

Public sector data are just one example of historically determined and institutionally developed structures which act as bottlenecks to the flow of information. Only very slowly is the realization awakening, that failure to release the knowledge accumulated in these resources forecloses whole new markets, as well as the economic growth associated with

²² Freedom of Information Act of 1966; 1980 Paperwork Reduction Act as implemented by the Office of Management and Budget Circular A-130.

²³ Case C-5/08, Decision of the Court of Justice of the European Union, 16 July 2009, (Infopaq International A/S v Danske Dagblades-Forening), para. 45.

²⁴ L. Guibault, Chapter 2 of this volume.

²⁵ Directive 96/9 of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, OJ L 77, 27.3.1996.

them.²⁶ EU governments have announced plans for accessibility of such data, but the actual work of opening up these pathways still lies ahead.²⁷

2.2 Open Access Licensing in Scientific Research

Information bottlenecks, such as the one illustrated above, can be effectively addressed by voluntary licensing, specifically, by way of various open access license models.²⁸ Still, some significant issues remain to be resolved in order to make open licensing an effective and widespread tool for the transfer of information.²⁹

Lucie Guibault³⁰ examines the issues confronting open licenses and discusses the most developed open license models in terms of their suitability for purposes of scientific research.³¹ The usefulness of many open license models is limited by the fact that access alone does not allow users-licensees to fully benefit from the information accessed. Instead, for most uses, the licensee requires the right to re-use the licensed information for the purposes of further development.³² Development of terms and conditions which grant successive downstream users the right to re-use materials licensed under open license terms is under way. International portability of license terms constitutes a further limitation. Massive work is being undertaken to adapt or ‘port’ the various license models linguistically and legally to the requirements of individual jurisdictions. Several versions of ported and unported licenses are available for use and more are on their way. Still, in light of these limitations, Lucie Guibault concludes that open licenses may not yet be ready to constitute an effective means for transfer, particularly of

²⁶ For instance, the UK government announced that all UK taxpayer-funded scientific research would be made freely available by 2014. www.dailymail.co.uk/sciencetech/article-2174146/All-UK-taxpayer-funded-scientific-research-freely-available-2014-new-government-plans.html#axzz2JtIf05O6; Public data for all – opening up Europe’s public sector – <http://blogs.ec.europa.eu/neelie-kroes/public-data-for-all-%E2%80%93-opening-up-europes-public-sector/>; see also the European LAPSI project <http://www.lapsi-project.eu/>.

²⁷ EU Open Data Portal, http://ec.europa.eu/information_society/policy/psi/open_data_portal/index_en.htm.

²⁸ L. Guibault, Chapter 2 of this volume.

²⁹ See the The Berlin Declaration, *supra* note 15.

³⁰ L. Guibault, Chapter 2 of this volume.

³¹ *Ibid.* The license models examined are the Creative Commons, the Open Data Commons and the Digital Peer Publishing licences.

³² L. Guibault, Chapter 2 of this volume.

scientific research information.³³ However, open licenses remain a highly promising model for the future, particularly since governments and funding agencies display increased interest in their use.

3. CHANGES IN THE ENTITLEMENT STRUCTURE – COMPULSORY LICENSES AND REVERSE LIABILITY RULES

Open and voluntary license models are well suited for certain types of information, such as early stage research data, for which the commercial endpoint remains remote and further investment is required. However, where substantial investment has been made into R&D and the information to be transferred consists of patentable inventions with imminent commercial potential, agreement on a consensual, voluntary basis is unlikely. Such situations require legal tools to facilitate the flow of information and changes in the structure of entitlements to intellectual property can be effective tools in helping to achieve this goal.

IP protection is generally premised on the principle of exclusivity and implemented in the form of property rules. Property rules provide rightholders with full control over and the right to exclude third parties from access to appropriated intellectual property.³⁴ This fairly rigid allocation does not lend itself well to ‘shades of gray’, that would allow more malleable approaches to access and use, for a distributed allocation of information. Yet, precisely such mechanisms are required by the rapidly evolving and diverse technological scene and innovation profiles.³⁵ Shifting the entitlement structure from the traditionally accepted

³³ Ibid.

³⁴ D. L. Burk, Chapter 3 of this volume. Under such an allocation, the property would end up owned by the party who values the property most and is in the best position to exploit it. Assuming transaction costs are low, this outcome would effectively promote welfare. Since in practice however, transaction costs are seldom low, transaction costs will often prevent transfers that alter the initial property allocation. *See* R. Coase, *The Problem of Social Cost*, *J.L.Econ*, 1960, Vol. 3, pp. 1 et seq.

³⁵ D. L. Burk, Chapter 3 of this volume; D. L. Burk and M. A. Lemley, *The Patent Crisis and How the Courts Solve It*, The University of Chicago Press, 2009.

property rule to a liability rule may provide the requisite flexibility or 'shade of gray'.³⁶

Liability rules are increasingly used for purposes of sharing research resources in upstream research.³⁷ They give rightholders the right to be compensated for third party use, but not the right to exclude third parties from use.³⁸ As such, liability rules are capable of providing an improved flow and balanced distribution of information resources and can be tailored to specific needs.

Reto Hilty proposes the use of compulsory licenses, a form of liability rule, that may yield an outcome not too different from that of a voluntary license.³⁹ On the one hand, the competitor-licensee gains access to the technology, subject to agreed-upon terms. The rightholder-licensor, on the other hand, can control the number of competitors that enter the market and retain contractual freedom with respect to negotiation and compensation. If the participants are unable to reach an agreement, a court or other authority can step in and substitute its determination, taking into consideration market conditions and principles of fairness and reasonableness. By unblocking the flow of information held by the rightholder, compulsory licenses may act as stimulants to both the product market – through increased competition, and the innovation market – in that new products or business models may emerge based on further development of existing technologies.⁴⁰ Despite these multiple benefits, compulsory licenses remain generally underused, perhaps because some of the technical details of their application still remain to be defined.

Taking the change of entitlement structures one step further in an effort to add yet greater flexibility, Dan Burk proposes a reverse liability rule that would give rightholders a conditional right to exclude.⁴¹ Under a reverse liability rule, rightholders would be granted an injunction that is

³⁶ The concepts of property and liability rules have been largely defined by G. Calabresi and A. D. Melamed, *Property Rules, Liability Rules and Inalienability: One View of the Cathedral*, 1972, Yale Law School, Faculty Scholarship Series, Paper 1983, http://digitalcommons.law.yale.edu/fss_papers/1983.

³⁷ G. Calabresi and A. D. Melamed, *supra* note 36. See generally, J.H. Reichman, *Of Green Tulips and Legal Kudzu: Repackaging Rights in Subpatentable Innovation*, *Vanderbilt Law Review*, 2000, Vol. 53. A version of such rules has been implemented, for instance, in the International Treaty on Plant Genetic Resources (ITPGRFA).

³⁸ See J.H. Reichman, *supra* note 37.

³⁹ R. M. Hilty, Chapter 3 of this volume.

⁴⁰ *Ibid.*

⁴¹ D. L. Burk, Chapter 3 of this volume.

conditioned upon payment to the infringing competitor in the amount by which the competitor is damaged from its inability to use the technology.⁴²

This rule could, for instance, find application in a standards situation. Patentees are normally required to disclose their patents to a standard-setting organization and to license them based on FRAND standards.⁴³ In case a patent owner seeks to enforce its patent in violation of FRAND terms, shifting the entitlement structure to a reverse liability rule would give the patent owner the right to an injunction only if it paid the costs of the competitor adopting a different technology.⁴⁴ In this way the patentee has the option of ‘buying’ its exclusivity and information would flow to the party who values it the highest and presumably is best equipped to make use of it. A wide variety of other shared entitlement models can be envisioned.⁴⁵

4. DESIGNING THE CONTOURS OF IP DOCTRINES

4.1 Trademark Law – Benign to Access?

A further effective tool for enhancement of access can be found in the design of the contours of IP rights. The narrower and more nuanced the contours, the less knowledge will be appropriated from the public domain, allowing greater room for access and freedom of use.

Martin Senftleben⁴⁶ discusses the relation between trademark law and the public domain. Unlike patent and copyright law, trademark law has been less theorized in terms of its scope of protection, perhaps based on the assumption that it is generally benign as far as access and flow of information is concerned.⁴⁷ Still, on closer analysis trademark law seemingly subjects broader areas to appropriation than other IP laws. Patent and copyright laws are specifically designed to enrich the public domain. Upon expiration of their respective limited exclusivity periods,

⁴² Ibid.

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Calabresi and Melamed support additional potential models. *See* D. L. Burk, Chapter 3 of this volume.

⁴⁶ M. Senftleben, Chapter 4 of this volume.

⁴⁷ Trademark law allows appropriation of signs only for a particular market segment, and has a minimal impact on the flow of information, because it leaves a competitor free to choose another mark for its goods.

patented and copyrighted works automatically become part of the public domain. Trademark law, on the other hand, designed to support the efficient functioning of markets,⁴⁸ merely appropriates from the public domain and does not contribute to it. To the contrary, it has the ability to re-monopolize works fallen into the public domain upon expiration of other IP rights. In addition, its appropriation is potentially unlimited in duration. These aspects, combined with elastic criteria of protectability,⁴⁹ would seem to cause deeper inroads into the public domain than other protection regimes. Yet, as Martin Senftleben points out, trademark law does in fact make a significant contribution to the public domain through its inherent limitations: the confinement to specific goods and services, the use in the course of trade and the likelihood of confusion requirements, all support the notion that the exclusive rights granted by trademark law are less absolute than those of patent or copyright law. Moreover, trademark law also features certain public domain ‘preservation tools’, such as absolute bars, the distinctiveness requirement etc., that diminish the scope of its appropriation from the public domain.⁵⁰

On balance, this analysis leads to the conclusion that trademark law may well allow for greater freedom of use than the other fields of IP law. Nonetheless, pressure is being exerted on the existing doctrines by certain new developments, such as association-based theories and the protection of shapes, which, unless resisted by the courts, will seriously broaden the impact of trademark protection and restrict the flow of information trademark law currently allows.

4.2 Patent Eligibility and Access – Too Much Elasticity?

Elastic protection criteria may act to restrict the flow of information in other fields as well. Patent law, for instance, faces the challenge of

⁴⁸ In a transparent market distinctive signs are exclusively linked with the goods or services stemming from one individual commercial source. Enterprises can clearly identify their offer in the marketplace, and consumers can easily select products. Trademark protection guarantees transparency and ensures fair competition between market participants and thus the efficient functioning of markets. M. Senftleben, Chapter 4 of this volume.

⁴⁹ For instance, distinctiveness, which allows signs, which are otherwise unprotectable, to be appropriated upon acquiring secondary meaning.

⁵⁰ Martin Senftleben lists four absolute bars to trademark protection: the exclusions based on certain signs’ inability to function as trademarks, lack of distinctiveness, inherent limits of exclusive rights (relative freedom of use) and the adoption of exceptions (absolute freedom of use). M. Senftleben, Chapter 4 of this volume.

defining the correct limits of patentable subject matter for newly developed technologies. In such new fields, access to information is particularly vulnerable, as unwise policy choices made early on, risk stifling innovation in the entire field.

Historically patent law envisioned patentable inventions as concrete, tangible or physical in nature. With the advent of software patents, pressure for patenting of more abstract inventions is giving rise to difficult questions relating to the balance between protection and innovation, particularly when it comes to software-only inventions. Courts and patent offices have developed an analytical mechanism for preventing the grant of patents on 'abstract' inventions. Patent eligibility of a given invention is essentially determined based on whether the invention is technical in nature, usually evidenced by the presence of hardware or some other physical component.⁵¹ A test of this kind, unfortunately, also has sufficient elasticity to be easily circumvented by artful drafting, through simply claiming a hardware or other technical component. Based on this, Erika Ellyne concludes that the standard for patent eligibility of software 'has been whittled down to insignificance'.

Certainly, as a result of this permeable standard, many questionable patents have been granted. These now provide a fertile ground for the massive litigation filed by patent trolls⁵² and pose a serious threat to further innovation.

⁵¹ Art. 52(2) of the European Patent Convention excludes computer programs from patent protection to the extent they are used 'as such'. This requirement has been interpreted by the EPO Technical Board of Appeal as a requirement of 'technical character' which may involve 'any technical means' or 'any hardware'. Decisions T 258/03 Hitachi 16; T 619/02 Odour International. This approach has been further refined to take into consideration the manner of implementation, which must focus on a further technical effect, or further technical advantages over and above the effects and advantages inherent in the excluded subject matter. T 336/07 IGT Poker.

For the US approach *see* *Bilski v. Kappos*, 130 S. Ct. 3218 (2010), which also considers software tied 'to a particular machine' as patent eligible, even though this may not be the only test available, but no parameters for a different analytical approach have been agreed upon.

⁵² In 2012, 56% of all patent lawsuits were filed by patent monetization entities, or patent trolls. For an empirical analysis and evaluation of this phenomenon, *see* S. Jeruss, R. Feldman, T. Ewing, *The AIA Expanded: Effect of patent Monetization Entities*, April 2013, available at SSRN: <http://ssrn.com/abstract=2247195>.

5. EXPANDING THE DEBATE TO INCLUDE NEW STAKEHOLDERS

5.1 User-innovators as Economic Agents

Moving away from the discussion of legal instruments, Andrea Stazi and Maximiliano Marzetti⁵³ explore an altogether different approach: the inclusion in the debate of the new stakeholders of the knowledge-based economy paradigm. These stakeholders are the class of individuals and firms, who as a result of broadened access become creators and innovators, and thus active economic agents. They will be referred to as ‘user-innovators’.⁵⁴

User-innovators are the product of the new paradigm of decentralized platforms and massively participatory environments. This paradigm changes the manner in which individuals interact with knowledge, as well as the nature of their interaction with it. Stazi and Marzetti explain the fact that use of information is moving away from a passive, consumptive model to an increasingly interactive one.⁵⁵ In this model, users apply their innovative and creative input to the existing pool of knowledge and produce information goods, developing into economic agents in their own right.⁵⁶

Economists had signaled the importance of user-driven innovation as early as the 1980s⁵⁷ and more recent empirical data confirm its significance.⁵⁸ With access to distributed means of production made available by the digital network, the economic participation of user-innovators has

⁵³ A. Stazi and M. Marzetti, Chapter 7 of this volume.

⁵⁴ The term used by Stazi and Marzetti is ‘consumer-participants’.

⁵⁵ Consumers become ‘consumer-participants’, A. Stazi and M. Marzetti, Chapter 7.

⁵⁶ D. Tapscott and A.D. Williams, *Wikinomics, How Mass Collaboration Changes Everything*, The Penguin Group, 2006; Y. Benkler, From consumers to users: shifting the deeper structures of regulation toward sustainable commons and user access, *Federal Communications Law Journal*, 2000, Vol. 52, pp. 561–579.

⁵⁷ See generally, E.A. von Hippel, The Dominant Role of Users in the Scientific Instrument Innovation Process, *Research Policy*, 1976, Vol. 5, Issue 3, pp. 212–39; Y. Benkler, *supra* note 56.

⁵⁸ C. Hienerth, E. A. von Hippel, M. Berg Jensen, Efficiency of Consumer (Household Sector) vs. Producer Innovation, September 1, 2012, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1916319.

taken a giant leap forward.⁵⁹ Broad segments of the ‘public’ are beginning to move from a passive-consumptive relation with knowledge to an interactive one. As a result, innovation is becoming increasingly distributed and user innovation as a business model is increasingly accepted.⁶⁰

As economic agents who contribute to innovation, user-participants have well-defined information-related interests, namely to ensure an adequate and sustainable ‘input’ of knowledge to feed the innovative process. The mainly applicable regulations, IP and consumer protection laws, inadequately represent these interests. IP laws treat the public as a passive group. The allowances for use and re-use provided by the limitations and exceptions to IP doctrines are not conceived for follow-on innovation.⁶¹ Consumer protection laws, on the other hand, are mainly intended to address information asymmetries between consumers and suppliers. They tend to focus on fairness of the conditions of access to information goods⁶² rather than the flow of information itself.⁶³

Yet these groups are clearly seeking to be included in the debate and are pushing for greater participation in the decision-making on access to knowledge. This is manifest in the rise of the Pirate Party in the EU and civil discontents in relation to the adoption of various pieces of legislation.⁶⁴

It is against this background that Stazi and Marzetti propose to integrate consumers into the IP discourse.⁶⁵ Such ‘integration’ may take different shapes, but may not be entirely unrealistic from a political

⁵⁹ A. Stazi and M. Marzetti, Chapter 7 of this volume.

⁶⁰ Even large companies, such as Microsoft, capture and integrate user innovation.

⁶¹ ‘It is crystal clear that the provision of incentives to authors by empowering them to exclude second-comers, as well as the exemption in favour of transformative uses of protected materials, result insufficient for the promotion of creativity’. A. Stazi and M. Marzetti, Chapter 7 of this volume.

⁶² A. Stazi and M. Marzetti, Chapter 7 of this volume.

⁶³ Y. Benkler, *supra* note 56.

⁶⁴ *See supra* note 1.

⁶⁵ Their ‘pragmatic proposal’ is ‘to integrate a consumer protection dimension with IP law’, while both disciplines could keep their autonomy. Inclusion of user-participants would contribute to the re-balancing of the interests of all the different stakeholders. The advantage of such arrangement would be that, on the one hand, it would capture the realities of the modern information markets, protecting consumers of mass produced content from the same disparities of power and asymmetric information suffered by the consumers of tangible goods, and on the other, facilitate the production of user-generated content, based on non-hierarchical voluntary participation. *See generally* A. Stazi and M. Marzetti, Chapter 7 of this volume.

standpoint. As the number of user-innovators increases and their economic importance expands, sufficient political will may develop to include them in the debate. Regardless of its ultimate shape inclusion of a new group of stakeholders would change the dynamic of IP policy-making.

5.2 Structural Forces Prompting Inclusion of New Stakeholders

It may well be, however, that political events will overtake the steps proposed above and, instead, expand the debate by different means. The vigorous public outcry over the EU Parliament's ratification of ACTA marked a turning point towards direct political action by the public, due to the increasing polarization and politicization of the discourse surrounding IP.⁶⁶ Ingrid Schneider⁶⁷ explains the structural forces and reasons underlying the fact that IP issues are increasingly problematized and politicized by the public.

ACTA had been framed by its proponents as a vehicle of effective enforcement of intellectual property rights, made necessary by the proliferation of counterfeit pirated goods that undermine the legitimate trade and cause significant losses to rightholders. However, to a generation which relies on the internet as its vital life force, ACTA, came to symbolize – rightly or wrongly – a curtailment of the freedoms that the internet offers and an invasion of fundamental rights and freedom of expression.⁶⁸ The ratification of ACTA presented a singular opportunity for action to express deep discontents associated with access to what the internet represents and with the political process surrounding its governance. It became a call for inclusion of a larger number of actors in the dialogue, a call to provide them with a say in making the norms, values, goals, and rules of intellectual property more consistent with the society we live in and the role knowledge plays in it. Schneider likens this outburst to the tip of an iceberg, which hides underneath it complex and widespread discontents. Once these discontents become manifest beyond isolated outbursts, inclusion of new stakeholders in the debate may not be far behind.

⁶⁶ I. Schneider, Chapter 8 of this volume.

⁶⁷ *Ibid.*

⁶⁸ *Ibid.*

6. ACCESS IN THE INTERNATIONAL ARENA – FROM TRIPS TO COUNTRY CLUB TREATIES

On the international scene, the access debate plays out between the developing countries' demand for access and relaxation of IP rules and the developed countries' demand for stronger IP and enforcement.

The adoption of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) was hailed as the turning point of multi-lateral IP agreements and brought with it the hope of uniformity to IP laws worldwide, that would help stimulate innovation and economic growth. TRIPS, in fact, grants member states numerous flexibilities for access-friendly policy options⁶⁹ The TRIPS environment has also produced initiatives and court decisions that are favourable to dissemination of knowledge.⁷⁰

Not long after the adoption of TRIPS, however, the initial optimism surrounding it dispelled. Developing and least developed countries gained the realization that strong IP rights do not necessarily lead, in linear progression, to innovation and economic growth, regardless of a country's stage of economic development.⁷¹ They are concerned that TRIPS does little to further their interest in indigenous innovation, and instead, merely enhances the knowledge gap. Developed countries on the other hand, perceive TRIPS' enforcement provisions as inadequate to stem the growing tide of piracy and counterfeits that impact their markets in both developed and developing countries. Some commentators feel that the TRIPS dispute resolution mechanism proved too weak to address this problem, as re-confirmed by the US China WTO Dispute Resolution

⁶⁹ Of note in this regard is the access-promoting tenor of TRIPS Arts 7 and 8 objectives, the technology transfer incentives of Art. 66.2, the disclosure provisions of Art. 29, the three-step tests in Arts 13 and 30, the prohibition of anti-competitive behaviour in Arts 8.2. and 40.2, compulsory licenses under Art. 31, and so on. R. Kampf, Chapter 9 of this volume.

⁷⁰ These include the DOHA Declaration, the Paragraph 6 System to enhance access to medicines in countries without manufacturing capabilities, the Canada Patent Protection for Pharmaceutical Products case, and so on. R. Kampf, Chapter 9 of this volume.

⁷¹ See generally, Daniel Gervais, *Intellectual Property, Trade and Development, Strategies to Optimize Economic Development in a TRIPS Plus Era*, Oxford University Press, 2007; P.K. Yu, *TRIPS and Its Discontents*, *Marq. Intell. Prop. L. Rev.*, 2006, Vol. 103, p. 69.

Proceeding,⁷² where the panel's cautious approach on criminal penalties for willful infringement failed to achieve meaningful change to China's IP laws.⁷³

Given these diametrically opposed perceptions about the role of TRIPS and its future direction, negotiations stalled. Efforts to change the venue of negotiations to WIPO proved fruitless.⁷⁴ As a result, major disagreements relating to software, enforcement against counterfeits, enforcement in a digital environment, protection of genetic resources and traditional knowledge, access to medicines, technology transfer obligations, etc. remain unsolved.

This state of things prompted like-minded developed countries to move away from multilateral arrangements and initiate negotiations on topics of common concern, in settings, often secret,⁷⁵ where resistance from developing countries could be avoided. This led to the emergence of a type of treaty known as a 'country club treaty', such as ACTA and TPP.⁷⁶

As Peter Yu explains,⁷⁷ the model of 'country club' treaties is both methodologically flawed and potentially substantively harmful. Because negotiations do not include all stakeholders, such treaties cannot achieve the proper balance between public access and the interests of proprietary control. Nor do the negotiations take into consideration the development needs of increasingly powerful developing countries, such as Brazil, China and Russia. Even though these countries' cooperation is needed to reduce cross-border piracy and counterfeiting, they were not included in the initial ACTA or TPP negotiations.⁷⁸ It is doubtful whether they can be enticed at a later date to join, as the treaties do not truly further their interests. Without these countries participating, the treaties would remain limited in geographic scope, a fact that would not only increase fragmentation and complexity in the international regulatory regime, but would

⁷² WTO Dispute DS362, China – Measures Affecting the Protection and Enforcement of Intellectual Property Rights, 2009.

⁷³ See C. Geiger, Chapter 11 of this volume.

⁷⁴ For example, Substantive Patent Law Treaty (SPLT), <http://www.wipo.int/patent-law/en/harmonization.htm>; see C. Geiger, Chapter 11 of this volume.

⁷⁵ P.K. Yu, Chapter 10 of this volume.

⁷⁶ *Ibid.*

⁷⁷ *Ibid.*

⁷⁸ *Ibid.* What is problematic in the case of ACTA, for instance, is that it lacks the ingredients that would allow it to follow the successful model of prior treaties. Unlike the TPP, a parallel treaty negotiated by a number of Pacific Rim, ACTA only contains IP provisions. Accordingly, unlike other treaties, ACTA has no non-IP-related items to offer to leverage concessions in the IP field.

also pose a serious threat to access to information, in places where it is most needed.

From a substantive perspective, both ACTA and the TPP were conceived with the aim of strengthening enforcement. In the case of ACTA, enforcement provisions were narrowed down in the process of negotiation, to a point where, at least on its face, the treaty appears to bring relatively few substantive modifications to existing legal provisions in most developing countries.⁷⁹ Still, concerns remain. One basis of concern relates to ACTA's criminal penalty provisions. As Christophe Geiger explains,⁸⁰ ACTA expands the type of conduct that gives rise to criminal penalties, compared to existing international law.⁸¹ Perhaps even more troublesome is the fact harmonization of criminal enforcement involves far-reaching economic, ethical, historical and even psychological aspects.⁸² The ACTA process did not include consultations with stakeholders in this regard, nor does it address these issues in the treaty at all. Given the generally open-ended nature of the provisions, ACTA easily lends itself to maximalist interpretations by courts or administrative agencies. Given the absence of a negotiating history in light of the secrecy of its initial negotiations,⁸³ vast discrepancies in interpretation can therefore be expected among member nations.

⁷⁹ The EU takes the position that ACTA is fully compatible with the *acquis communautaire*.

⁸⁰ C. Geiger, Chapter 11 of this volume.

⁸¹ Criminal penalties are 'to be applied at least in cases of wilful trademark counterfeiting or copyright or related rights piracy on a commercial scale'. The term commercial scale is defined broadly as 'commercial activities for direct or indirect economic or commercial advantage'. This broadens the notion considerably and is less flexible than previous law. For instance, the definition given by the US – China WTO Panel limited the concept to commercial activity with respect to a given product in a given market. *See* H. Grosse Ruse-Khan, Criminal Enforcement and International IP law, in: C. Geiger (ed.), *Criminal Enforcement of Intellectual Property: A Handbook of Contemporary Research*, Cheltenham (UK)/Northampton, MA (USA), Edward Elgar, 2012, pp. 171 et seq.

⁸² C. Geiger, Chapter 11 of this volume. For a historical, economical and psychological perspective on criminal enforcement, *see* the chapters by D. Lefranc, A. Wechsler and A. Peukert, in: C. Geiger (ed.), *Criminal Enforcement of Intellectual Property: A Handbook of Contemporary Research*, Cheltenham (UK)/Northampton, MA (USA), Edward Elgar, 2012.

⁸³ C. Geiger, Chapter 11 of this volume.

7. CONCLUSION

As the individual chapters discussed above indicate, the pathways towards greater convergence of knowledge are not linear, in fact, they are full of challenges and pitfalls. Even so, technological progress is unstoppable and some form of aggregation of knowledge will be associated with it. It is important to ensure that such vast accumulation of knowledge serves to benefit creation and innovation. Legal instruments similar to some described in this book⁸⁴ can assist in this task. Their focus would be on distributed use of information resources, facilitating transfer of information products, and eliminating or reducing high transaction costs. At an international level it is possible that, in the long term, the dynamics of the participatory networked environment will be able to overcome the complexities of national interests and interest-based alliances. However, the shape of this pathway remains unclear and, for the time being, there is little evidence that points to global convergence of knowledge.

⁸⁴ Such as the use of compulsory licensing, *see* R.M. Hilty, Chapter 3 of this volume; changes in the structure of IP entitlements, *see* D.L. Burk, Chapter 3 of this volume; collective licensing models, *see* J. Axhamn, Chapter 6 of this volume.