Re-Thinking the Role of Intellectual Property

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The context in which intellectual property (IP) operates in the contemporary world is vastly different from the one in which IP was born. The new context has changed the position of IP both in the economy and in society. It calls equally for a change in the way in which we think about IP and its role.

Traditional Explanations for IP

Let me start by recalling briefly the traditional explanations of why we have IP. There are four main reasons, applicable to varying degrees to all the rights that we characteristically consider to be IP rights.

Oneset of explanations arises from the non-rivalrous nature of knowledge and information. Knowledge and information are private goods in production. They cost human and financial resources to create. In contrast, they are public goods in consumption. Once available, they may be used by another without lessening their enjoyment by the producer. This characteristic of knowledge was noticed by Columcille in his defence against the charge by Finnianin Ireland in the Sixth Century that he had copied the illuminations of a bible that Finnian had lent to him. When called before King Diarmuid to answer to the charge of theft, Columcille protested that he had not stolen anything, since Finnian still had his

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drawings and "Finnian's book was none the worse for his copying from it." In dismissing the defence, the king ushered copyright into the world by pronouncing "To every cow her calf; and to every book its copy."[2]

IP creates a policy restriction, in the form of exclusive rights to commercial use, on the otherwise free availability of knowledge and information in order to compensate for the cost of production of the knowledge or information. It thereby creates an economic incentive to investment in knowledge creation and provides a safe passage through hostile terrain for the long and often lonely march of an idea from conception to commercial implementation as a new product, service or process. The exclusive rights, in effect, make access a saleable commodity and create the basis of markets for knowledge and technology.

This first set of explanations applies to those IP rights that cover new forms of knowledge[3], namely, patents, plant variety rights, trade secret rights or rights in confidential information, industrial designs and copyright.

As suggested by the moral indignation of Finnian when he discovered that his drawings had been copied, IP also has an ethical basis. This is expressed in Article 27.2 of the Universal Declaration of Human Rights, which provides that "Everyone has the right to the protection of the moral and material interests resulting from

[2]Royal Irish Academy MS 24 P 25. A copy of the page of the manuscript hangs at WIPO. See, also, Thomas Cahill, *How the Irish Saved Civilization* (1995, New York) 170. Thomas Jefferson made the same point when he wrote of an idea that "… no one possesses the less, because everyone possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me." (Letter to Isaac McPherson, August 13, 1813)

[3]I am using "knowledge" (and "information") in a very general sense to cover also new creative expressions.

any scientific, literary or artistic production of which he is the author." This ethical basis of IP applies to most IP rights. It has a long social history, as evidenced in the negative connotation of words in the ordinary language such as plagiarism, cheating or copying (or any of the last term's more pejorative derivations such as "copycat").

The other reasons for having IP apply more specifically to particular IP rights. A further reason, additional to the incentive to create new knowledge, for having a patent system is to get new knowledge into the open. A good example of this function of patents is the saxophone. The saxophone is the only instrument in the orchestra that was once patented. It was patented in 1846 in France by Adolphe Sax. Throughout the course of the next 70 or so years, another 14 patents were taken out in relation to the saxophone, some by Adolphe Sax and some by what we would now call competitors. These led to the mouthpiece that we now know, the alto sax, other different varieties of sax, and an improved mechanism for the saxophone itself. Much of that technology has been in the public domain for well over 100 years now, and anyone can make or use the saxophone. It is interesting and instructive to compare that with the evolution of the violin. In Cremona, in Italy, in the 17th and 18th centuries, the technology for making violins was family-based and secret. It was passed from generation to generation in secrecy. The result is that nobody, to this day, knows how the very best violins that the world has ever heard – by Stradivari, Guarneri and others – were made. The secret of their manufacture has been lost in time and in the secrecy of families and the methods by which they transmitted their knowledge.

The comparison of the transmission of knowledge concerning the saxophone with the retention of knowledge by luthiers is far from being the only example of the success of the disclosure function of the patent system. The Hollerith punched card, television, the jet engine, polymerization catalysts and the iPhone are all examples of major technologies or products published in the patent system years and, sometimes, decades[4] before the commercialization of the inventions. The patent system has been responsible for constructing the most complete, systematic and accessible record of humanity's technology.

In the case of trademarks, geographical indications and, depending on the jurisdiction, passing-off or unfair competition, the policy justification tends to be the maintenance of order in the marketplace. Messaging and signalling between producers and entrepreneurs, on the one hand, and consumers and the general public, on the other hand, are indispensable for ensuring correct information and the avoidance of deception and fraud in the market. Distributed markets in a globalized economy only reinforce this role of brands and identity presentation (trade dress).

These traditional explanations of the purpose of IP remain entirely valid. But much has changed in the world since they were first formulated. These changes do not undermine the traditional explanations, but they should cause us to add certain other responsibilities to the job description of IP in order to reflect better the position of IP in the contemporary economy and society. Let me describe briefly the main changes, which, I believe, consist in three major shifts – the

[4] In the case of the iPhone, it was a few months. Enterprises tend to accord their new product announcements now with the publication of the corresponding patent application (18 months after the first filing).

economic shift from tangible to intangible, the geopolitical shift from West to East and the political shift from State to non-State.

The Rise of Intangibles

Over the past few decades, the centre of wealth creation has been shifting from tangible assets or physical capital to intangible assets or intellectual capital or, as the OECD calls it, knowledge based capital. There are many measures of this shift[5]. It is apparent in the asset distribution of the corporations in the S&P 500, which was 95% tangible assets and 5% intangible assets in 1978, but had become 20% tangible assets and 80 % intangible assets by 2010. It is apparent in business investment trends. In a number of advanced economies, more is invested in knowledge based capital that in physical capital and the rate of increase in investment in knowledge based capital is consistently out-pacing the rate of increase in investment in physical capital.

This shift brings with it, naturally, a change in the focus of competition. Competition is increasingly targeted at the competitive advantage that is derived from knowledge based capital. That is why, after all, we are seeing increasing rates of investment in knowledge based capital. The competitive advantage conferred by knowledge based capital is expressed as innovation, innovation being increasingly understood in a comprehensive way as covering all the technological, design, organizational and marketing information that go into the commercialization of new products, services or processes. Innovation is the key to

[5] For a general survey, see the publications relating to the two-year project of the OECD on *New Sources of Growth: Knowledge-based Capital*, particularly *New Sources of Growth: Knowledge-Based Capital: Key Analyses and Policy Conclusions - Synthesis report*. (OECD 2013)

economic (and, by the way, military) success in the contemporary world for enterprises, industries and countries and is perceived as such by all those actors. This is why we see such emphasis placed on innovation. The Wall Street Journal last year did a survey of quarterly and annual reports filed with the Securities Exchange Commission and found that the word "innovation" had been used 33,528 times in those reports in the preceding year.[6]

IP captures and secures the competitive advantage conferred by innovation. This translates into enormous value for which IP is the custodian. In a study published last year by the United States Government[7], it was estimated that, in 2010, $5.06 trillion in value added, or 34.8% of US GDP, and 27.1 million jobs, or 18.8% of all employment, were directly attributable to IP-intensive industries. Awareness of this value captured by IP also accounts for the rising demand for IP rights throughout the world. Between 1995 and 2011, worldwide the number of patent applications rose from 1.05 million to 2.14 million, the number of trademark applications from 2 million to 4.2 million and the number of design applications from around 245,000 to 775,000.

The Geopolitical Shift from West to East

The second major shift informing the context in which IP operates is the geopolitical shift from West to East. The centre of economic gravity is moving and, with it, the centre of technological gravity. These are occurring at different

[6] *Wall Street Journal*, May 23, 2012

[7] U.S. Department of Commerce, *Intellectual Property and the U.S. Economy: Industries in Focus* (March 2012) available at http://www.uspto.gov/news/publications/IP_Report_March_2012.pdf

speeds. Naturally, one may argue about how long this movement will continue for, where the centre will end up, whether there will be a centre or some other geometric configuration, and so forth. But it is undeniable that a shift, the likes of which we have not seen for several hundred years, is underway. Again, there are many measures of this shift. My concern here is the shift in the production of knowledge and technology. Let me cite three indicators of this, one relating to inputs to knowledge production and the other two relating to outputs.

Research and development (R&D) is one of the principal inputs to knowledge production. China is now the second largest investor in R&D, in absolute terms, in the world. The third largest, in absolute terms, is Japan. Asian countries represented 24% of global R&D in 1999, but accounted for 32% in 2009.[8]

In terms of outputs, the rise of Asia is apparent in the production of scientific articles, where the first decade of the 21st Century saw the scientific production of a range of Asian countries increase at rates far greater than the rates of increase in the mature economies[9]. As a report of the Royal Society in 2011 stated, "The scientific league tables are not just about prestige – they are a barometer of a country's ability to compete on the world stage."[10] The picture is even clearer in the case of technology, as measured by the number of international patent

[8] National Science Board, *Science and Engineering Indicators 2012*, 4-5 (Arlington, Virginia : National Science Foundation (NSB 12-01).

[9]Over that decade, the rate of increase in the number of published scientific articles was, on average, in the USA 1%, the EU 1.4% and Japan -1.1%, but was for China 16.8%, Republic of Korea 10.1%, Singapore 8.2%, India 6.9% (National Science Board, op. cit. 5-33).

[10]Royal Society, *Knowledge Networks and Nations. Scientific Collaboration in the 21st Century* (2011).

applications filed under the Patent Cooperation Treaty (PCT). In 1994, Japan, China and the Republic of Korea accounted for 7.6% of all international patent applications. In 2012, they accounted for 38%, more that the shares of the EU or the USA.

The Empowerment of Non-State Actors

The final shift is the diffusion of political power throughout society as a result of the empowerment brought about originally by the Internet and more recently by other forms of social media. The Internet has busted the State's monopoly on information, one of the bases on which it could claim the authority to make policy, and has facilitated the creation of networks of all conceivable varieties - social, political, economic, cultural, scientific and technological. It has, in short, created a shift in access to information and knowledge and in the capacity to use knowledge for all sorts of purposes.

There are many examples in the political, economic and social arenas that illustrate the application of this newfound empowerment. In the area of IP, the last two years have produced a number of major examples.

One of those was the coordinated action taken on January 18, 2012, to protest against the passage of certain IP legislation in the USA. The legislation was the Stop Online Piracy Act (SOPA) and the Protect Intellectual Property Act (PIPA). These bills enjoyed bipartisan support in Congress and their passage, ordinarily, seemed inevitable. But the protests caused them to be shelved. The protests involved 115,000 websites closing access to all or much of their content. Participating websites included Wikipedia, which went dark, Google, which

blacked out its logo, Reddit, Twitter and Tumblr. 162 million people experienced Wikipedia's blackout. Four and a half million people signed Google's online petition by 1.30pm PST on January 18. Nearly two and half million (2.4 million) SOPA-related tweets were sent in the first 16 hours of January 18. The top five trending terms on Twitter that day were "SOPA", "Stop SOPA", "PIPA", "Tell Congress" and "#factswithoutwikipedia".[11] In addition (and I do not suggest that this was in any way part of the aforementioned coordinated action), the hacking group Anonymous stated that it had knocked out the websites of the FBI, the U.S. Department of Justice and several entertainment industry sites as retribution for anti-piracy efforts by both the government and the entertainment industry. The group said it was "the largest attack ever", with 5,635 participants involved in bringing down the sites. In addition to the Department of Justice and the FBI, the Recording Industry of America, Motion Picture Association of America, Universal Music and BMI websites were also reportedly attacked.[12]

Other examples in the field of IP of the exercise of the power conferred by the Internet, social media and networking are the protests against the Anti-

[11] See Jenna Wortham, "Public Outcry Over Antipiracy Bills Began as Grass-Roots Grumbling", *New York Times*, January 19, 2012 - http://www.nytimes.com/2012/01/20/technology/public-outcry-over-antipiracy-bills-began-as-grass-roots-grumbling.html?pagewanted=1&ref=technology); Jenna Wortham, "With Twitter, Blackouts and Demonstrations, Web Flexes Its Muscle", New York Times, January 18, 2012 - http://www.nytimes.com/2012/01/19/technology/protests-of-antipiracy-bills-unite-web.html?ref=technology; and Deborah Netburn, "Wikipedia: SOPA protest led 8 million to look up reps in Congress", Los Angeles Times, January 19, 2012 - http://latimesblogs.latimes.com/technology/2012/01/wikipedia-sopa-blackout-congressional-representatives.html.

[12] Nbcnews.com - http://www.nbcnews.com/technology/anonymous-says-it-takes-down-fbi-doj-entertainment-sites-117735

Counterfeiting Trade Agreement (ACTA)[13] and the re-configuration by Microsoft of its Xbox One Console.[14]

The three shifts outlined above have occurred against a backdrop of globalization, that is, the rise of free, open and interconnected markets and global value chains, driven by reduced trade barriers, improved transportation, telecommunications and communication devices. There are, of course, numerous by-products or consequences of the complex phenomenon of globalization. For present purposes, among the most important are the global awareness and use of consumer technologies (there are 6.8 billion mobile subscriptions in the world, for example), global fashions and trends and globalized consumption of culture and entertainment (as of July 28, 2013, the music video "Gangnam Style" by the Korean performer Psy had been viewed over 1.715 billion times on YouTube, having surpassed Justin Bieber's "Baby" as the site's most watched video).

Where does all this leave King Diarmuid and his cow? As mentioned above, I do not believe that any of these developments invalidate the traditional bases of IP. But we do need to recognize that the mission of IP is much larger and more sophisticated than any one of the individual bases alone might suggest. It is, in my view, really about the whole way in which knowledge and culture are

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[13]See, for example, "1.5 million signed a web petition calling on the European Parliament to reject ACTA" (http://www.nytimes.com/2012/02/06/technology/06iht-acta06.html) and "Global protests on February 11, 2012" (http://www.ibtimes.com/anti-acta-day-action-february-11-protest-details-where-when-how-join-worldwide-fight-407660

[14] John Gaudiosi, "Microsoft Xbox: The damage has been done – Anyone who questions the power of the crowd need only talk to Microsoft", *Fortune* Tech - Media Round-Up June 20, 2013 - http://tech.fortune.cnn.com/2013/06/20/microsoft-xbox-the-damage-has-been-done/

produced, distributed and consumed in an economy in which knowledge is the basis of wealth generation and in a society with global habits of consumption of technology, culture and entertainment. Such a mission statement requires that we add two additional functions to the job description of IP.

IP as a Regulator of Competitive Behaviour

The first additional function is for IP to be a mechanism for determining fair competition in relation to the resource base of the knowledge economy. Since innovation is increasingly the battleground for competition, and since IP captures the competitive advantage of innovation, IP will become, as the former Prime Minister of China, Wen Jiabao, said, the basis of competition in the future.

We can see the authenticity of this insight at the level of both countries and enterprises. More and more countries are adopting innovation strategies or plans or are explicitly making the capacity to innovate part of their industrial or technological strategy.[15] Competition abounds with respect to most of the elements that go into constituting the capacity to innovate - for hosting R&D facilities, for positions on university league tables and for attracting human resources. In the USA, Mark Zuckerberg launched in April this year a lobbying group, FWD.us, to advocate immigration reform specifically to attract the talent necessary to support innovation through, for example, a simpler track for foreign science graduates to obtain residency and an increase in the quota for H-1B visas, the visa available to specialized temporary workers. The quota of 65,000 for H-1Bvisaswas this year filled in five days in the USA. In 2007, Microsoft is reported

[15]See, for example, Chapter 5 of National Research Council, *Rising to the Challenge. U.S. Innovation Policy for the Global Economy* (National Academies Press, 2012)

to have opened a software development centre in Vancouver, Canada, to stow workers it was not yet able to bring to its Redmond headquarters. About half of science, technology, and engineering workers in Silicon Valley are foreign-born, compared to a quarter in the rest of the United States, according to the U.S. Bureau of Labor Statistics.[16]

The darker side of this State-to-State competition is espionage (which, naturally, is also a feature of enterprise-to-enterprise competition). The intensity of the rhetoric on this subject has been rapidly escalating in the recent past. General Keith Alexander, Director of the National Security Agency and Commander of U.S. Cyber Command, called the loss of industrial information and intellectual property through cyber espionage "the greatest transfer of wealth in history".[17]The Commission on the Theft of American Intellectual Property reported that "[t]he scale of international theft of American intellectual property … is unprecedented – hundreds of billions of dollars per year, on the order of the size of U.S. exports to Asia."[18] The Commission's first recommendation was to "designate the national security advisor as the principal policy coordinator for all actions on the protection of American IP".

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[16] See Jessica Leber, "Silicon Valley Fights for Immigrant Talent" *MIT Technology Review*, July 26, 2013

[17]Josh Rogin, "NSA Chief: Cybercrime constitutes the 'greatest transfer of wealth in history'"*Foreign Policy* The Cable July 9, 2012.

[18]National Bureau of Asian Research, *Report of the Commission on the Theft of American Intellectual Property* May 2013. For another view, that it represented "a rounding error in a 15 trillion dollar economy", see John Reed, "The Cost of Cyber Espionage: 'A Rounding Error'"*FP National Security* March 25, 2013, and Center for Strategic and International Studies, *The Economic Impact of Cybercrime and Cyber Espionage* July 2013.

In the enterprise sector, IP similarly finds itself at the centre of competitive attention. As with State-to-State competition, there is a soft side and a hard side to this competition. The soft side is seen in the enhanced effort made by all firms to be innovative across all the stages of the conception, design, production and marketing of products and services and to protect through IP the advantage that their innovation confers. The hard side can be seen in sharp relief in the Smartphone patent wars. Here is an industry in which everything is wagered on innovation. Companies have been building patent arsenals to buy a stake at the table. Amongst the high-profile patent portfolio acquisitions in the past three years have been the acquisition by the so-called "Rockstar Group" (including Apple, Microsoft, Research in Motion and Sony) of the 6,000-patent portfolio of Nortel Networks for $4.5 billion; the acquisition by Google of Motorola Mobility, reportedly for its 17,000-patent portfolio, for $12.5 billion; the sale by Kodak of its digital imaging portfolio to a consortium of 12 licensees for $525 million; the sale by Microsoft of 650 patents to Facebook for $550 million; and the acquisition by Hewlett-Packard of 1,500 mobile technology patents from Palm for $1.2 billion. There are multiple explanations for this behaviour. For the present purposes, I note just the focus of competitive behaviour sharpening on IP and that behaviour being frequently expressed through litigation.[19]

In the litigation wars, a terrorist has entered the ranks, effecting indiscriminate collateral damage. This is the patent troll, more politely known as a patent

[19]The annual number of patent actions filed in the USA has increased at an overall compound annual growth rate of 6.4% since 1991 (patent filings have increased commensurately). See PwC, 2012 Patent Litigation Study.

assertion entity (or a non-practicing entity[20]). The problem, however, is that no one knows how to define this phenomenon and to say where the legitimate evolution of technology markets, with a wide and developing range of useful intermediaries, ends and where undesirable behaviour that puts innovation at risk commences. What we do know is that patent assertion entities share in common interest in the exclusion right that a patent confers and not in the underlying knowledge. We also know that the presence of such entities in the market is growing. Patent assertion entities filed 61% of new patent litigation in the USA in 2012. That translated into 3,054 patent infringement cases against 4,351 defendants.[21] Some policy responses are now commencing in the USA, with the publication of the report *Patent Assertion and U.S. Innovation* by the Executive Office of the President of the USA.

IP as the Mechanism for Finding Equilibrium among Competing Interests

I turn now to the second additional mission of IP. It is a function of the centrality of knowledge, creative works and entertainment in our economy and society and of the complexity of interests that result from that centrality. When King Diarmuid considered the issue that was brought before him, things were relatively simple – two disputants and a hand-produced bible. The ramifications of his decision were limited. It is true that, in a sense, they affected the whole monastic class, which constituted the literate class and the one responsible for

[20] This is a less appropriate term since universities are usually non-practicing entities.

[21] RPX, *2012 NPE Activity Report* http://www.rpxcorp.com/siteFiles/SiteManager/0BF995E82CFF591EE80EFE8AC69259E7.pdf

most literary production. But the readership in the largely illiterate society of the time was small and the impact was local.

Compare this to a decision today on the legality of the settlement between publishers and Google over Google's plan to digitize all the books in the world[22], or a decision on the patentability of genetic information[23]. There is a complexity that is born of the interconnectedness of societies and economies; the transparency, immediacy and universality that the Internet and technology has brought to the media and communications; and the central position of knowledge in the economy that requires us to consider IP differently. This complexity requires IP also to perform the function of finding the equilibrium point between the many and richly diverse interests that surround the acts of innovation and creation.

These interests include the interests of the individual innovator or creator, as against those of society in using the innovation or enjoying the experience of the creation; the interests of the producer, as against those of the consumer; the interests of encouraging investment in the production of new knowledge, as against those of sharing the social benefit of the new knowledge. A balancing act has to be performed in relation to the interests of all the individuals, enterprises, institutions, governments and the general public or civil society that coalesce around and claim a stake in an innovation or creation. In this world, where all

[22]*Authors Guild v Google*, No: 05 CV 8881, complaint filed on September 20, 2005, class action suit; and *McGraw-Hill et al v Google*, No: 05 CV 8136, complaint filed on October 19, 2005, civil action by five large publishers and the Association of American Publishers.

[23]See, eg, Association for Molecular Pathology v Myriad Genetics Inc, 569 US _ (2013) (June 13, 2013); Cancer Voices Australia v Myriad Genetics [2013] FCA 65 (February 15, 2013).

those interests are capable of being expressed and communicated instantaneous around the world with the immediacy of the Internet or social media, it is increasingly anachronistic to consider IP as standing for one set of interests only. It the means to reconcile all those divergent interests and that is exactly what we are seeing with the vibrant public debate around IP.

In a sense, IP has always played this role[24]. The patent system is conceived as a bargain between the inventor and society, with society enticing the inventor to disclose the new invention in return for exclusive rights to commercial use for a limited period, beyond which the invention falls into the public domain and is available for use by all. But the new context requires the reconciliation of interests to be much more explicit and to be considered in relation to a range of issues and details at a much more granular level than that of the system itself.

IP as a Financing Mechanism

I am tempted to add a third new role for IP, but I believe that it is more a new use of IP, rather than a mission statement. It arises from the increased appreciation and value of intangibles in the economy. The increased value of intangibles provides a means of leveraging or underwriting activities in the tangible economy that was not possible or, at least, not practiced, previously. Let me give you the example of sport. IP captures the commercial value of sport through the mechanisms of the spectacle and image or reputation.

[24] The opposition of interests and the implicit need to reconcile them is recognized in the two paragraphs of Article 27 of the Universal Declaration of Human Rights:

> "1. Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.
> 2. Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author."

Without a spectacle, there is no means of capturing anyone's attention. The spectacle provides the consumer experience. But the means of monetizing the spectacle is no longer through ticket sales. These can be important but are, perhaps, more important for creating the right atmosphere than for producing monetary returns. The real monetization of the spectacle is through broadcasting and the value of the broadcast depends on the capacity to control access to it, for which IP is the gatekeeper. Thus, we find that 60% of the income of the International Olympic Committee comes from broadcasting rights that leverage a global audience and the advertising power that comes with such an audience. For the Beijing Olympics, it is estimated that $1.7 billion was paid by broadcasters for the exclusive rights to broadcast.

In addition to spectacle, there is image and reputation, which are captured by association with brands that, in turn, are protected by trademark law. Sporting teams now are sophisticated bearers of sandwich boards who also perform some ancillary form of sporting function. They are covered in marks and the revenue from the association with these marks provides, usually, the second major source of sport revenue after broadcasting rights. Roger Federer has won $77 million in prize money. But most of his money comes from sponsorships and endorsements. Last year he signed a five-year deal with Moët & Chandon for $30 million. It is reported that he also has deals with Rolex, Mercedes-Benz, Nike, Wilson, Lindt Chocolate, Jura, Gillete Proctor & Gamble, Credit Suisse and Netjets.

The analysis that I have given for sport could be equally applied to most forms of spectacles, including musical or theatrical performances or museum exhibitions.

The point is that IP provides a means of financing all these sporting and cultural manifestations in the tangible economy.

Having tried to describe the new role of IP, I would like to move to two final sets of considerations – what are the dominant themes and questions that are going to preoccupy us in the new world of IP, and how is this new context affecting the process of making policy for IP?

Some Dominant Themes and Questions

I believe that there are three questions that are most likely to preoccupy us in the new context of IP. I shall call the first "entitlement". It relates to the function of IP as a regulator of competitive behaviour that I described above. The second and third questions relate to the function of IP as the keeper of the social and economic equilibrium in respect of the multiplicity of interests surrounding innovation or creation. I shall call them "appropriability" and "access". Each of these questions deserves a vastly more wide-ranging discussion than I am able to accord them here. I shall limit myself to sketching some highlights to provide an indication of why I believe that they are or will be the dominant questions in the new world of IP.

"Entitlement" is an age-old question. It is the question of the ownership of, or the right of control over, Finnian's illuminations. It is about who invented or created something first, what are the boundaries between legitimate inspiration from someone else's literary creation or design, on the one hand, and illicit imitation or slavish copying, on the other hand, and it has always animated the IP world. But it is likely to become even more animated, for three reasons.

The first reason is the enhanced values now involved as a consequence of the rise of the knowledge economy.

The second reason is the rise in importance of espionage and the illicit appropriation of trade secrets and confidential information. Technology has enabled espionage on a widespread basis in a way that was not possible previously. This development has coincided with the rise in value of the intangible assets that are the target of the espionage. At the same time, the movement of skilled persons from enterprise-to-enterprise on an international scale is now commonplace. This is not a form of espionage, but it does create a potential vulnerability for the knowledge assets of enterprises[25].

These developments underline the importance of that branch of IP that is the protection of confidential information or trade secrets. Worldwide it is in a poor condition. There is very little uniformity in approach, with the common law and the civil law traditions viewing the matter juridically in completely different ways. There are few multilateral provisions; those that exist are in the Paris Convention on the Protection of Industrial Property[26] and the TRIPs Agreement[27]. It is an area in great need of attention. But giving it multilateral attention will not be easy. It is a difficult sell to promote secrecy in an age of transparency. Even if this is an

[25]The *Shanghai Daily* reported on August 3, 2013, that "A Shanghai court yesterday issued China's first ban on the circulation of trade secrets, a major step in intellectual property rights protection under Chinese law. Shanghai No. 1 Intermediate People's Court prohibited a former employee of US-based drug maker Eli Lilly and Company from using and circulating trade secrets." See http://www.china.org.cn/china/2013-08/03/content_29613779.htm

[26] Article 10*bis* and Article 10*ter*.

[27] Article 39.

entirely superficial way of looking at the matter, this is the immediate reaction that one may expect and a great deal of care will need to be exercised in laying the basis for an international action.

The third reason for expecting greater animation over the question of entitlement is the silently growing tension between competition and cooperation. I have outlined the reasons why competition is heightening in the area of innovation and IP. At the same time, open innovation has become an increasingly important mode of behaviour in innovation. Open innovation may mean many things, but broadly it describes the tendency a firm to look outside itself to partnerships and collaborations to satisfy its innovation needs, rather than relying on purely inside processes to generate innovation. As has been said, the advantages of cooperation are increasing[28]. This tension between competition and cooperation is going to be a defining issue in the coming decades and IP will be the means of resolving the tension. This is why Samuel Palmisano, the former President and CEO of IBM, has said that "[i]ntellectual property will become one of the key geopolitical issues of the twenty-first century".[29]

A second cluster of issues and questions will revolve around "appropriability", which is, of course, not a word. I use it to describe two things– whether

[28] Ellen Enkel, Oliver Gassmann and Henry Chesbrough, "Open R&D and Open innovation: Exploring the Phenomenon"(2009) 39 *R&D Management* 4.

[29]Samuel J. Palmisano, "The Globally Integrated Enterprise" 2006 *Foreign Affairs*. The passage continues :"Fortunately, some promising new approaches are being tested. Already, focus has begun to shift from protecting intellectual property, which calls for limiting use, to maximizing intellectual capital, which is based on shared ownership, investment, and capitalization."

something should be the subject of an IP right and whether something can be the subject of an IP right.

Whether something should be the subject of an IP right raises the question of what may be taken out of circulation and placed in the domain of private property. Theoretically, the position is clear. IP deals only with the new, the original and the distinctive. It only protects what did not previously exist and therefore does not involve any subtraction from the public domain. But in practice, the position is not so clear. The boundary between science and technology, or discovery and invention, is more and more difficult to draw, especially for lawyers, as the recent parliamentary and judicial attention given to gene patenting has shown[30]. The question of what should be appropriated is not confined to scientific advances. It occurs equally with respect to the appropriation of words, signs and symbols through trademark law. Should colours be able to be the exclusive domain of one enterprise, for example?

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[30] See, e.g.,
IP Australia, Australian Government, *Patentable Subject Matter, Consultation on an Objects Clause and an Exclusion from Patentability* (July 2013);
Centre for International Economics, *Economic Analysis of the Impact of Isolated Human Gene Patents: Final Report* (May 2013)
Australian Government, *Response to Senate Community Affairs References Committee Gene Patents Report* (November 2011);
Advisory Council on Intellectual Property, Australian Government, *Patentable Subject Matter, Final Report* (December 2010);
Senate Standing Committee on Community Affairs, Parliament of Australia, *Inquiry into Gene Patents* (2010);
Australian Law Reform Commission, *Genes and Ingenuity: Gene Patenting and Human Health*, Report No 99 (2004);
Association for Molecular Pathology v *Myriad Genetics Inc.*, 569 US _ (2013) (June 13, 2013);
Cancer Voices Australia v *Myriad Genetics* [2013] FCA 65 (February 15, 2013).

A major challenge for IP here will be not to lose touch with the general public. As mentioned above, there is an increased social attention and focus on IP for a variety of reasons. If IP, whether through the legislature or the judiciary, takes decisions about appropriability that are not in consonance with the sentiment of the general public, it will lose the social credibility on which all good regulation depends.

Whether something is capable of being appropriated is an entirely different question that arises from the arrival of technologies of perfect and efficient imitation, notably the life sciences and digital technology. The problem that has emerged here is the disjunction between the cost of production, on the one hand, and the cost of reproduction, on the hand. In the case of a new pharmaceutical, the cost of production is estimated by industry to be in the vicinity of a billion dollars and to involve several years of work. Once available and disclosed, however, it can be reproduced by a competent graduate student in three months for a relatively meagre outlay. A new feature film may take two years to produce, involve several hundred persons and cost several hundred million dollars. But, once produced, it can be reproduced with perfect fidelity in a matter of seconds and for near zero cost. These developments are massive challenges for IP and, again, deserve much greater analysis than I am able to give them here.

The third issue that will occupy our attention in the new environment is access. As mentioned above, what IP does is to make access a saleable commodity. While this enables technology markets, it also creates social tension over the price of access and over the lack of access. We have seen this tension played out in relation to access to medicines and biomedical technologies, content on the

Internet and climate change technologies, although the last area is more a theoretical debate than a full-scale political engagement that has seized the public's attention.

It is unlikely that the tension around access will subside. For policy-makers, the challenge will be to try to orchestrate an informed and reasonable public debate. For corporations, the challenge will be to balance being competitive and getting a financial return on investment, on the one hand, with management of a potentially hostile public response, on the other hand. There is a paradox at work here, of course. No one minds, it seems, someone making billions out of new social networking or media technology, but there is widespread social unease at someone making billions out of a new life-saving drug. Which outcome do we want to achieve in the innovation system?

Policy-Making in the New Environment

Like the new context for IP, the environment for making policy for IP has changed considerably in the past two decades. The challenge before policy-makers is to produce answers as quickly as the speed of technological change is producing questions. There are very active IP policy agendas all over the world at all levels – national, bilateral, plurilateral, regional and multilateral. How do these all fit together?

It would be wonderful to say that there is a grand design. Regrettably, I think that reality is more opportunistic. We have moved from a multilateral world to a multispeed one. Given its competitive significance to the advanced economies, in particular, and given the social attention focussing on issues like appropriability

and access, IP is pursued in every available arena by everyone who feels that they have a stake in it, which means governments, industry, the research community and all other concerned non-State actors. There are risks in this opportunism and I shall point to three.

The first is the maintenance of policy coherence in so many intersecting processes. Ideally, one level should fit into another like Russian dolls (with, presumably, the multilateral level being the biggest doll, not because it is the most important, but because all others should conform to it). What happens in practice is that there are, at any given moment, multiple processes taking place at multiple levels. There is a risk in this of the discussions in one process (for example, a plurilateral process like the Trans Pacific Partnership talks) holding up discussions at another level (for example, the multilateral) because an issue is not ready for decision in the first process, while the second process is coming to a conclusion[31].

The second risk also arises from the complexity of managing policy processes occurring at multiple levels and involving so many diverse interests. This is the risk of non-delivery, with the consequences that policy is made by default by the private sector's actions and that the courts are called upon to make decisions that the legislature has not been able to make. The best example of this is the litigation in relation to the Google Books settlement, where a private law suit in the New York Southern District Court became the forum for international policy, with the sovereign States of France and Germany filing objections in an

[31]For another example, this time of a unilateral measure allegedly having an impact on multilateral and other external agendas, see James Politi and Richard Waters, "Apple Import Veto Risks Undermining Patent Protection Push", *Financial Times* August 4, 2013.

endeavour to preserve what they perceived to be the interests of internationally established principles.[32]

The final risk is that the capacity of the policy response is not equal to the size of the problem. We are seeing this happen in multilateral affairs more generally. The capacity of the international community to reach agreement is limited, while the problems and challenges that confront the world are growing in dimension on a daily basis, with most of them, such as those arising out of the movement of persons, goods, arms, germs, pollution or cultural content, requiring international cooperation to provide an adequate policy response.

In WIPO, in the last two years, the Member States have bucked this trend by concluding two new treaties, the first, the Beijing Treaty[33], directed at including actors and audiovisual performances within the international legal framework for copyright, and the second, the Marrakesh Treaty[34], directed at improving access to published works for persons who are blind, visually impaired or otherwise print disabled. I believe that agreement was possible on these two treaties for a number of reasons[35], but a prominent reason was that they dealt with specific and technical problems that were negotiated on their own merits and without

[32] *Authors Guild v Google*, No: 05 CV 8881, complaint filed on September 20, 2005, class action suit; and *McGraw-Hill et al v Google*, No: 05 CV 8136, complaint filed on October 19, 2005, civil action by five large publishers and the Association of American Publishers.

[33] Beijing Treaty on Audiovisual Performances

[34] Marrakesh Treaty to Facilitate Access to Published Works for Persons who are Blind, Visually Impaired or Otherwise Print Disabled

[35] For an analysis of the reasons, see my closing speech at the Marrakesh Diplomatic Conference, available at http://www.wipo.int/about-wipo/en/dgo/speeches/dg_dc2013_closing.html.

making connections to interests in the wider IP or multilateral agenda. The new treaties constitute very welcome victories for actors, the visually impaired, IP, WIPO and multilateralism. But they also demonstrate that the road of adaptation of the IP policy to the new environment is a long one that needs to be constructed by a multiplicity of specific and technical solutions. At the back of our minds, however, we know that the world is moving very quickly and is, as it goes, throwing up major problems along the way that are going to require all the capacity that we are able to muster in order to provide solutions.

Here is the thought that I would like to leave you with. If you were in the 18th or the early 19th century, new wealth was being created, in new ways and on a rather massive scale, by physical capital and the process of industrialization. Industrialization spawned the great ideological debates and cleavages that shaped the world for the next 200 years – capitalism, Marxism, communism, socialism – and they all centered on property, the control of property and its use by the State and citizens. Now, in the early 21st century, new wealth is being created, in new ways and on a rather massive scale, by intellectual capital and virtualization. This is what we are seeing in what I have described – the contours of the new ideological battle lines that will shape our world for the foreseeable future.