



Know IP - Stockholm Network Monthly Bulletin on IPRS

Commentary

IP Debates - the lessons of history? Helen Disney & Meir P. Pugatch*

To the outsider, IPRs may be perceived as a technical, somewhat esoteric, and often a dull subject. After all what could be more predictable and static than a patent application?

For those of us dealing with IPRs on a more frequent basis, this perception cannot be further from the truth. We are now in the midst of a period of intense and heated IP debates. These debates are as emotional as practical, covering a wide range of topics, including pharmaceutical IPRs, software patents, the patent system itself, copyrights, the internet, public-private partnerships, technology transfer, geographical indications, IP litigation, IP valuations and enforcement, to name but a few.

Not only are these debates extremely emotional, they also seem recently to have become 'militarised'". The terms 'war', 'battle' and the 'fight between good and evil ' (with each side claiming to be the former) are now in frequent use. Indeed, today one cannot but escape the feeling that we are at the peak of an era in which there is a dramatic and deterministic fight over the nature of IPRs, the result of which will have an effect for generations to come.

A closer look at the history of debates, however, suggests quite a different conclusion. Our era of IP debates, although certainly fascinating, is by no means a new phenomenon.

One can recall at least three eras of

* Helen Disney is Director of the Stockholm Network. Dr. Meir Perez Pugatch, Haifa University, heads the Intellectual Property and Competition Programme of the Stockholm Network

great IP debates over the last two centuries, each characterised by a different theme.

In a fascinating article, Fritz Machlup and Edith Penrose, two of the greatest IP scholars of the early and mid 1900s, tell us about the great Patent Controversy of the late 19th Century.¹ The main clash then was between liberals and mercantilists, each using moral and economic, even national arguments, to justify its position.

For example, those who opposed the patent system, such as L. Ricardo – one the eminent leaders of the 'Social Progress' movement - argued that since "nearly all useful inventions depend less on any individual than on the progress of society" there is no need for it to "reward him who might be lucky enough to be the first to find the thing (invention) required". Today, he might be elected chair of the open source society. On the other hand, those supporting the patent system referred to the great thinker Jeremy Bentham, the father of Utilitarians, who argued that "without the assistance of the law, the inventor would almost always be driven out of the market by his rival, who finds himself without any expense, in possession of a discovery which has cost the inventor much time and expense". Therefore, he concluded that "he who has no hope that he shall reap will not take the trouble to sow".

The 1950s brought a new IP debate, in the US, over the industrial role of the system of IPRs and their impact on the Industrial strength of the nation. Distinguished scholars, such as Fritz Machlup and Raymond Vernon, prepared very detailed and highly sophisticated studies, while presenting

¹. Penrose, E., Machlup, F. 'The Patent Controversy in the Nineteenth Century', Journal of Economic History, vol. X:1 (May 1950), pp. 1-29



Know IP - Stockholm Network Monthly Bulletin on IPRS

them to the US Congress.² These reports also laid the theoretical and academic foundations for the economic study of IPRs. However, despite their efforts, Machlup and his peers could not reach a definite conclusion about the prospects of IPRs. Therefore, he argued that "no economist on the basis of present knowledge, could possibly state with certainty that the patent system, as it now operates, confers a net benefit or a net loss to society".

The 1970s put the third wave of IP debates into the context of the North-South divide. In a series of publications, UNCTAD has vigorously flagged up the effect of IPRs on developing countries.

(One can recall publications such as *The Role of the Patent System in the Transfer of Technology to Developing Countries - 1975*; *Major Issues in the Transfer of Technologies to Developing Countries - A Case Study of the Pharmaceutical Industry - 1975*, *The Role of Trade Marks in Developing Countries*, 1979). However, despite their critical approach on the impact of IPRs on developing countries, the UNCTAD studies did not seem to offer an alternative, practical policy for the IP system.

We are now facing the fourth wave of IP debates - which for lack of a better term we might refer to as the 'Millennium IP debate'. This debate is far from over, and its boundaries are

². Machlup, F. *An Economic Review of the Patent System*, Study of the Subcommittee on Patents, Trademarks and Copyrights of the Committee on the Judiciary, United States Senate, 85th Congress, Second Session, Study No. 15 (Washington DC: 1958); Vernon, R. *The International Patent System and Foreign Policy*, Study of the Subcommittee on Patents, Trademarks and Copyrights of the Committee on the Judiciary, United States Senate, 85th Congress, Second Session. Study No. 5 (Washington DC: 1957)

yet to be defined. Its origins, however, can be traced to the TRIPs agreement and its aftermath.

The Millennium IP debate promises to be wide in scope. It will encompass issues across the board, such as incentives to innovation, industrial development, trade policy, access to available technologies, effective commercialisation in the age of knowledge-intensive industries and so on.

In this debate, like the IP debates that precede it, the flaws of the system (and there are flaws) will be emphasised, discussed and celebrated. Those who support the IP system and wish to emphasise its positive aspects and contribution to society should be aware of this fact: In any debate, including in this debate, a positive aspect is less interesting and appealing than a negative one. Indeed, highlighting the problems of a given system, including the IP system, is a much easier and safer way to dominate debate than offering solutions.

Nevertheless, one thing that history shows is that, while the debates on IPRs come and go, the IP system has nevertheless managed to survive the test of time. Some may argue that the IP system represents the eternal hold the strong have over the weak, though history suggests that sometimes the strong were actually the ones who opposed the system.

Although there are many explanations about the durability of the system, one cannot ignore a simple truth: so far no alternative system aimed at incentivising the creation of knowledge and distributing it - has been found sufficiently appealing to replace the IP system. Perhaps it is therefore time that we start considering the ways in which we can improve the system rather than trying



Know IP - Stockholm Network Monthly Bulletin on IPRS

to replace it. This will enable us to learn from history instead of repeating it

Topic of the Month

Market Leaders and Industrial Policy*

Economic research on industrial organisation studies the structure of markets and the role of industrial and anti-trust policy to improve their efficiency. Traditional industrial organisation has emphasised the negative aspects of markets dominated by one or a few firms, the dangerous tendency of market leaders to engage in anti-competitive practices (entry deterrence or collusive behaviour) and their passive role in innovation. Most of this view relies on the simple analysis of ideal monopolies, hence it is not surprising that the main preoccupation of anti-trust authorities, both in the US and the EU, has been to fight against dominant firms.

Recent developments in the theory of industrial organisation, however, have approached market structures in a new way. The starting point of this *New Industrial Organisation* is that any serious attempt to shape industrial policy concerning dominant firms should focus on the role of these firms in realistic markets rather than in an ideal monopolistic market. Once this is done, one finds out that market leaders often have a positive role in improving efficiency, reducing prices and promoting innovation: what creates anti-competitive behaviours is not dominant firms, but the lack of access to a market by potential competitors.

Let us address the issue within a more specific example concerning innovation. In high-tech sectors (think

*. We are very grateful for Prof. Federico Etro, from UCSC, Milan, for his help and guidance in preparing this piece

of hardware, software, pharmaceuticals, biotechnologies) firms do not compete that much on prices, but rather compete through innovations. This is possible as long as there are well defined intellectual property rights defending innovations and investments, which is ultimately what leads technological progress in our economies. In these markets, traditional industrial organisation claims that dominant firms tend to jeopardise innovation and technological progress (such a view is associated with the analysis of the Nobel Prize winner Kenneth Arrow): persistent monopolists not only set high prices, but they also stifle innovation according to the traditional view.

The new industrial organisation changes the terms of the analysis and focuses on realistic markets where a firm with the leading edge technology faces competition from potential entrants. In such a case, the dominant firm has strong incentives to invest in R&D to prevent others from replacing its leadership. For instance, Federico Etro (2004, "Innovation by Leaders", *The Economic Journal*) shows that market leaders have even stronger incentives than outsiders to innovate. According to the *Economist* "the most important requirement for this result is a lack of barriers to entry: these might include, for example, big capital outlays to fund the building of new laboratories, or regulatory or licensing restrictions that make it hard for new firms to threaten an incumbent. If there are no such barriers, a monopolist will have an excellent reason to innovate before any potential competitor comes up with the next new thing. It stands to lose its current, bloated profits if it does not; it stands to gain plenty from continued market dominance if it does" (Economic Focus, May 22nd, 2004).

It is now clear that the new industrial organisation completely overturns the results of the traditional industrial



Know IP - Stockholm Network Monthly Bulletin on IPRS

organisation: while persistent leadership would be a sign of monopolistic power for the traditional view, it is a sign of competitive pressure for the new view. We can even go beyond that: related research has shown that the innovative role of market leaders in high-tech sectors represents a main component of technological progress (see Paul Segerstrom, 2004, "Intel Economics"). This implies that the proper objectives for industrial policy in high-tech sectors should be protecting intellectual property rights to promote innovation and guaranteeing free access to research by new firms.

Similar results apply in other contexts as well. A new general result is derived in a study on competitive markets where a dominant firm undertakes strategic investments to gain advantage over the competitors (Etro, 2005, "Aggressive Leaders", *The Rand Journal of Economics*, forthcoming). For instance, we may think of any investment to reduce costs or to improve quality, an advertising effort, production of complementary goods, and so on. What happens is that the market leader always over-invests to gain a strategic advantage and conquer a larger market share. However, this results in a reduction in prices with a net gain for the consumers! This happens under any form of competition (including in prices and in production levels) as long as entry for competitors is free. Only when this is the case, the fear of competitors induces the leader to be aggressive: its best strategy requires reducing costs, improving product quality, engaging in a lot of advertising, producing complementary products and so on. This allows the leader to lower its price and gain market share, but it also disciplines competitors and keeps prices at a low level, with unambiguous benefits for society.

Again, the implications for industrial policy are the opposite of the

traditional industrial organisation: leadership in a market is not in itself a sign of an inefficient market structure or of lack of competition. What matters is whether there is a free access and, if this is the case, market leadership is just the sign of a more efficient organisation of the market. Actually, the new industrial organisation provides a simple way to rank market structures in terms of welfare. The worst one is characterised by barriers to entry; promoting entry in the market induces superior outcomes; but the best outcome emerges when entry is free and one or few firms are dominant. That's why anti-trust authorities should shift their priorities and move ahead with the promotion of free entry rather than the fight against market leaders.

Experts' Corner

Is human gene patenting based on faulty science? – Graham Duffield*

Molecular biology is a typically immature science – the state of the art is whizzing forward. If the recent past is even a halfway decent guide to the near future, much of what we assume to be true today will seem pathetically misguided in a few years. Until February 2001, we were told to expect about 100,000 protein-encoding human genes. Yet when the International Human Genome Sequencing Consortium and Celera published their findings, this estimate had suddenly dropped by two-thirds.

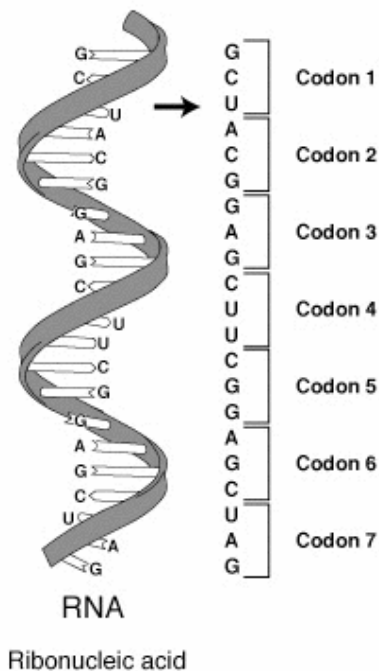
In the 1960s, scientists discovered how DNA instructs cells to assemble amino acids, which form the building blocks of proteins. Briefly, each gene contains the instructions for the synthesis of one or more proteins. Just as proteins

* Graham Duffield is a Herchel Smith Senior Research Fellow, Queen Mary Intellectual Property Research Institute, Queen Mary, University of London



Know IP - Stockholm Network Monthly Bulletin on IPRS

consist of chains of amino acids, each gene may be sub-divided into three nucleotide base units called codons that comprise and code (by way of a closely related chemical called ribonucleic acid (RNA)) for the preparation of a particular amino acid. These amino acids are then combined in a specified way to form the required protein; that is, the one "expressed" by the gene.³



But as scientists know very well now, this is far from the end of the story. The famous 'central dogma' which is that DNA makes RNA makes protein, which then regulates gene expression, is not even half of it. For one thing, the whole protein-making process is looking ever more complex. In fact, a gene can produce more than one protein, for example by means of a process called "alternative splicing" in which coding sections of the gene are selectively deleted.

³ This illustration is taken from the Glossary of Genetics. It is freely available and may be used without special permission

For another, genes and RNA in higher life forms perform many roles other than protein production. Indeed, as much as 98.5 percent of human DNA is non protein-encoding even though much of it is still transcribed into RNA for reasons that we hardly understand (but probably will in the coming years). The conundrum is that "either the human genome ... is replete with useless transcription, or these nonprotein-coding RNAs fulfil some unexpected function".⁴ Apparently, "these RNAs may be transmitting a level of information that is crucial, particularly to development, and that plays a pivotal role in evolution".⁵

In consequence of such discoveries, the "regulatory architecture"⁶ of living things has never looked so sophisticated or complicated than it does today. Indeed, even the gene is beginning to look like a rather fuzzy concept. A scientist at the Karolinska Institute in Sweden even admitted that "we tend not to talk about 'genes' anymore; we just refer to any segment that is transcribed [to RNA] as a 'transcriptional unit'".⁷

Consequently, we should be very cautious about granting patents claiming genes on the basis of a single disclosed function or discovery such as that it codes for a particular protein, or that it is associated with a disease. After all, we can no longer assume that genes operate independently and perform single functions. Indeed, genomes can more accurately be seen as consisting largely of multiple intersecting mini-ecosystems forming one larger one (i.e. the genome itself) rather than as a single collection of separately functioning "Lego bricks"

⁴ Mattick, J.S. (2004) "The hidden genetic program of complex organisms". *Scientific American* 291(4): 30-7, at 32.

⁵ Ibid., at 32-3.

⁶ Ibid., at 37.

⁷ In Gibbs, W.W. (2003) "The unseen genome: gems among the junk". *Scientific American* 289(5): 26-33, at 29.



Know IP - Stockholm Network Monthly Bulletin on IPRS

(i.e. the individual genes) that can be combined and recombined precisely, predictably and with no possibility of unintended consequences.⁸

Treating genes as patentable inventions because a single function has been discovered may even stifle innovation. This is because it potentially hinders opportunities for follow-on researchers to carry out further investigations on genes and find out much more interesting things about them, including how they interact with other parts of the genome and with what effects.

This is not just academic. Gene patenting can be a life or death issue.⁹ Patents on genes linked to particular diseases tend to claim a range of applications including diagnostic tests, and owners can be quite determined in enforcing their rights even though the validity of such patents is often considered to be questionable. Even non-commercial entities like public sector hospitals may be the target of companies demanding royalties. It was recently reported, for example, that "after the gene for the iron overload condition haemochromatosis was patented, 30 per cent of labs surveyed stopped testing for the disease-causing gene variant, or developing such tests".¹⁰

The question is, what to do? One could simply exclude DNA sequences from patentability. But would this necessarily be good for innovation or for society?

⁸ See Krinsky, S. (2000) "Risk assessment and regulation of bioengineered food products". *International Journal of Biotechnology* 2(1/2/3): 231-8.

⁹ See Montgomery, D. (2001) "Human gene patent plan could hit tests to cure fatal diseases". *The Scotsman* 24 Apr.: 5; Anand, G. (2001) "HIV patent holder is slowing spread of fast AIDS test". *Wall Street Journal Europe* 20 Dec.: 1, 11.

¹⁰ Kleiner, K. (2002) "Bad for your health: are gene patents stopping patients getting the latest tests?". *New Scientist* 23 March: 6.

In such a case, business will probably resort to copyright or trade secrecy. Since legal and technological measures provided under current copyright and trade secrecy laws lock up information much more securely than under patent law, one should tread very cautiously when reforming the patent system in this field in case the cure is more harmful than the disease.

Useful Reports, Articles and Links

Stockholm Network's "A Sick Business" now available on Interpol's website

Last year, the Stockholm Network published an in-depth investigation into the links between counterfeit medicines and organised crime (*A Sick Business*, 2004).

Authored by Graham Satchwell, a retired senior policeman and former spokesman on piracy and counterfeiting for the Association of Chief Police Officers (ACPO), the book looks at the public safety issues surrounding the production of fake and sub-standard medicines and has attracted widespread attention among the media and policymakers.

The latest developments include a decision by Interpol, the international policing agency, to make the full report available on the public part of its Intellectual Property Crime website:

www.interpol.int/Public/FinancialCrime/IntellectualProperty/Publications/Default.asp

Mr Satchwell also recently gave testimony to the US Senate HELP Committee on the safety implications of a proposed bill to allow greater importation of medicines into the US from Europe. You can read his full written testimony here:

www.help.senate.gov/testimony/t257tes.html



[Know IP - Stockholm Network Monthly Bulletin on IPRS](#)

The 2005 Annual Report on Global Software Piracy

The Business Software Alliance (BSA) and the International Data Corporation (IDC), have published its second annual report on global software piracy. The report suggests that the average rate of global piracy is about 35% (one percent down from last year).

According to the report, The Asia-Pacific region has the highest piracy rate (53%), Vietnam, Ukraine and China lead the chart with an average piracy rate of more than 90%.

The Latin America and the Middle East regions have an average piracy rate of 66% and 58% respectively.

The EU region has an average piracy rate of 35% (according to the report the average piracy rate of the Eastern European countries stands at more than 60%). the North American region has the lowest rate of piracy (22%), though in capital value its piracy losses are the most significant. The report is available here:

www.bsa.org/usa/research/