

## CHAPTER 3

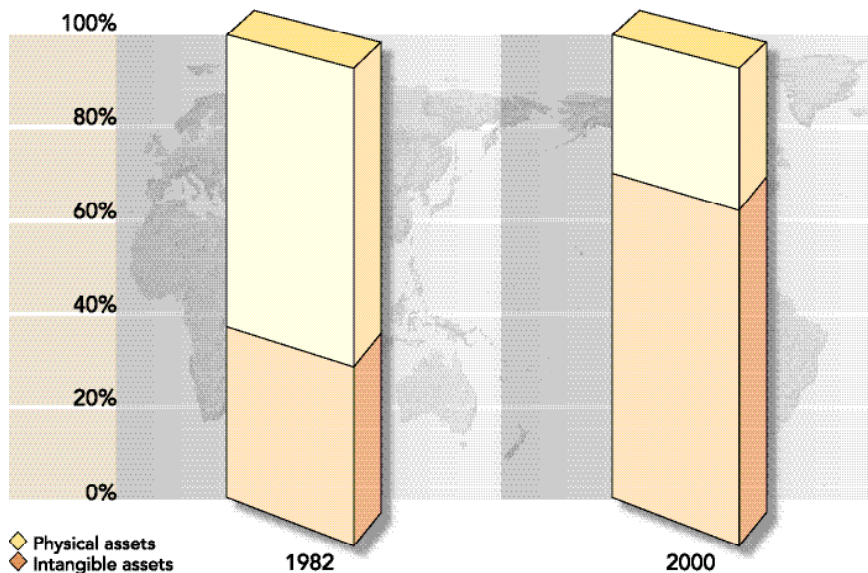
# INTELLECTUAL PROPERTY, KNOWLEDGE AND WEALTH CREATION

Although tangible assets such as land, labor, and capital used to be the yardsticks of economic health, this is no longer the case. The new drivers of wealth in contemporary society are knowledge-based assets.<sup>1</sup>

## HIDDEN VALUE AND NEWFOUND WEALTH

IP assets are gaining ground as a measure of corporate viability and future performance. In 1982, some 62 percent of corporate assets in the United States of America were physical assets, but by 2000, that figure had shrunk to a mere 30 percent (see Chart - 3.1). At the beginning of the 1990s, in Europe, intangible assets accounted for more than a third of total assets. In 1992, in the Netherlands, for example, intangible assets accounted for more than 35 percent of total public and private investments. A recent British study shows that, on average, 40 percent of the value of a company is not shown in any way on its balance sheet.<sup>2</sup> IP is a significant component of intangible assets.

**CHART-3.1 US COMPANIES' INTANGIBLE ASSETS AS A PERCENTAGE OF TOTAL ASSETS<sup>3</sup>**



A survey conducted in 1993, sampling a total of 284 Japanese firms, revealed that IP assets accounted for 45.2 percent of corporate knowledge accumulated during a reporting period (covering both codified knowledge, such as that fixed in documents, and tacit knowledge that cannot be fixed, such as human skill sets).<sup>4</sup>

The bricks-and-mortar economy is, thus, being replaced with the economy of ideas in which IP has become one of the major currencies. In the new economy, wealth is generated through creating and capturing the value of knowledge. Throughout the history of human civilization, wealth was based on the possession of physical assets. Today, however, the paradigm has changed, and knowledge has become the new wealth.

The significant, positive impact that the protection of IP can have on the technological progress of a country can be clearly seen at the macro-economic level. But, until recently, it was hard to assess the value of IP at the micro level, partly due to the lack of viable methods of valuation. IP assets have not been adequately reflected in corporate balance sheets.<sup>5</sup>

However, the environment surrounding the valuation of intangible assets has significantly changed over the last decade. This chapter will discuss these changes and the recent developments and efforts to find a robust way of valuing IP assets. It is through these efforts to assess the hidden value of IP that many have realized how and to what extent IP has contributed to, and will continue to increase, company earnings.

## INTANGIBLE ASSETS, IP, AND ACCOUNTING

With the growing realization of the hidden value of IP, companies are increasingly managing and wielding their patents, not just as defensive protection against intellectual theft, but as an active and powerful tool to sharpen their competitive edge, increase their sector influence, and enhance their reputation as market innovators.<sup>6</sup> Discussions on these issues at the international level have begun to emerge, particularly regarding the extent to which IP is seen as a new form of capital and an ingredient for success in business.<sup>7</sup> Shareholders are increasingly sensitive to the value of IP assets and are using them as an indicator of company earning potential.

It has been said that “intellectual creation can make economic sense only when we wake up the innovator in an entrepreneur and also the entrepreneur in an innovator.” Globalization, technological development, and the Internet have brought a new realization of the worth of IP to entrepreneurs and innovators, and both are waking up to the need to protect it and to build “a strong bridge between invention and the market place.”<sup>8</sup>

In the new economy, innovative thinking is as valuable as skill. When vast generic information is creatively managed, business ideas spring forth as value-added knowledge. Often, giving knowledge a central place in business strategies is the key that makes both traditional firms and new start-ups competitive, successful and unique. Intellectual capital embodies the results of innovative knowledge management. Today, IP rights count heavily amongst the intangible assets of enterprises, along with other proprietary knowledge-like business procedures.

Modern competitive management is mindful of the strategic use of IP, and creates the environment for innovative thinking and knowledge-mining by its workers (e.g., sharing of skills among knowledge teams, strategic selection of innovations for IP protection, and valuation of IP assets).

Business in the new economy depends largely on stable and long-term relationships based on trust and win-win partnerships, and the careful balancing of new knowledge creation and creation of benefits for civil society. An IP-minded management approach provides the bargaining power to exchange intellectual assets and to develop more advanced strategic partnerships. In the market for patented technologies, M&As, and business-to-business (B2B) relationships, the positive valuation of IP is a driving force. Intellectual property also allows firms to establish a robust brand (trademarks, domain names, etc.), which is essential to cultivate recognition and trust in the Internet environment. The creation and exploitation of intellectual assets by empowering knowledge workers are fundamental strategies for firms. IP provides important motivation and incentives to workers through the recognition and rewarding of their intellectual contribution to the process of internal assets generation and the seeking of legal protection thereafter.

In the rapidly changing markets where products and services have shorter life cycles, firms need a decision-making system that allows accurate strategic evaluation of intellectual assets and swift action to secure legal protection of IP rights. The tactics of “file first and evaluate later” seem to be viable for those assets that have uncertain possibilities of commercialization.

### INTANGIBLE AND IMMEASURABLE

Every firm has a portfolio that includes both tangible and intangible assets, including IP. These IP assets have the potential of significantly contributing to an increase in the return to investors. Firms that fail to fully comprehend and realize that potential run the risk of lost revenue, poor positioning, diminished market value, and possible collapse.<sup>9</sup>

According to Generally Accepted Accounting Principles (GAAP), assets are composed of (a) current assets; (b) plant, property, and equipment (corresponding to tangible assets); and (c) other assets (corresponding to intangible assets). Though accountants have recognized the existence of intangible assets for many years,<sup>10</sup> different types of intangible assets were aggregated in a class called “goodwill” without being specifically identified. In the 1960s, the wave of corporate M&As prompted a review of the accounting of intangible assets. In 1981, the United Kingdom enacted the Companies Act, which permitted firms to include intangible assets in their accounts. However, it was not until the 1990s that governments started to develop more specific standards for such assets. During the last decade, when the economy and business increased their focus on value-added, and became more services-oriented and knowledge-intensive, the proportion of intangible assets to tangible assets increased. Strategic alliances became popular as a way of coping with global market competition, and the value of M&As worldwide has, according to *The Economist*, continuously increased from US\$0.5 trillion in 1990 to US\$3.5 trillion in 2000.<sup>11</sup>

## VALUATION OF IP ASSETS

Intellectual property assets have emerged as an important factor in corporate strategy in the 1990s. One reason the new economy has been called invisible is that old accounting methods have trouble monitoring it.<sup>12</sup> In response to the trends, legislation addressing this issue has been drafted in many countries. In the United States of America, the Omnibus Budget Reconciliation Act of 1993 introduced the definition of several classes of intangible assets (for example, goodwill, going concern value, lists of customers, patents, copyrights, formulas, processes, designs, patterns, know-how, and licenses) and allowed firms to amortize the cost of such assets.

The lack of reliable and widely accepted accounting standards for intangible assets resulted in differences between companies' book values and their market capitalization. For example, a review of the accounts of the 350 largest British companies with a combined total market capitalization of US\$2,167 billion revealed that, of that value, total balance sheet assets amounted to US\$603 billion and intangible assets a mere US\$38.9 billion. This leaves an unexplained gap between market capitalization and balance sheet assets of about US\$1,500 billion or 72 percent.<sup>13</sup> Accordingly, in parallel with the development of national laws, regional efforts at coordination have been made. For example, since its establishment in 1977, the European Accounting Association has tried to link the Europe-wide community of accounting scholars and researchers. This initiative has been dealing with the presentation and valuation problems associated with intangibles.<sup>14</sup>

At the international level, the International Accounting Standards Committee (IASC),<sup>15</sup> an independent private sector body, has also been working to develop internationally acceptable accounting standards. The IASC publishes its standards in a series of pronouncements called International Accounting Standards (IAS). In 1998, IASC published IAS 38, a revised standard on intangible assets.<sup>16</sup> It applies to expenditures on advertising, training, start-up, and R&D activities. One of the main features of IAS 38 is the requirement that an intangible asset should be recognized in financial statements only if it is an identifiable asset that is controlled and clearly distinguishable from an enterprise's goodwill. Intangible assets should be amortized over the best estimate of their useful life. The

disclosures on intangible assets should enable users to understand the types of intangible assets that are recognized in the financial statements and the movements in their carrying amount (book value) during the year.

In contrast to the keenness of some accountants and government authorities, many firms have been slow in introducing full-fledged strategic management of IP. This is probably due to the fact that, in many countries, recognition of IP as a natural part of management's responsibility has not included the practice of assessing its value.<sup>17</sup> However, to meet the requirements on disclosure of assets, effective methods of assessing the value of intangible assets, including IP, are needed. Experts have not found a robust method that could fully satisfy firms in different sectors of industry and this may also be another reason which prevents many firms from systematically assessing the value of IP.<sup>18</sup>

## VALUATION METHODS

The methods for the valuation of IP so far developed are either qualitative or quantitative. Qualitative methods provide different scores or rankings based on certain assessment criteria. Quantitative methods provide actual figures for the value. Valuation methods may be divided into the following three groups:<sup>19</sup>

### (a) Cost Approach

The expenses for acquiring IP from external sources or for generating IP assets internally are indicated. This method measures future benefits by quantifying the amount of money that would be required to replace the future service capability of the property. The value is subject to amortization and write-downs.

### (b) Income Approach

The income approach focuses on a consideration of the income-generating capability of the property. The underlying theory is that the value of property can be measured by the present worth of the net economic benefit on the assumption that IP is capable of producing the income. It is generally agreed that this approach often proves to be the most reliable for the valuation of IP.

### (c) Market Approach

The market approach is the most direct and the most easily understood appraisal technique. It measures the present value of future benefits by obtaining a consensus of what others in the marketplace have judged it to be. There are two requirements: the existence of an active and public market and an exchange of comparable properties. Until recently, these conditions were considered difficult to meet. However, the emerging web-based patent exchange markets may change the picture as the next section will describe.

## VALUATION OF IP IN THE PRIVATIZATION CONTEXT

The issue of privatization (simply defined as the transfer of assets from the state to the private sector) was recently identified as having significant influence on IP policy and strategy formulation, and vice versa.<sup>20</sup> WIPO's study on privatization, carried out by an advisory panel, readily identified the question of valuation of IP assets as a key and possibly seriously under-researched area with clear relevance to decisions to privatize or not, and highlighted many examples where IP assets had possibly been undervalued, or not valued at all. The panel noted that existing international accounting standards and valuation methodologies might be inadequate in providing a sound foundation for valuing intangible assets, including IP assets in processes that were immensely important to the economies of many countries, in particular those economies in transition to free-market principles. While the panel concluded that there is virtually no overlap in current literature on privatization and IP as such, there was much interest in the assertion that IP figured significantly in the valuation of intangible assets and, therefore, in the estimation of a firm's capitalization and strategic value, which in turn is important in dealing with the question of privatization of public enterprises.

One of the striking figures brought before the panel was the suggestion that between 50 and 80 percent of the value created by a firm originates from intellectual capital rather than from traditional physical assets, pointing to the shift in economic valuation from physical capital to intangible and intellectual capital. This shift is apparent in the recent strategic

patenting by multinational firms, whereby patents are considered valuable not only in the originally intended sense of protecting innovation, but also in respect to potential business income from licensing fees, protection and leverage against competitors, or even extra income unrelated to the main business of the firm. Texas Instruments, for example, is well-known for pioneering the process of applying for patents on innovation discovered by its R&D teams in circumstances where the patents may have general scientific and technical application. More and more companies are realizing that aggressively asserting the existence of their patents can generate many business advantages, and are spending large sums of money undertaking a patent portfolio audit to identify economically relevant patents.<sup>21</sup>

Valuations of IP assets, such as trademarks, have grown to become an important component of a firm's capitalization. According to Interbrand, in 2001, the worldwide trademarks for Coca-Cola, Disney and Ford were 61, 54 and 66 percent, respectively, of the capitalization of those companies, and were worth US\$69, 32.5, and 30 billion respectively.<sup>22</sup> A decade or so ago, very few companies entertained such a concept of trademark valuation.

## MARKETING KNOWLEDGE

A report issued by PricewaterhouseCoopers in 1999 found that the global IP licensing market had soared over the previous ten years to reach more than US\$100 billion. In this regard, patent information plays an important role, in particular by assisting in the assessment of the potential for commercialization of IP. A good illustration of this emerging market is that IBM and the Internet Capital Group have joined the growing list of companies creating online exchanges for the evaluation, buying, selling, and licensing of patents and other forms of IP. IBM contributed the assets of its IP Network, a content-oriented website that provides a range of free information about European, Japanese and US patents.<sup>23</sup> Several IP information brokerages were set up to provide value-added evaluation of patent information and services for patent licensing.<sup>24</sup> Recently, IP assets have also been recognized as financial assets. Sellers and buyers of IP can manage their IP as financial assets just as investors in stocks, options and other financial instruments.<sup>25</sup>

## THE EMERGING CYBER MARKET FOR PATENTS

According to the British Technology Group (BTG), a consulting firm, just 3 percent of the commercial potential of global IP was realized in 1999; that figure translates into about US\$110 billion out of a US\$3 trillion pie. Of that \$110 billion, only some \$500 million came from universities, where the bulk of R&D takes place. IBM alone, which has long set the standard for both the volume of patents issued and the revenue generated from licensing them, created an annual royalty stream of \$1.25 billion. However, most corporate giants were inclined to guard their patents, trademarks, and other IP more closely.

“A year and a half ago, we did a survey and realized that we were spending US\$1.5 billion on R&D, but we were using less than 10 percent of it in our own products,” said Jeff Weedman, vice president of global licensing and external ventures of Proctor & Gamble (P&G). The company, which holds over 27,000 patents worldwide and is one of the biggest users of WIPO’s PCT, has changed its IP philosophy dramatically, and now all its patents, as well as other technologies, are available for licensing, sale, or joint ventures.

Under pressure to increase revenue, many companies are offering for sale or license, at new online IP exchanges, everything from prized R&D secrets to sharp, in-house information technology systems. The buyers are other big companies looking to slash R&D costs by buying the results of others’ research.<sup>26</sup> For patent valuation, the Patent & License Exchange uses a mathematical model based on the Nobel Prize-winning option theory developed by Robert Merton, Myron Scholes, and Fischer Black.<sup>27</sup> This has proved to work well in analyzing the differing claims that debtholders and shareholders have on a firm. These business-to-business marketplaces offer, users say, a fast, efficient, and extremely low-cost way to transfer technology and build revenue based on inventions that otherwise might not have seen the light of day.

The emerging recognition of IP and its role in knowledge and wealth creation has been driving the development of new and better valuation and accounting methods for IP as an intangible asset, or a new and modern form of knowledge capital in the business world. IP seems to be accepted

as the commercial embodiment of new knowledge and as an instrument of wealth creation. Its tradability as an economic good has found a new expression in the form of knowledge and technology markets. The new knowledge market takes advantage of web-based technologies and the most recent marketing tactics. The recognition of IP in the market is further convincing evidence of its growing economic impact.

## MODERN IP MANAGEMENT AND THE NEW ECONOMY

Intellectual property management is becoming a major element in corporate business management. It affects M&As, generates joint ventures, forges cooperative R&D agreements, and is the basis of licensing agreements. Companies are forging alliances with each other in order to heighten the value of their IP and to obtain mutually beneficial competitive advantages. Often such alliances will give the companies involved substantially increased clout in their particular field of technology, allowing them to impose their standards on competitors in that sector. Strategic positioning of IP assets can make a difference to a company’s profit. Such strategic positioning enhances revenue through better deployment of R&D and market intelligence, and facilitates licensing income, as well as the potential for M&As.

Intellectual property assets can contribute significantly to a company’s market value. Several companies have a major part of their market value in IP assets; these include Walt Disney, Microsoft, and P&G. Evidence shows that in each of these three companies, more than 80 percent of their value is associated with IP and intangible assets.<sup>28</sup> Microsoft is said, for example, to have a book value of US\$90 billion. However, its market capitalization value is estimated to be around US\$270 billion. The major part of the extra \$180 billion is said to come from IP assets, including trademarks, patents, trade secrets, and know-how.<sup>29</sup>

In order for corporate management to maximize the assets of a firm, a deliberate effort must be made to understand and focus on IP in the business world.

## NEW CORPORATE IP MANAGEMENT

Possession and management of IP assets is becoming a major determinant of company success or failure. IP management, formerly confined to legal departments, is increasingly being handed over to proactive IP departments. This is especially true in some of the new technology firms which are developing so fast and making huge investments in R&D. "The market for biotechnology is expected to be worth US\$38 billion by the year 2005... On average, the biotechnology industry ploughs some 45 percent of its annual income into R&D. That means nearly half the value of the industry is embedded in its intellectual capital. The trouble is that intellectual capital is a very plunderable good: it can be stolen quite easily, copied and then sold without authorisation... patenting is seen as being important to researchers."<sup>30</sup> (For further discussion on the patent protection of biotechnology, see Chapter 4.)

What changes in IP management are taking place in those firms? Here are some examples:

- By licensing CD technologies to competitors at an early stage, Philips and Sony prevented them from developing alternative standards, which could have provoked a long and draining format war like the one between the video formats VHS and Betamax.<sup>31</sup>
- IBM has generally stayed away from having to make large acquisitions, in part because it has been able to leverage its IP into new products and businesses, investing more than US\$5 billion annually in R&D. IBM's aggressive IP effort boosted patent licensing royalties 3,300 percent between 1990 (\$30 million) and 2000 (\$1 billion).<sup>32</sup>
- Hitachi progressively developed its patent strategy and earned \$455 million in 1996. Its earnings expenditures ratio (EER) grew from 0 in 1990 to 4.5 in 1996, going through four stages of patent strategy evolution.<sup>33</sup>

Intellectual property management is occurring not just in the private sector. For example, in 1987, an eminent international scientific research institute, CERN (European Organization for Nuclear Research), created an Industry and Technology Liaison Office to stimulate interaction with industry and to assist in issues related to its IP. The liaison office also ensures that the organization's IP is adequately protected and correctly exploited. Some universities also have IP offices whose sole function is to manage IP assets (see Chapter 4).

## PATENT MAPPING

Making the care of IP a core part of marketing strategy is not just an offensive weapon; it is crucial for defense as well. An effective way to analyze trends in R&D in certain fields of technology, and also competitors' R&D and marketing strategies, is to make a so-called patent map in which all significant patents are shown along with the technological links between them. The patent map may include an analysis of how a company's patents and those of its competitors relate to the company's technology and products. This is not just an exercise to avoid IP infringement but a tool to understand trends in technology and plan a company's strategy for investment in R&D and marketing. Until recently, many executives thought it unnecessary to spend the time and money to map out the patent landscape, but now it is an essential factor in corporate strategy. Patent-mapping efforts that used to take months can now be done in hours or days. The relationship between patents, competitors and the corporation's research and business activity can now be presented in 3-D reports that highlight patterns and relationships in technology development.

Many commercial databases and software packages have been developed to assist companies in managing IP. Such services and products provide a set of dynamic analytic tools applied to a database of worldwide patents that allow customers to gain a decisive insight into their innovation asset opportunities. They have a platform that allows clients to create powerful visualizations of their marketplace, their innovation assets, and their competitors' innovation assets. This promotes the

understanding of industry trends and opportunities and facilitates rapid, informed decisions in key strategic areas such as R&D, M&As, technology licensing, and competitive intelligence.<sup>34</sup>

## THE NEW ECONOMY, THE INTERNET, AND IP

Intellectual property is on its way to becoming the ultimate asset.<sup>35</sup> What has caused this transformation is the advent of the so-called knowledge economy supported by the Internet, which completely changed the coverage, amount, and speed of access to information (from which knowledge can be made). Increasingly, the creation of wealth – and its attendant social and cultural benefits – hinges on the generation and management of the three “i”s: innovation, information, and ideas, using another “i” – the Internet. They are the fuel that drives the incredible forward thrust of technological development today, and possession of (or access to) them is vital for any company that wants to stay ahead of the field – whether in creating innovative new products or finding innovative and cost-effective ways to manufacture old ones. Globalization is raising the financial stakes in these new products and processes, as a truly worldwide marketplace becomes increasingly accessible through new communications technology. The economic landscape – and the place of IP in it – has changed completely.

A major element in the new topography is the Internet and its user-friendly graphical interface, the World Wide Web. Other inventions have had a profound effect on society (the wheel, the internal combustion engine, the radio), but it is difficult to think of one that has had such an immediate and wide-ranging impact. In the first 4 years of its existence the Web reached 50 million users (the telephone took 74 years to attain that figure), and it is said that traffic on the Internet doubles every 100 days.<sup>36</sup> The casting of this particular net (and the spinning of the web) has irrevocably linked individuals and organizations all over the planet, creating a global grapevine, a virtual talking-shop, a cyber-marketplace, a digital “Delphic oracle”, a vast electronic sea of knowledge, accessible to all, transcending existing boundaries and transforming how, where, and with whom we communicate and do business. “A century ago, Standard Oil of New Jersey went overseas in search of oil. In the late

1990s, America Online went around the world in search of subscribers. In 1899, the United Fruit Company needed to be in Central America because of that region’s advantages in the cultivation of bananas. Nowadays, Yahoo! needs to be everywhere because the more visitors it attracts the higher its stock price.”<sup>37</sup>

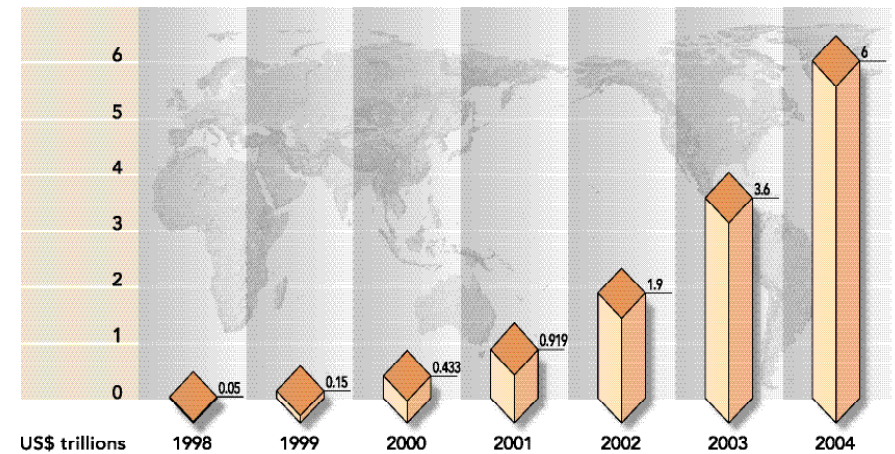
From education to entertainment to e-commerce – the possibilities of the Internet are vast. All these changes have reinforced the importance of knowledge and have become effective tools to optimize the benefits of that knowledge and of IP. For example, the Internet has allowed researchers and inventors to access more easily the almost overwhelming volume of electronically stored patent information drawn from patent documents filed with national and regional patent offices and under the WIPO PCT.<sup>38</sup> This has, in turn, triggered a new growth industry with the rapid rise of on-line service providers offering patent search and management facilities that enable clients, quickly and efficiently, to ensure the originality of their own research; to track down inventions of use to them for further innovation; to obtain an overview of trends and new R&D activity in a particular area of technological development; and to monitor the marketing strategies of competitors by tracking the countries in which they are seeking patents. The possibilities that modern technology offers for making full and creative use of patent databases can also lead to happy discoveries of ideas with great, but unexploited, market potential, such as the antibiotic azithromycin, uncovered by the pharmaceutical company Pfizer, which came across the patent by chance when searching the United States Patent and Trademark Office (USPTO) database (see Chapter 4).

The Internet is creating a worldwide human and business network of networks. Some pundits and business managers have suggested a new maxim to survive in the new economy – think globally and act locally. “Glocalism”, that is, to be global and local, allows people to assimilate aspects of globalization into their own country and culture in a way that adds to their growth and diversity, without overwhelming local cultures.<sup>39</sup> Empowerment by the Internet provides local industries and communities with a fresh opportunity to realize the value of their indigenous intellectual assets such as cultural inheritance and traditional knowledge, which may potentially have a global market (for further details, see Chapter 7).

## ELECTRONIC COMMERCE AND THE IMPACT ON IP

As well as facilitating innovation and allowing its more efficient management and exploitation, the Internet has also raised some challenges for the IP community. One such, which has attracted a considerable amount of recent media attention, concerns innovative ways of conducting business on-line. Electronic commerce (e-commerce) grew from more or less nothing in 1995 and is expected to become a trillion dollar industry within a decade. Business-to-business e-commerce in 2000 represented a 189 percent increase over 1999 and, while valued at US\$1.9 trillion in 2002, is anticipated to reach US\$6 trillion by 2004 (see Chart - 3.2).<sup>40</sup> With such high stakes at play, there has been a rush to patent methods designed to make it easier for buyers and sellers to conduct cyber-business. The most well-known example is Amazon.com's famous *one-click* shopping, enabling customers to order, pay for, and authorize delivery of their purchases with one click of their mouse. Another classic example is Dell's 40-odd patents protecting on-line techniques that enable customers to order a customized computer assembled to their individual specifications. In fact, new business methods cover everything from Priceline.com's system of on-line reverse auctioning to Chase Manhattan Bank's techniques for check imaging and credit card authorization (for further discussion on the patentability of business method inventions, see Chapter 4).

CHART-3.2 PROJECTED E-COMMERCE GROWTH



Source: Gartner, Inc., [http://www4.gartner.com/5\\_about/press\\_room/pr20010313a.html](http://www4.gartner.com/5_about/press_room/pr20010313a.html)

Another Internet-generated battle in the IP area is being fought over the eviction of cybersquatters who have taken over trademarks to which they have staked a claim in bad faith. Cybersquatters register domain names (essentially website addresses), which they have no intention of using and that are identical or similar to trademarks or famous names, and then try to sell them back to the holders of the mark or famous name at a profit. Cybersquatters, and some of the cases brought against them under the WIPO domain-name dispute resolution procedure, have received wide-spread coverage in the press, highlighting the importance of trademarks<sup>41</sup> and their new manifestation as website identifiers, in the world of commerce. The domain name issue is yet another example of how the Internet has given a new dimension to a traditional form of IP and has forced the IP community to find speedy and efficient solutions in order to resolve a problem of considerable economic importance (for further discussion, see Chapter 5).

Another challenge to IP is digital piracy caused by the ease and speed with which perfect digital copies of books, photographs, music, and film can be made and distributed on the Internet to anyone, anywhere in the world. The fight against such illegal distribution of copyrighted materials is being fought with technological weapons, but digital pirates are adept at finding their way through barriers put in place by encryption and copy protection techniques. While many copyrighted works can be shared with friends and acquaintances or even large numbers of fellow Internet-users at the click of a mouse, many of the new cyberpirates are often unaware that they have committed an illegal act. For example, many Napster users have made their recordings globally available without knowing that their act is illegal. Even now, software is being developed to enable users to share music files through peer-to-peer exchanges, making it more difficult to trace such digital transfers and to crack down on them. Another example concerns Stephen King, the popular author, who put a new spin on the concept of electronic self-publishing. As an experiment, King posted a chapter of his new book *The Plant* on the Internet at regular intervals, but only as long as his readers continued to pay him a dollar for each new chapter (routed on-line through Amazon.com). The experiment ended after the sixth chapter, due to a fall-off in payments. The difficulty of controlling copyright in cyberspace has given rise to a rethinking of the way in which royalties are collected (for further discussion, see Chapter 6).

**TABLE-3.3 E-COMMERCE AND ITS IMPACT ON IP LAW AND POLICY AND OTHER RELATED AREAS**

Characteristics	Phenomena	IP-related issues
Globality	Cross-border impacts	Harmonization of IP laws, recognition of judgments, and enforcement
Interdisciplinary	Emerging new intermediaries and dis-intermediation	On-line provider's liability for IP infringement, broadcasters request for their rights
Digital technology	Perfect quality of digital copies	Review of the definition of copy
Detection, anonymity, and privacy	Cyber-piracy and fair use (e.g. Napster)	Difficult enforcement of IP rights, watermarking of copyrighted works.
Speed of light	A widened gap between legislative efforts and technical changes, no effective judicial system	Internet-based consultation for international policy formulation, emerging solution of using alternative dispute resolution systems (mediation and arbitration)
Technical features	Domain name, Internet standard protocol	Domain name disputes and conflicts with trademarks
Internet governance	Minimalist v. Maximalist	Policy difference between countries (the extent to which governments implement regulatory measures)

E-commerce has already begun to have an extraordinary impact on the architecture of our markets and regulatory structures, and to raise issues that implicate different sectors of legal interest. As IP systems have been independently developed in different countries on the fundamental principle that each state has sovereignty over IP protection and enforcement within its territory, the international dimensions of e-commerce and the IP-related questions emerging from it complicate the development of solutions and caution against national interventions that would ignore potential cross-border impacts. They also have horizontal implications for other areas of law and policy as summarized in Table - 3.3.

- 1 Steven M. H. Wallman, "In Pursuit of Intellectual Capital," foreword to **Hidden Value: Profiting From the Intellectual Property Economy**, ed. Bruce Berman (London: Euromoney Publications PLC, 1999): 9.
- 2 Gordon V. Smith and Russell L. Parr, **Valuation of Intellectual Property and Intangible Assets**, 2<sup>nd</sup> ed. (New York: John Wiley & Sons, 1994): 117-119.
- 3 Source: Brookings Institution.
- 4 Juniiichi Kikuchi and Yasuyuki Ishii, "A Survey on the Economic Impact of Intellectual Property," Institute of Intellectual Property, Japan (1993).
- 5 Russell L. Parr "Intangible Assets Dominate Hidden Corporate Value," in **Hidden Value: Profiting from the Intellectual Property Economy**, ed. Bruce Berman: 64.
- 6 The accounting firm, PricewaterhouseCoopers, estimates that two thirds of the US\$7 trillion market value of all publicly traded US companies is not reflected on their balance sheets because it lies in their intangible assets, such as intellectual property.
- 7 See also – Patrick H. Sullivan, **Value-Driven Intellectual Capital: How to Convert Intangible Corporate Assets Into Market Value**, (New York: John Wiley & Sons, 2000) – for extended treatment of the subject.
- 8 S. K. Bijlani, WIPO document: WIPO/IP/MNL/00/3(b) (October 2000).
- 9 Bruce Berman, ed. "The Emergence of an 'Invisible' Asset Class," Introduction to **Hidden Value: Profiting From the Intellectual Property Economy**: 12.
- 10 In December 1944, the Committee on Accounting Procedures of the American Institute of Certified Public Accountants issued Accounting Research Bulletin 24, which directed that goodwill could be carried on the balance sheet as an asset.
- 11 "The Great Merger Wave Breaks," **The Economist**, (January 25, 2001).
- 12 Karen Lowry Miller, "A Run for the Money," **Newsweek**, (January 29, 2001).
- 13 Thayne Forbes, "To Have and to Hold," **Managing Intellectual Property**, (September 2000).
- 14 See discussions on this subject at the website <http://www.eaa-online.org>
- 15 The IASC was formed in 1973 through an agreement made by professional accountancy bodies from Australia, Canada, France, Germany, Japan, Mexico, the Netherlands, the United Kingdom, and the United States of America. Its objective is to achieve uniformity in the accounting principles that are used by businesses and other organizations for financial reporting around the world.
- 16 All proposed standards are available at <http://www.iasc.org.uk>
- 17 Danish Ministry of Trade and Industry, **New Trends in Industrial Property Rights** (Copenhagen: Danish Ministry of Trade and Industry, 1999).
- 18 Certain governments assisted their industry in developing suitable methods. For example, see Danish Patent and Trademark Office, **Management and Valuation of Patents and Trademarks: Consultants' Analysis prepared by Ernst & Young and Ementor Management Consulting** (Copenhagen: Danish Patent and Trademark Office, December 1999), <http://www.dkpto.dk>. In 1999, the Japanese Patent Office published Patent-Related Evaluative Indexes, in which a qualitative approach was proposed by suggesting five different ranks (A to E) for the valuation of patents.
- 19 Gordon V. Smith and Russell L. Parr, **Valuation of Intellectual Property and Intangible Assets**, 3<sup>rd</sup> ed. (New York: John Wiley & Sons, 2000): 175, 215.
- 20 The relevance of privatization to intellectual property was included in Vision and Strategic Direction of WIPO (A/34/3) endorsed by the Assemblies of the Member States of WIPO, 34<sup>th</sup> series of meetings (Geneva, September 20 to 29, 1999). Subsequently, WIPO studied a framework for understanding the impact of privatization on the IP area, and to build greater awareness of, and consensus on, the relevant issues. The valuation of intellectual property clearly emerged as one of those issues.
- 21 Report of the WIPO ad hoc Advisory Panel on Privatization (April 2001) <http://www.wipo.int>
- 22 <http://www.interbrand.com>
- 23 <http://www.delphion.com>
- 24 <http://www.pl-x.com>; WIPO PCT statistics; "Corporate Finance," **The Economist** (January 27, 2001); and "Corporate Secrets Up For Grabs at New Exchanges," **CNN Interactive** (November 15, 2000).

- 25 Intellectual Property Monetization, Nir Kossovsky, *WIPO Second International Conference on Electronic Commerce and IP (September 2001)* – <http://ecommerce.wipo.int/meetings/2001/conference/presentations/pdf/kossovsky.pdf>
- 26 Dozens of brokers are offering such exchanges, including Cambridge, Massachusetts-based Yet2.com and Pasadena, California-based The Patent & License Exchange. In November 2000, Minnesota-based Global Commerce and Communication joined with NewIdeaTrade.com, a free online forum for buyers and sellers of inventions, trademarks, and patents.
- 27 <http://www.pl-x.com>
- 28 Russell L. Parr, "Intangible Assets Dominate Hidden Corporate Value," in *Hidden Value: Profiting from the Intellectual Property Economy*, ed. Bruce Bannan.
- 29 Bruce Berman, ed., "The Emergence of an 'Invisible' Asset Class," *Introduction to Hidden Value: Profiting from the Intellectual Property Economy*: 24.
- 30 Evdokia Moisé, "Intellectual Property: Rights and Wrongs," *OECD Observer (April 1999)*.
- 31 Alberto Torres, "Unlocking the Value of Intellectual Assets," *The McKinsey Quarterly* 4 (1999)
- 32 Tom Foremski, *Financial Times (February 2, 2000)*.
- 33 Hisamitsu Arai, *Intellectual Property Policies for the Twenty-First Century: The Japanese Experience in Wealth Creation (Geneva: WIPO, 1999)*: 34-37.
- 34 For example, Aurigin Systems (<http://www.aurigin.com>), introduced in Kevin G. Rivette and David Kline, *Rembrandts in the Attic: Unlocking the Hidden Value of Patents (Cambridge, MA: Harvard Business School Press, 1999)*.
- 35 *Ibid.*
- 36 WIPO, "E-commerce Primer," – <http://www.wipo.int/primer/index.html>
- 37 Moises Naim, *Financial Times (December 22, 2000)*.
- 38 For further information, see the WIPO Intellectual Property Digital Library (IPDL) at <http://ipdl.wipo.int>
- 39 Thomas L. Friedman, *The Lexus and the Olive Tree: Understanding Globalization*, (New York: Anchor Books, 2000): 295.
- 40 Gartner, Inc. – [http://www4.gartner.com/5\\_about/press\\_room/pr20010313a.html](http://www4.gartner.com/5_about/press_room/pr20010313a.html)
- 41 Well-established trademarks have traditionally been recognized as valuable pieces of intellectual property and their new role as website identifiers has increased that value – which can be considerable.