

# INTELLECTUAL PROPERTY IS THE FOUNDATION OF VALUE

*Intellectual property* first entered the lexicon of the general U.S. population in 1993. Late-night talk-show host David Letterman did not get the nod from NBC to replace retiring Johnny Carson at *The Tonight Show with Johnny Carson*. David Letterman's rival, Jay Leno, got the job. Letterman went to CBS to host a new late show to compete with *The Tonight Show*. NBC threatened to sue Letterman if he used any of his regular running gags such as "The Top Ten List," "Stupid Pet Tricks," and "Viewer Mail," developed while Letterman was at NBC. The *Los Angeles Times* reported, "NBC's position is that, under 'intellectual property' laws, it owns the rights to *Late Night with David Letterman* and elements in the show . . ." <sup>1</sup>

The general public was aware of the elements of intellectual property such as patents and trademarks but not the collective term *intellectual property*, which was largely limited to professionals specifically operating in the field of intellectual property.

This book is about intellectual property: patented technology, trademarks, copyrights, and trade secrets. It describes the methods for valuing intellectual property and the practices of monetizing intellectual property, including licensing and royalty rates. It also spends considerable space on the determination of patent infringement damages.

This book also is about intangible assets that in conjunction with intellectual property create value in a business enterprise. Intangibles are categorized as rights and relationships. Examples of rights include licenses, contracts, and leasehold interest. Examples of relationships include an assembled workforce and distribution network. Their value can be substantial and will be discussed.

The reason for this book is that intellectual property is the central resource for creating wealth in almost all industries.

Patents convey exclusive rights to inventors for their innovations. The government allows a patent owner to exclude all others from using a protected invention for 20 years after filing for a patent. During the life of a patent, its owner can commercially exploit the patent invention, license it to others, sell it, or "park" it—not use it and keep all others from using it, too.

Patents encourage and protect the billions of dollars invested in the development of new products. Consider breakthrough medical therapies. It costs \$2.5 billion to get a new

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<sup>1</sup>[http://articles.latimes.com/1993-08-30/entertainment/ca-29527\\_1\\_stupid-pet-tricks](http://articles.latimes.com/1993-08-30/entertainment/ca-29527_1_stupid-pet-tricks)

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drug from the laboratory, through development, and through FDA approval.<sup>2</sup> This massive investment would never be spent without patent protection. No company would invest this kind of money in developing a new drug if, after successfully entering the market, any other company could market a copy of the new drug. Patents protect investors by providing them with an exclusive period of time during which the investor can recover its huge investment and make a profit. In return for the limited exclusivity provided by a patent, at the end of a patent's life, the invention enters the public domain, free for all others to use.

Trademarks convey the messages of value, quality, and safety for coveted products and services to trusting consumers. These assets are often nurtured over decades of exposure to the public and enormous support from advertising. By the end of 2017, over \$200 billion in annual media ad spending will support the recognition of trademarks.<sup>3</sup> *Forbes* reports the value of the Google trademark at over \$44 billion.<sup>4</sup>

Think about the single aspect of safety conveyed by a trademark. A thirsty consumer is interested in buying an amber-colored, sugary carbonated drink. He faces two options. One is in a dirty glass bottle with an unknown brand name scrawled across the bottle with a grease pen. The other drink is presented in a gleaming bottle with *Pepsi* expertly printed on the bottle. Even though the Pepsi option is more expensive, the decision is obvious for those desiring a thirst-quenching experience without the risk of poisoning.

Trademarks also provide a consumer with cachet. Cars are a great example. Most cars produced today can get anyone from point A to point B reliably and safely. BMW and Mercedes, however, propel their owners with widespread respect and admiration. Enormous premiums are paid for such attributes.

Copyrights for the entertainment industry protect the creativity that goes into music, movies, art, and literature. Congress protects copyright owners as reward for their creativity. Like patents, time and money are required to create art, and the intangible benefits for society for entertainment and amusement are considered worthy of exclusive rights. Consider comic books. Disney purchased the rights to comic book characters like Iron Man, the Hulk, the Fantastic Four, the X-Men, and Spider-Man when it purchased Marvel for \$4 billion. Movies, theme parks, and merchandising of the superheroes have earned Disney billions of dollars annually.

Trade secret laws protect sensitive manufacturing, services, and marketing activities vital to many companies; think of the formula for Coke. Like patents, the development of trade secrets can be costly. Unlike patents, trade secrets rights do not expire. If the trade secret can be maintained as a secret, the initial investment can be enjoyed into perpetuity. The value of all the trade secrets in the world can never be known, but this book will teach how specific trade secrets can be valued.

## FOUNDATION OF VALUE CREATION

The United States Patent and Trademark Office conducted a study to estimate the impact of intellectual property (IP) on the economy. It identified IP-intensive companies as those using significant amounts of patents, trademarks, and copyrights. The report concluded that IP-intensive industries supported 45.5 million jobs and contributed \$6.6 trillion in value added in 2014, equivalent to 38.2% of U.S. GDP. The study also reported on the impact of IP in Europe.<sup>5</sup>

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<sup>2</sup><http://www.scientificamerican.com/article/cost-to-develop-new-pharmaceutical-drug-now-exceeds-2-5b/>

<sup>3</sup><http://www.emarketer.com/Article/Digital-Ad-Spending-Surpass-TV-Next-Year/1013671>

<sup>4</sup><http://www.forbes.com/sites/seanstonefield/2011/06/15/the-10-most-valuable-trademarks/2/#cc4f4f52c5c6>

<sup>5</sup>"Intellectual Property and the U.S. Economy," 2016 Update, USPTO.

The European Patent Office and the Office for Harmonization in the Internal Market (OHIM) published a comparable report in 2013 using European Union (EU) data. It relied on similar methodologies to identify intellectual property rights (IPR)–intensive industries in Europe and quantified their contribution to the European economy in the 2008–2010 period. The study found that IPR-intensive industries generated €4.7 trillion worth of economic activity, which amounted to almost 39% of EU GDP. Furthermore, the study found that IPR-intensive industries directly employed 56.5 million Europeans, which accounted for almost 26% of all jobs for the period.<sup>6</sup> According to another report, IP-intensive industries account for approximately 90% of the EU’s trade with the rest of the world.<sup>7</sup>

Intellectual properties are at the very core of corporate success. Properties such as patented technology and world-class trademarks are the basis for capturing huge market share, commanding premium prices, and maintaining customer loyalty. They are also in scarce supply. This combination of power and scarcity makes such assets very valuable. Companies that possess such assets will grow and prosper. Those without access to intellectual property will stagnate for a while in low-profit commodity businesses and eventually fade out of existence. Future success therefore requires that companies somehow gain access to intellectual properties. They must create them, buy them, share them, or arrange to rent them. As a result, licensing and strategic alliances will play a dominant role in future corporate deal-making. At the core of these strategies will be intellectual property.

Companies are seeking to expand product lines, increase market share, minimize new product development costs, expand market opportunities internationally, and reduce business risks. Companies are also seeking to create corporate value for investors. All of this is accomplished by exploiting patents, trademarks, trade secrets, and copyrights.

It is important also to consider the consequences of not having access to intellectual property. Without intellectual property, profits are low, growth is lacking, and corporate value is lost. Corporate managers realize more than ever that access to intellectual property is key to their ability to create corporate value and, more important, key to continued corporate survival. The forces driving the licensing and joint venturing of intellectual property include time savings, cost controls, and risk reduction. Consider Huawei Technologies Co. Huawei is the world’s third-largest maker of smartphones behind Samsung and Apple. Most American consumers have never heard of the company, and that is the problem for Huawei as it attempts to enter the U.S. market for the first time. U.S. carriers such as AT&T and Verizon distribute over 80% of handsets in the country. Huawei is a major force in China, Europe, the Middle East, Africa, and Latin America. Yet, the company has almost no sales in the world’s largest market for smartphones—the United States. Besides needing to make changes to its mobile chips to comply with cellular standards in the United States, carriers like Verizon and AT&T are reluctant to add Huawei phones to their already-crowded phone offerings because the Huawei brand is unknown in the United States. As a result, the company is having difficulty entering the world’s largest market for its products.<sup>8</sup> Such is the importance and value of trademarks. Compounding Huawei’s problem is that no established smartphone maker in the United States is going to even consider licensing their well-established trademark to Huawei.

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<sup>6</sup>Ibid.

<sup>7</sup><http://www.eubusiness.com/focus/16–10–25>

<sup>8</sup>Juro Osawa and Ryan Knutson, “For China’s Huawei, Hurdles Loom as It Plans U.S. Smartphone Sales,” *Wall Street Journal*, November 28, 2016, p. B4.

## LEGISLATION CREATED INTELLECTUAL PROPERTY

On September 5, 1787, the Committee on Detail reported to the Constitutional Convention that Congress should have the power “to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”

That recommendation was unanimously adopted without recorded debate, and the provision was incorporated into the final draft of the Constitution. Such a constitutional clause is highly unusual in that it instructs Congress to promote the progress of the useful arts—namely by securing to inventors the exclusive rights to their discoveries. It is even more unusual in that nowhere else in the Constitution is there any provision for an exclusive right to be granted to any individual or group of individuals; only authors and inventors are so blessed.

America was not the first nation to recognize special rights for inventors. The patent institution was established by the medieval Venetian state, which articulated the basic feature of the law today: spur innovation through the incentive of limited-time exclusivity by demanding the demonstration to the public of a working model and promising to seize and destroy counterfeit products. Patent rights arise because inventing is an expensive process and costs must be recouped to provide incentives to invest. If others can cheaply appropriate an inventor’s innovation, calling it their own without having invested time and energy in it, investments in innovation will not be made.

Venice institutionalized the right of patent in 1474 in a statute that contained all the main features of contemporary patent law, including requirements that the device be novel, be actually constructed (reduced to practice in modern jargon), and be made public. It also required that it be examined (although the examination was rather informal), that there be term limits to exclusive rights, and that there be remedies for infringement. Finally, the Venetian statute declared that the inventor must teach others how the invention worked and be granted exclusivity in return.<sup>9</sup>

Many important inventions were first discovered and developed by small companies and inventors who sought personal success: for some as wealth, for others as fame. Without the patent system, likely we would not have the economic power that we enjoy nor the quality of life we cherish. The Continental Congress had in mind the creation of a country and system of self-government like none ever tried before—a system that protected the rights of individuals above all else, a system where the governing body had only the powers granted to it by its citizens. The protection of the fruits of inventive energies seems a natural extension of the Miracle at Philadelphia. Economic prosperity and military strength were imperative for the new experiment to work. By stimulating and encouraging innovation, the United States has achieved economic prosperity that all other systems of government can only envy. Probably the first international recognition of the eminence of American invention came at the Crystal Palace Exhibition in London in 1851.

The Great Exhibition of the Works of Industry of All Nations was held in London in 1851. Having been staged in a huge building of glass it became known as the Crystal Place exhibition. At the time, England was experiencing a manufacturing boom. It seems that the time had come for England to demonstrate its pride to the world. There were some 100,000 objects displayed along more than 10 miles by over 15,000 contributors. Britain, as host, occupied half the display space inside with exhibits from the home country and the Empire.

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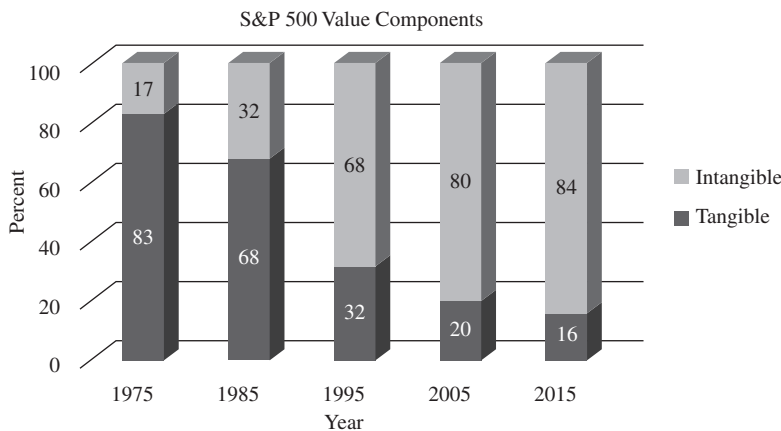
<sup>9</sup>Michael P. Ryan, *Knowledge Diplomacy, Global Completion and Politics of Intellectual Property* (Washington, DC: The Brookings Institute, 1998), pp. 21, 24, 25.

Many countries displayed their best, including France, Germany, Russia, and Canada. The *London Times* said, “It is beyond all denial that every practical success of the season belongs to the Americans.”<sup>10</sup>

At about the turn of the twentieth century, a Japanese official, Korekiyo Takahashi, was sent on a fact-finding tour of the United States; he subsequently reported, “We have looked about to see what nations are the greatest, so that we can be like them. We asked ourselves, ‘What is it that makes the United States such a great nation?’ and we investigated and found that it was patents, and we will have patents.”<sup>11</sup>

## INTELLECTUAL PROPERTY DOMINATES CORPORATE VALUE

Ocean Tomo is an integrated intellectual capital merchant bank.<sup>12</sup> It conducted an analysis of the largest companies in the United States and found that patents, trademarks, copyrights, and other intangible assets have exploded as a percentage of the S&P 500’s market value from 17% in 1975 to 84% in 2015. No longer do markets value companies based on balance sheet cash and fixed assets. Today, stock prices reflect the importance and value of all intangible assets, including patents, trademarks, copyrights, and trade secrets. Presently, intellectual property and intangible assets overwhelmingly represent the value of corporations. Today, only 16% of the value of major corporations is associated with *hard* assets, (i.e., cash, inventory, and tangible facilities). Intellectual property and intangible assets overwhelmingly dominate.



## EMERGENCE OF INTELLECTUAL PROPERTY EXPLOITATION STRATEGIES

The great fortunes built by Rockefeller, Vanderbilt, and Carnegie were based on oil, railroads, and steel. Hard assets ruled the day and their empires. These great fortune builders could not hope to recognize the current economic landscape. Their fortunes were built from tangible property. Today, fortunes are created from intellectual property. Hard assets have become less important to wealth creation. Intangible assets have become dominant. Bill Gates is a perfect example of the present and future. He built his billion-dollar fortune from

<sup>10</sup>Ibid.

<sup>11</sup>Ibid.

<sup>12</sup>[www.oceantomo.com](http://www.oceantomo.com), <http://www.oceantomo.com/2015/03/04/2015-intangible-asset-market-value-study/>

software. In fact, when personal computers were in their infancy, most companies, like IBM, NEC, Wang, H-P, and others, focused on developing and selling computer hardware. Bill didn't care about hardware and instead purchased the DOS operating system from IBM and made it the standard upon which all of the personal computers worked. Making and selling computer hardware became a cutthroat industry, driving computer prices and profits ever lower. Bill Gates didn't care because no matter where the computer was manufactured it needed an operating system, and his was the industry standard.

All future wealth creation will be based on the same intellectual foundation. In *Microcosm—The Quantum Revolution in Economics and Technology*, George Gilder explains that wealth is no longer derived from possessing physical resources. “Wealth and power came mainly to the possessor of material things or to the ruler of military forces capable of conquering the physical means of production: land, labor, and capital.”<sup>13</sup> Gilder explains that “today, the ascendant nations and corporations are masters not of land and material resources but of ideas and technologies.”<sup>14</sup>

D. Bruce Merrifield, professor of entrepreneurial management at the Wharton School of the University of Pennsylvania, echoed this theme in an article titled *Economics in Technology Licensing*. Merrifield said, “Wealth no longer can be measured primarily in terms of ownership of fixed physical assets that can be obsolete in a few years. . . . Wealth instead will be measured, increasingly, in terms of ownership of (or time-critical access to) knowledge-intensive, high value-added, technology-intensive systems.”<sup>15</sup> Of special interest is Professor Merrifield's parenthetical highlighting of the time-sensitive nature associated with intellectual property. Not only do companies need these knowledge-based assets, but they need them right now.

Lester Thurow, author and former dean of MIT School of Management, has written that the “only remaining source of true competitive advantage is technologies that others do not have.”

## FACTORS DRIVING STRATEGIC ALLIANCES: TIME, COST, AND RISK

Companies are seeking to expand product lines, increase market share, minimize new product development costs, expand market opportunities internationally, and reduce business risks. All of this is to create corporate value for investors, and today it is accomplished by exploiting patents, trademarks, copyrights, and trade secrets. It is important also to consider the consequences of not having access to intellectual property. Without intellectual property, profits are low, growth is lacking, and corporate value is lost. Corporate managers realize more than ever that access to intellectual property is key to their ability to create corporate value and, more important, key to continued corporate survival.

**TOO EXPENSIVE TO GO IT ALONE.** Even the largest companies cannot fund all the intellectual property programs that they may desire. Research programs can run into billions of dollars annually, and trademark costs can also reach billions of dollars. A major force behind the desire to form strategic alliances is the high level of investment needed to create new intellectual properties. And time is always vital.

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<sup>13</sup>George Gilder, *Microcosm—The Quantum Revolution in Economics and Technology* (New York: Simon & Schuster, 1989), p. 17.

<sup>14</sup>Ibid.

<sup>15</sup>D. Bruce Merrifield, “Economics in Technology Licensing,” *Les Nouvelles (Journal of the Licensing Executives Society)*, June 1992.

In August 2016, Pfizer, Inc. agreed to pay \$14 billion for Medivation, one of the most desired independent biotechnology companies. The attraction was Medivation's top-selling prostate-cancer drug. Medivation's drug, Xtandi, already generated about \$2 billion in yearly sales and had the potential to more than double, according to analysts. Through this deal, Pfizer expanded its lineup in oncology treatments. Xtandi would give Pfizer a beachhead in prostate cancer complementing its breast-cancer treatment, Ibrance. Medivation's drugs in development could also complement Pfizer's efforts to develop combinations of cancer agents with so-called immunotherapies, which deploy the immune system in the fight against cancer. The \$14 billion price equals almost 12 times Medivation's 2017 projected sales—not earnings but *sales*—an enormous valuation.

Why? The deal accomplishes many things for Pfizer. It immediately gets technology it does not have. It eliminates the need for Pfizer to spend billions of dollars on its own development program. The deal eliminates the risk that Pfizer's own development efforts could fail. The deal also gets Pfizer into a new market that complements its product line. Pfizer obtained new technology, without delay, at reduced risk, and entrance into a new market.

Technology is not the only intellectual property coveted. *Shrek*, *Kung Fu Panda*, and other animated characters have just been valued at \$3.8 billion. NBCUniversal, owned by Comcast Corp., opened its checkbook to acquire DreamWorks. The deal is expected to help NBCUniversal create new movies with the acquired characters and add *Shrek*, *Kung Fu Panda*, and others to Universal theme parks. Comcast obtained new characters without the risk of development failure and without delay.

Joint ventures are also driven by intellectual property. One of the first major joint ventures of the 1990s was the combination of pharmaceutical product lines from DuPont with the distribution network of Merck & Co. The new joint venture company was equally owned by the two companies. Its name was DuPont-Merck. DuPont had a product line of drugs but needed help with international distribution. The time and cost needed to create its own network of sales staff were formidable obstacles to fast growth and return on the research effort that DuPont had in the new drug line. Part of DuPont's worries included the remaining patent life associated with some of its drug products. By the time a self-created distribution network was established, some of the valuable products would be off patent. Full exploitation of patents requires that sales be maximized during the premium price years that exist before generic products hit the market. DuPont needed a way to tap its full market potential fast.

Merck had annual sales that ran above \$6.5 billion. It also had one of the largest research and development budgets in the world. Even so, Merck had limitations as to the number of new drugs that it could discover, investigate, develop, and commercialize. Access to a new line of already commercialized products was a great attraction to Merck.

The DuPont-Merck joint venture saved DuPont both time and money. It gave DuPont immediate access to an international distribution network. Merck gained immediate access to a new product line that would have cost enormous amounts of time and money to develop. The joint venture combined the drug technology of DuPont with the intangible assets—distribution network—of Merck.

This joint venture is a classic case of how the factors of time and cost drive strategic alliances that are founded on access to intellectual property and intangible assets. It also illustrates how strategic combinations of key intellectual property can reduce the investment risk associated with new strategies. If DuPont had attempted to build its own international distribution network, the cost would have been high and the time needed long, and there

was no assurance that it would successfully construct a network that could move the goods. Merck enjoyed a reduction in investment risk by gaining access to the profits associated with the DuPont drug technology. If Merck had embarked on its own plan to duplicate the DuPont product line, there was no assurance that it would have been completely successful. Furthermore, there existed the risk that the Merck product line could have ultimately infringed on the DuPont product line patents. The two companies saved research funds, gained immediate access to commercialized intellectual property, and reduced business risk.<sup>16</sup>

**IMPOSSIBILITY OF MASTERING EVERYTHING.** Beyond time and cost factors are capability limitations. Products have become more complex. The technologies in a product must be combined from a diverse number of industries. Mastering all of the divergent technologies that go into a single product is not always realistic. Consider the smartphone. Listed here are just a few of the different technologies that make a smartphone work:

- Battery and charging
- Touchscreen
- Camera
- Digital music player
- Video capture and player
- Operating system
- Security
- Text messaging
- Connectivity
- Data storage
- GPS
- Email
- Web browser
- Contact address book
- Speech recognition
- Fingerprint recognition
- Iris recognition

Investigating any one of these critical technology areas requires a multidisciplinary understanding of a wide variety of sciences such as physics, chemistry, software, semiconductors, and electronics. Advanced knowledge in each discipline is required, not just one specialty and a superficial understanding of the others. Corporations are a lot like people. A professional architect with expertise in marina design cannot cope with the complexities of modern life without outside assistance. Tax-preparation services, medical treatment, lawn services, and many other areas of individual expertise must be acquired from others in order for the architect to survive. Corporations, too, have their specialized areas of expertise, but to deliver the products of tomorrow, these specialized corporations will need

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<sup>16</sup>“Financial Prescriptions for Mighty Merck,” *Wall Street Journal*, June 30, 1992, p. A17.



to incorporate into their products advanced aspects of different technologies. This will require specialized knowledge that they do not possess and will require them to participate in corporate transactions that are centered on sharing access to technology.

## A SHORT HISTORY OF CORPORATE STRATEGIES

The primary goal of business strategies is to create shareholder value. This has always been the goal, but the strategies used have been through various mutations, including:

- Management science magic, whereby large egos believed they could run any company any time
- Acquisition fever, whereby large egos believed they saw unrealized value in everyone else's backyard
- Excess asset magic, whereby non-core assets were spun off to free up cash for investment in the core business
- Financial management magic, whereby large egos believed that the trick to higher value was simply higher risk tolerance in the form of debt

**MANAGEMENT SCIENCE MAGIC.** In the 1960s, businesses were driven by diversification and integration strategies. Diversification spread economic risks among many businesses to counter the negative effects of being too focused in cyclical industries. Integration merged manufacturing, raw materials suppliers, and distribution networks to bring control and profit from indirectly related activities under one corporate roof. Manufacturing companies first acquired raw material suppliers. Then finance companies and other vaguely related businesses became desirable. As acquisitions hit their stride in the 1960s, completely unrelated businesses were combined into a portfolio of diversified business investments. Anything and everything was a potential acquisition target.

The underlying notion was that acquirers would introduce management science and centralized control, thereby enhancing the value of all the portfolio components. Management science was considered the missing and special element that would make the combined entities more powerful, successful, and profitable than when the businesses were independent. *Conglomerate* was a descriptive term that managers eagerly sought to have bestowed on their company. It carried images of power and expansive management skills. With superior organizational skills founded in management science, the acquirers of the 1960s thought that they could manage any business. Understanding the nature of the business didn't matter. Sadly, overreaching occurred, and conglomerate builders found that more than a little knowledge about the acquired businesses was needed. Huge and unwieldy corporate structures were needed just to monitor the performance of the unrelated businesses that composed these conglomerates. Long delays occurred in decision making, with strategy meetings with "Corporate" killing any inventive ideas that were developed at the operating level. Often the accounting systems used to monitor one of the conglomerate components were completely unworkable for monitoring other components. Management time was spent studying the portfolio rather than managing the business. Instead of gaining investment performance from portfolio diversification, the centralized control structures introduced anti-synergistic costs of time and money.

In almost all cases, the conglomerates have failed. Stock performance for these portfolios of management science was dismal. In fact, stock investors led the efforts that killed

conglomerates. The investors never needed one company to provide a conglomerate of diversified investments. Investors themselves could easily accomplish the diversification goal by prudently investing in a portfolio of focused companies, thereby creating their conglomerate of diverse investments.

**Xerox.** In 1906, the Haloid Company was formed in Rochester, New York, to manufacture and sell photographic paper. By 1947, the company had expanded and acquired the license to the xerographic patents of Chester Carlson. One year later, the company trademarked the word *Xerox* and introduced its first copier in 1949. Throughout the 1960s, Xerox acquired a number of electronics manufacturers and educational publications, expanded its global reach into Europe and South America, and launched a joint venture with Fuji Photo Film.

In 1970, the company opened the Xerox Palo Alto Research Center (PARC) in Palo Alto, California. This center developed the technologies of laser printing, flat panel displays, the original computer mouse, and the Apple Macintosh user interface. At the end of the 1970s, Xerox Credit Corporation was formed to help finance the purchase of its machines. In the early 1980s, the company acquired several insurance companies and formed Xerox Financial Services in 1984.

After decades of building a conglomerate, dismantling began. In 1993, Xerox announced its decision to exit the insurance business and other financial services. Three years later, Xerox began treating its insurance operations as discontinued operations for accounting purposes. In 1998, Xerox disposed of the last remaining entity in its financial services area. The company announced worldwide company restructurings in 1993 (10% workforce reduction), in 1998 (9,000 positions), in 2000 (5,200 positions), and again in 2001 (4,000 positions).

Xerox pursued the conglomerate model in the 1960s. Xerox was largely unable to profit from the R&D produced at its PARC facility and actually sold much of the technology developed there to Apple, Microsoft, and others who were able to capitalize upon it. Xerox indicated that it wanted to exit financial services, but then took five years to do so. The company tried to realign itself, but it was too large to change quickly, and these efforts failed. As it restructured, the company announced layoffs that created a great amount of uncertainty while the realignments were underway. Xerox changed the structure before retraining the people, leading to dissatisfaction among both staff and customers. As a result, Xerox lost a great number of people that it wanted to retain.<sup>17</sup> Xerox is currently a shadow of its former greatness.

Companies learned that management science magic was a false deity. Conglomerates were dismantled. Managers did everything possible to shed the dark shadow that now accompanied the once-coveted descriptive word *conglomerate*.

**EXCESS ASSET MAGIC.** Acquisitions of the late 1970s and early 1980s focused on the value of excess assets. These assets were on the balance sheet but were not adequately reflected in the stock price. They included real estate, cash hoards, and resource reserves such as timberland and oil, especially oil. Companies that had excess assets were the delight of acquirers who wanted to restructure them. If the excess asset was cash, a company could be acquired, and then the cash could be issued as a special dividend or used to pay down the debt associated with the purchase of the company. In some cases, the target company's own cash was used to finance part of the takeover. If the excess asset was real estate, then after acquiring the company a sale-leaseback deal was put into effect. Valuable land and buildings

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<sup>17</sup>Forecast Metrics, <http://www.forecastmetrics.com/newsletter103.html>

were sold to institutional investors as safe investments, providing the acquired company with cash, while long-term leases allowed the company to continue to use the property.

Excess asset magic worked but was limited and not able to continually contribute to future growth and profitability. Once the excess assets were sold and the proceeds redeployed, the strategy was done. Continued growth of revenue and profits was absent.

**FINANCING MAGIC.** In the late 1980s and early 1990s, business strategy involved acquisition fever fueled by the idea that a little more debt and a willingness to accept just a little more risk would shower profits on those who knew how to introduce financing magic. Acquirers during this period focused on the introduction of financing capabilities, once again not caring about the business they were buying and often not even understanding the business.

A leveraged buyout (LBO) is an acquisition of a company or division of another company financed with a substantial portion of borrowed funds. Leveraged buyouts fueled acquisitions during the late 1980s. Raiders looked to enhance investments by using more aggressive financial structures. At times the restructuring made a lot of sense. LBOs combined an aggressive leverage strategy with the excess asset concept. Instead of gaining access to particular assets like cash and real estate, takeover artists focused on entire business units that they considered undervalued or completely unrepresented in the stock price of the target company. From a manager's perspective, leveraged buyouts had a number of appealing characteristics:

- Tax advantages associated with debt financing
- Freedom from the scrutiny of being a public company or a captive division of a larger parent
- The ability for founders to take advantage of a liquidity event without ceding operational influence or sacrificing continued day-to-day involvement
- The opportunity for managers to become owners of a significant percentage of a firm.

Initially, it can be argued, raiders contributed in a positive way to Corporate America. Leveraged buyouts provided a means to get Corporate America back on track. Over-bloated corporate executives who ignored shareholders just had to go. They spent money on lavish perks, gave themselves extraordinary bonuses, even in poor performance years, and acted more like caretakers. It seemed that the attitude of corporate managers was: *Why take risks when mediocrity can get you eight-figure compensation packages?* LBOs provided a means to get rid of these timid managers and return America's business power to the hands of managers who had a financial stake in the business's success.

Once again, however, good ideas are often extended far beyond realistic applications. Early successes in LBOs caught the attention of many raiders. Bidding wars erupted, and the bargains disappeared. Watching the devastating effect of "just a little" more debt became a sad legacy of the 1980s.

Even when LBOs worked, they did not create value. They just redistributed existing value at the cost of accepting risky debt.

**MAGIC FAILURES.** Past strategies failed for a number of reasons. One was arrogance. Corporate managers, it turned out, could not optimize the management of a diverse group of companies using a single corporate strategy and corporate culture. Divesting excess assets

worked but ended when excess assets were exhausted. Debt management turned to fiscal irresponsibility and was abandoned as bankruptcies led to restructurings using prudent amounts of debt.

The failures of past business strategies coupled with new global pressures have caused managers to focus on what they know best. They also have learned a tolerance for seeking the assistance of others to fill corporate capability gaps. Managers are saying, although with less fanfare, “I can’t do it all alone, I need help.” Hence, we are entering the age of strategic alliances, when licensing deals and joint ventures rule—all based on intellectual property and intangible assets.

## THE MAGIC OF INTELLECTUAL PROPERTIES

Successful companies are using new strategies based on intellectual property that bring together partners with different skillsets, allowing each partner to balance its strengths and weaknesses with another partner. As previously stated, time, money, and risk reduction drive these new strategies where different companies rely on the unique intellectual property and intangible assets of others.

Reviewing the annual reports and other public statements of business leaders shows that the paths being taken by successful corporations will include strategic alliances centered on intellectual property exploitation. This trend appears to have starting gaining momentum in the early 1990s.

**JOINT VENTURES TO DEVELOP GLOBAL OPPORTUNITIES.** When two companies join forces without combining their individual companies, a joint venture is usually the method for developing new opportunities, globally expanding, and entering new markets.

**New Opportunities.** Consider the 1991 annual report of Imo Industries, Inc., a leading manufacturer of analytical and optical instruments used in the industrial and defense industries. The report states, “Our increasing focus on international markets is underscored by the fact that almost 40% of Imo’s overall revenue comes from outside the United States. . . . Around the globe, we are increasingly utilizing joint venture structures to develop opportunities.”<sup>18</sup>

**Global Expansion.** In 2014, Sony said it would set up two joint ventures to make and market PlayStation consoles and games in China. One venture will be responsible for the PlayStation’s hardware while the other would focus on software. China is a difficult market for game consoles. They were banned from 2000 until January 2014, and the Chinese market for games is very different from traditional console markets like Japan, Europe, and the United States, because Chinese gamers predominantly play computer and mobile games. Hence, Sony has called on partners to help it market in an environment that is different from anything it has experienced in the past.

**New Markets.** AES Corp. and Siemens AG are leaders in the field of energy storage. As wind and solar technology generates power during off-peak usage there is a need for complex battery technology to store the excess power for when peak demand requires it. Siemens technology focuses more on projects for individual companies and enterprises, such as universities and hospitals, while AES targets larger arrays that are incorporated into a region’s electrical grid. In 2017, the companies announced a joint venture allowing them the opportunity to exploit markets the separate companies could not.

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<sup>18</sup>Annual Report of Imo Industries, 1991.

**CREATING NEW PRODUCTS VIA A JOINT VENTURE.** The development of complex technology can also drive joint venture where a single company cannot go it alone. As previously mentioned, product complexity has become too much for one company. It is becoming impossible for one company to have expertise in the vast amount of science and technology required to produce competitive products. Consider the automotive industry. Cars initially involved a chassis, engine, transmission, interior compartment, wheels/tires, and a steering mechanism. Advancements in cars now require enhanced skills in batteries and intelligent software for self-driving functionality. Consider self-driving cars.

Volvo Cars, a luxury carmaker, and Autoliv, a leader in creating automotive safety systems, have come together to create Zenuity in 2017. The joint venture will focus on the development of leading advanced driver assist systems (ADAS) and autonomous driving (AD) technologies. Autoliv and Volvo Cars license and transfer intellectual property for their ADAS systems to the joint venture. Using the contributions from each party, the joint venture will develop new ADAS products and AD technologies. Zenuity is expected to have its first ADAS products available for sale by 2019 with AD technologies following shortly thereafter.

These two companies decided they could not go it alone so they combined their individual self-driving car technologies into a joint venture they hope will become the industry standard used by all automakers.

**ADVANCEMENT OF STRATEGIES VIA INTELLECTUAL PROPERTIES.** The automotive industry is not alone. Pharmaceutical and medical therapy companies once were notorious for total self-reliance when it came to new product development. Those days are gone.

In a press release, Sidney Taurel, executive vice president of Eli Lilly & Company, a leading pharmaceutical maker, says, “Strategic alliances, co-marketing agreements, and licensing agreements have become vital to the continued success of the pharmaceutical industry and an important part of Lilly’s strategic direction.”<sup>19</sup>

In a press release quoting Dr. Glen Bradley, chief executive officer of Ciba Vision Worldwide, a vision care company, readers learn about licensing. Bradley says, “The combination of internal research and development at Ciba and licensing agreements, such as the newly announced 3M license, allows Ciba Vision to fulfill our mission of developing quality products and services which will best satisfy our customer needs and expectations.”<sup>20</sup>

**TRADEMARK LICENSING PROVIDES DIFFERENTIATION AND NEW MARKET ENTRY.** Technology is not the only area possessing unique intellectual property that can provide those possessing it with a strategic advantage. Trademarks can provide a powerful advantage that sets their users apart from the crowd.

A new ETF (exchange-traded fund) in order to differentiate itself from the 2,000 ETFs offered in the United States has turned to licensing a celebrity name. Exchange Traded Concepts is licensing the Quincy Jones name to draw attention to its new fund, The Quincy Jones Streaming Music, Media & Entertainment ETF filed with the Securities and Exchange Commission on June 22, 2017. It remains to be seen if the younger generation will identify with the ancient Quincy Jones.

Starbucks Corporation has reached a new licensing agreement to expand into South America. Alsea is a restaurant operator in Latin America and Spain. Alsea was granted exclusive rights to develop and operate Starbucks stores in Uruguay, adding to its existing rights to operate in Mexico, Argentina, Chile, and Columbia.

<sup>19</sup>Eli Lilly Company press release, 1991.

<sup>20</sup>Ciba Vision Worldwide press release, 1991.

Alsea is smart. By licensing the Starbucks name their expansion into new markets will be far less risky than starting a new coffee brand from the ground up.

Everything that a company hopes to accomplish in its goal to create value, global expansion, product differentiation, and new product development is currently based on intellectual property deals.

## VALUATION, EXPLOITATION, AND LITIGATION

This book is divided into four parts—Introduction, Valuation, Exploitation, and Litigation.

The introductory part defines the key areas of intellectual property—patents, trademarks, copyrights, and trade secrets. It also discusses intangible assets such as the assemblage of skilled workers, advantageous contracts, and big data. It will also show how these assets are an integral part of a typical business enterprise. To generate profits and value, intellectual property must be integrated into a business enterprise having monetary and tangible assets. The first part of this book focuses on identifying intellectual property and intangible assets and then showing how they are integrated into a business enterprise for their commercialization.

Part II, “Valuation,” discusses the methods for determining the specific value of specific intellectual properties and intangible assets. It will explain the *cost*, *market*, and *income* approaches to valuation with emphasis on the income approach. Valuations are needed for a variety of purposes, many driven by the tax code. As an example, in 1991, Theodor Geisel (Dr. Seuss) died, and his estate needed valuation for estate tax purposes. In addition to a typical estate, including cash, real estate, and an investment portfolio, Mr. Geisel needed a value for his 47 book copyrights. The value of *The Cat in the Hat* along with 46 other books needed to be determined. The value required determination of all future sales of the books plus the potential for royalty income from licensing activities in children’s clothing, movies, theater productions, and theme parks.

Intellectual property has become part of every aspect of life. As a result the reasons for valuing it encompass all aspects of our society. Intellectual property valuations are required for some of the following purposes:

- *Transaction support.* Intellectual property is being exchanged more often as an independent asset. Individuals sell inventions to corporations. Universities sell inventions to corporations. Corporations sell trademarks and patents to each other. In all of these cases, the price must be determined, and valuation opinions must be developed. Often the values involved are enormous. In such cases, corporate managers are required to get outside opinions of value that show that the price of the transaction is fair.
- *Bankruptcy.* Intellectual property values play an important role in bankruptcies. Value opinions are needed for presentation in court as debtors scramble for assets that can satisfy their losses.
- *Licensing.* When the owner of intellectual property is considering licensing a property, the outright value is also a consideration. As an alternative to licensing, consideration is often given to selling the property. In such cases, a value opinion is needed. Licensing also requires the determination of the royalty rate at which to license the property. Instead of determining the fee-simple value for outright purchase of an intellectual property, an appropriate royalty amount must be determined for *renting* the property.

- *Strategic alliances.* Often two independent entities come together to form a third entity for the purposes of exploiting new technology. Each party brings different contributions, which often include intellectual property. In order to determine the relative ownership of the new alliance, a value for the independent contributions is needed. Only after considering the relative values of the assets contributed can the ownership be allocated.
- *Estate and gift taxes.* As patents, trademarks, or copyrights are part of an estate, they must be valued. These properties are also becoming the subject of gifts. Patents are given to children. The recipient of the gift enjoys future royalties when the gifted patents are licensed. Value exists in these gifts, and valuation opinions are needed for tax purposes.
- *Marital dissolution.* In one case, the value of patents owned by the husband had to be determined as part of the marital assets. As intellectual property is owned by more individuals, its value will play an important part in divorce proceedings.
- *Infringement damages.* A growing trend in litigation involves patent and trademark infringement. The damages analysis is directed at determining the damages caused by the infringer. The conclusion is not necessarily a fee-simple amount but still involves much of the same type of analysis discussed throughout this book. Royalties play a dominant role.
- *Intercompany transactions.* The transfer of intellectual property between related parties comes under the scrutiny of various taxation authorities. As U.S. companies transfer intellectual property rights for use by a foreign subsidiary, tax authorities in both jurisdictions are watching to make sure an untaxed wealth transfer is not taking place. As a result, patents and trademarks are valued and are the subject of domestic and international taxing authorities.
- *Collateral-based financing.* As intellectual property becomes the dominant asset of companies, it also becomes the primary collateral on which banks are willing to make loans. Banks are asking for valuation opinions for patents, trademarks, and copyrights as security for their loans.
- *Attorney malpractice.* Sometimes a patent attorney inadvertently fails to obtain patent rights that should have been obtained. Sometimes patent maintenance fees go unpaid, and a patent lapses. When a patent is lost damage results. In such instances, an opinion of the value that was lost is required for presentation in court.
- *Accounting requirements.* Acquisitions require that buyers properly state the value of purchased assets on their balance sheets. Since acquisitions are driven by intellectual property and since these assets dominate acquired companies, valuations for accounting statements are becoming common reasons for valuing intellectual property and intangible assets.
- *Regulatory requirements.* Initial public offering (IPO) documents are more often referring to the importance of the intellectual property of the company that is being taken public. Since intellectual property often dominates these companies, a valuation opinion is sometimes presented within the IPO document.
- *Ad valorem taxes.* Property taxing authorities traditionally have been limited to taxing the value of fixed assets. Some of the valuation techniques they use capture value that is intangible in nature. In some instances, the value of intellectual property and intangible assets must be valued so that appropriate property tax bases can be determined.

Part III, “Exploitation,” will discuss the various means, beside monopolistic ownership, used to maximize the economic benefits of owning intellectual property, including licensing and joint ventures. It will discuss the reasons for different exploitation strategies and some of the pitfalls. Licensing will be featured. In licensing, the royalty charged for granting rights to use intellectual property such as patents is often central to making a deal.

This part of the book concerns the economic principles relating to the exploitation of intellectual property, with a primary focus on licensing. As an example, consider the agreement between Daimler-Benz and Odetics, Inc. for a license to use Daimler-Benz’s driver heuristics algorithms for the software applications as part of the joint development agreement of a lane-tracking system product also called “Lane Departure Detection and Warning System.” The system is comprised of the physical assembly that includes the vision sensor, the imbedded application software and operating system software, the electronic module that provides the host processor and internal electronic circuits/devices that receive inputs and provide outputs, and the external interface connector with harness tail. The licensed invention does not include external detectors providing vehicle inputs such as steering wheel angle or motion detectors. The license provides to Odetics the source code, documentation, and object code of application software incorporating the algorithm. Odetics agreed to pay Daimler-Benz a royalty of 3% of the net sales price for each system, or portion thereof, sold to a third party for the purpose of sale in vehicles of OEMs other than Daimler-Benz. In the exploitation section of this book, determining an appropriate royalty rate will be discussed and illustrated, not only for patents but for trademarks, copyrights, and trade secrets.

In Part IV, “Litigation,” methods for developing damages opinions regarding intellectual property infringement are presented. The law will be discussed and damages based on lost profits and a reasonable royalty will be emphasized.

When intellectual property laws were administered inconsistently, owners of trademarks and especially technology were lucky to get requests for license deals. Infringement did not carry the same potential for financial ruin as it does today. When a potential licensing partner approached a technology owner, the leverage needed to demand high royalty rates was not very strong. Enhanced legal protection around the world has made patented technology and trademarks more valuable than ever before. Given this, royalty rates for licenses and joint venture equity splits are moving to higher levels, and intellectual property owners are less interested in outright sales of their valuable properties.

In the United States, the patent system was dramatically strengthened with the creation of the Court of Appeals of the Federal Circuit (CAFC). It is the only court in the nation that handles patent and trademark case appeals. The continuity of the court’s thinking and decisions has strengthened the rights of patent and trademark owners. It has made willful infringement a very risky proposition. Damage awards by courts are higher than ever before. Several decisions have upheld damage awards that have bankrupted the infringer.

CAFC’s decisions have clarified and made uniform U.S. law. Under 35 U.S.C. 283 (1952) courts may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable.

Prior to 1981, when infringement cases were initiated, preliminary injunctions were granted only when there was a reasonable likelihood that the infringed patent could be proven both valid and infringed. While preliminary injunctions typically were granted in trademark and copyright cases, they were seldom granted for patents. The owner of the infringed patent was required to prove the validity of the patent in order to be granted a preliminary injunction. Such proof was possible only in those cases in which prior court decisions had found the patent valid. Therefore, injunctions were rarely granted for patent



cases. Infringing on an existing patent was not risky because an infringer could continue to exploit an infringing product or service while a court case dragged on. In cases where infringement was decided, damage awards typically were expressed as royalties in amounts that represented what would have been negotiated had the infringer taken a license before beginning the infringing activity. Prior to the creation of the CAFC, infringement was almost a risk-free strategy. The worst consequence an infringer faced was payment of the low royalty that should have been negotiated initially.

Currently, the Federal Circuit standard has placed the burden of proving a patent invalid upon the infringer. This standard supports the patent owner. Infringers must provide clear and substantial proof of invalidity. Otherwise, the patent owner is considered to have a valid patent. This standard of presumed validity is very powerful and renders infringement both costly and risky. Entire manufacturing plants may be shut down and entire workforces indefinitely suspended. As substantial investments by infringers can be rendered worthless, infringement is more costly than ever. This new attitude strengthens the U.S. patent system, making patents even more valuable. Another shift in the legal system that enhances patent values is the willingness of juries to grant huge awards. In addition, where willful infringement is proven, the damage award can be increased to three times the actual amount of damages.

Patent rights have been reinforced to such an extent that the value of patents has risen to new heights. The exploitation opportunities of licensing are greatly enhanced, and royalty income has risen as a result. The enhanced protection has trebled the avenues by which intellectual property can be exploited safely. Instead of only deriving profits from internal use, the licensing option is now well protected, and joint venture projects are becoming common. Instead of deriving only one stream of income from intellectual property, we are more likely to see three: internal use, licensing, and joint ventures. Each of these represents another source of earnings growth that adds to the value of companies.

Consider the patent infringement lawsuit between Abbott Laboratories and Johnson & Johnson. A jury in the Eastern District of Texas found that Abbott Laboratory's best-selling drug, Humira, violated a patent on Johnson & Johnson's Remicade. The jury awarded one of the largest patent infringement damage awards ever, at \$1.67 billion. This award was based on expert testimony and detailed analysis. The litigation section of this book will discuss the calculation of damages where intellectual property infringement is found to exist, including patents, trademarks, copyrights, and intellectual property.

A lot has changed since the first edition of this book in 1991. Financial markets and economic conditions are wildly different. Globalization has introduced new exploitation opportunities. Infringement litigation is also global. The fundamental aspects of valuation, exploitation, and litigation are constant, but the new world order makes implementation very challenging. This book will address the challenges.