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### **A PRACTICAL GUIDE FOR VALUING INTANGIBLE ASSETS IN RESEARCH AND DEVELOPMENT INSTITUTIONS**

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1. This document contains *A Practical Guide for Valuing Intangible Assets in Research and Development Institutions*, prepared in the context of the *Project on Innovation and Technology Transfer Support Structure for National Institutions (CDIP/3/INF/2)*. The guide has been prepared by Mr. Thomas Ewing, Commercial Lawyer, Registered Patent Attorney, and Intellectual Property Counselor, Avancept LLC, San Francisco, United States of America.

2. *The CDIP is invited to take note of the information contained in this document.*

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<sup>1</sup> The views expressed in the guide are those of the author, and not necessarily those of the WIPO Secretariat or its Member States

# **A Practical Guide for Valuing Intangible Assets in Research and Development Institutions**

## **Summary**

This Guide aims to assist Member States in the development and improvement of national Intellectual Property (IP) institutional capacity through the further development of infrastructure and other facilities to enhance the functionality of national IP institutions and promote fair balance between IP protection and the public interest.

Among other things, this Guide provides a comprehensive review of various valuation methodologies and offers a guideline for the rapid and systemic evaluation of new technologies. The Guide provides practical advice to assist universities and publicly-funded research organizations (PRO) to:

- (a) Identify their valuable intangible assets (IA);
- (b) Rank IA by using different qualitative and quantitative valuation approaches;
- (c) Manage those IA which were assessed as valuable towards strategic collaborations and markets, and
- (d) Commercialize IA with potential market value (determined by application of quantitative valuation methods).

The Guide uses case studies and practical examples that explain how the valuation of IA can provide a solid base for strategic IA management decisions. The Guide addresses the valuation of both registered and non-registered IP, including patents, trademarks, copyrights, industrial designs, know how, and trade secrets, as well as non-registered IAs such as skilled human capital, innovative processes, and management organization.

# A Practical Guide for Valuing Intangible Assets in Research and Development Institutions

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## CHAPTER I

### Introduction to Intangible Asset Valuation

#### 1.1 Goals and Uses for the Valuation Field Manual

This Guide serves as a field manual for achieving several pedagogical goals related to the valuation of intellectual property. As a first goal, the reader is introduced to the topic of valuation of intangible assets (“IA”). This Guide employs a paradigmatic approach that intends to provide the motivated reader with a starting point for the further development of relevant skills. The interested reader may need to acquire additional skills to further develop the precise set of skills and abilities needed for his/her unique circumstances. As a second goal, this Guide aims to answer certain problems facing a research institute’s technology transfer office or commercialization department in its daily routine. In other words, the Guide aims to provide answers for problems encountered in the field where solutions need to be found quickly.

The Guide reviews some of the approaches that have emerged for IP valuation and evaluation. The Guide particularly focuses on those methods that are most accessible for the typical reader and provides additional meta-techniques for "triangulating" valuations, e.g., a floor, ceiling, and mid-point valuation. The Guide also strives to provide advice for those situations where a “textbook” valuation answer will be less likely to achieve the business objectives. For example, the Guide provides paradigms for finding reasonable answers quickly in those situations where finding a more precise textbook answer might fail to satisfy a realistic business objective, e.g., appropriate speed of response and/or satisfying budgetary limitations. The Guide discusses less often those instances where the intellectual asset manager has adequate time and resources to commission a professional appraisal; a general assumption here is that at least one of the resources of time or money is not present or remarkably depleted.

This Guide has been structured as a field guide for providing both valuation and evaluation, much as a field guide for engineering describes bridge construction in a highly practical but possibly less elegant manner than a textbook in civil engineering. The Guide draws upon examples for many types of valuation with the aim of giving

the reader an introductory template for valuation. The Guide also recognizes the perspective of academic institutions, particularly in developing countries, with the unique challenges they face, such as weak resource endowments and weak institutional regimes.

## **1.2 Intangible Assets, Valuation & Commercialization**

Intangible Assets enjoy a variety of definitions, but typically comprise non-monetary and frequently non-physical assets. This means that these assets cannot typically be seen, touched, or measured. Intangible Assets are typically created through human industry, e.g., hard work and clever thinking. Some forms of intangible assets, known as “intellectual assets” may receive independent legal protection under certain circumstances. These intellectual assets comprise patents, copyrights, trademarks, design rights, and trade secrets, although not all legal systems recognize these rights or accord them the same level of protection. Other forms of intangible assets comprise competitive intangibles such as a know-how and human capital. Intangible assets of all types may also receive certain levels of protection via legal mechanisms like contract, although contract operates as a mechanism between two parties rather than the world at large. Intangible assets are sometimes classified functionally under categories such as marketing, customer, technology, and contract-related.

Intellectual assets may provide a competitive advantage to an organization (firm, university, company, etc.) by enabling the organization to limit or exclude others from using the intellectual assets. This right to limit or exclude adds value by allowing the intellectual asset owner to generate higher income through commercialization of the intellectual assets whose use without permission is foreclosed to others. For example, the benefits of brand recognition allow one company to charge a higher price for its cola-flavored beverage than another company with a less recognizable brand. Similarly, a patented technology can only be practiced by the owner of the patent and/or its licensees. Organizations may trade intellectual assets using various contract mechanisms, such as a licensing agreement and a sales contract.

Competitive pressures have stimulated an increasing interest in and focus on Intellectual Assets, especially Intellectual Property Rights (IPRs), and the strategies related to their commercial exploitation during the past 30 years. This time period has often been described as “the pro-patent era,” although the interest in intangible assets goes far beyond patents alone. Intellectual asset managers have explored innovative uses for IP assets as competitive tools in their own right. The majority of these strategies could be classified as “direct uses” in which a company exploits IPRs developed from the company’s own R&D activities. IA managers have also developed various indirect IPR techniques using inventions originally developed by others. During this period, IA managers have honed techniques for asset commercialization, including but not limited to licensing and assertion programs. We will focus in this text primarily on licensing and sales, which forms the core of IA commercialization. Most value associated with IAs ultimately derives from the owner’s ability to sue others for infringement and seek damages of some sort. Similarly, value from intellectual assets for non-commercial entities derives from the ability to decline to freely share these assets with others. This text does not attempt to explain all the nuances of IP licensing and valuation for the further education of a seasoned licensing executive but will aim instead to provide the interested novice with an overview of the topic and understanding of the various issues and strategies associated with intellectual asset commercialization.

Intellectual Assets may not immediately associate themselves with value. If one grew carrots or mined copper, it would seem very natural to ask for something of value in exchange for them. One’s thoughts alone do not necessarily lend themselves to a commercial exchange. Among other things, scientific papers have traditionally been provided for free or at very low cost. Many other intellectual creations do not readily associate themselves with commercial activity.

This Guide does not advocate changing traditional mechanisms for the exchange of scientific information. Modern universities, wherever they are located, conduct a wide range of activities some of which are clearly commercial and/or have commercial import. Absent other considerations, when a university engages in commercial activities, it should receive appropriate remuneration on a scale commensurate with those of commercial actors. Because modern universities



engage in so many activities, administrators understandably have difficulties in A) immediately recognizing that which is commercial, B) having some sense of what the commercial value might be, C) negotiating the arrangements to recognize this value, and D) managing relationships with commercial actors. This Guide aims to give university administrators an introductory understanding in all of these areas that they can then use to build appropriate programs.

A first step involves assessing the activities that the university does that have value. This does not necessarily mean that the university should begin charging fees for all of these activities – but it does mean that the university should recognize that they have value. So, for example, if a university offers a public outreach program whereby local businesses can bring their toughest technical problems to the university’s scientific staff for a few hours of consulting, the university does not necessarily need to charge a fee for this program – but the university should recognize that the advice has value. In a slightly different scenario, imagine that a group of the university’s professors are running such a program on their own without informing the university. The university need not necessarily shut down such programs, but it should recognize that the control (and corresponding value) of such programs has slipped outside the university’s grasp.

Once administrators have an understanding of the totality of their institution’s Intellectual Assets, then they can decide which ones should be subject to commercial considerations. Such choices are sometimes as political as they are practical. If a university chooses to give away everything that it does free of charge, this is perfectly fine – so long as it is a conscious decision.

A concurrent task involves valuing the relevant Intellectual Assets. If a university has no idea about the value of its activities, it likely cannot make an informed decision as to whether charges and fees should apply to those activities when they are provided to others. Assume, for example, that a university decides to provide 30 years of research in tree bark free of charge to a multi-national paper company. It is likely an “easier” decision to provide the research free of charge if the university has no idea what the research is worth than it is to provide the research free of

charge knowing that that the fair market value for this particular research ranges from 30-50 million euro.

The valuation question can become extremely problematic because modern universities engage in so many tasks. A company that sells shoes just needs good metrics for the wholesale and retail prices of loafers, laced shoes, and sandals. By contrast, a university may need a reasonable understanding of the value of nearly every possible scientific, technical and/or academic endeavor, provided under a nearly infinite range of commercial activities, and provided on a similarly huge range of commercial terms. For some activities, the university can likely develop a sense of expertise that rivals many commercial companies. While for many other activities, such as those rarely or infrequently encountered, the university need only strive for a vague but generally accurate sense of value.

### **1.3 IP Eco-Structure & Advanced IP Strategies**

Over time, what might have once been a fairly simple arrangement within the innovation system has evolved into a complex Intellectual Asset ecosystem. The evolving Intellectual Asset ecosystem features many kinds of entities, distinct business models, patent profiles, and patent strategies. The most noticeable contemporary players in this ecosystem are the large companies holding enormous IPR portfolios and non-practicing entities (NPEs). Billions of dollars in new capital has flowed into the IPR markets in recent years. Each of these actors plays a significant role in shaping the innovation system and interacts continuously with other participants such as individual inventors, small companies, research labs and universities.

During the pro-patent era, competitive pressures stimulated increasing interest in IPRs and strategies related to their deployment. The majority of these strategies could be classified as direct uses in which a company focuses exclusively on maximizing the effectiveness of IPRs developed from the company's own R&D activities. Over time, increasing interest in IPRs stimulated the development of increasingly robust Intellectual Asset markets. The competitive pressures and the

rich varieties of intellectual assets available in these markets have led to the development of various indirect intellectual asset strategies.

A single Intellectual Asset strategy no longer directs the Intellectual Asset ecosystem. Product companies that acquire patents only to protect their product/service sales revenue against competitors have generally diminished in most industrial sectors. Companies tend to consider all forms of IPRs and Intangible Assets. A company may employ certain patents defensively to gain freedom to operate, but the same company may also sell other intellectual assets on various markets. A company may enjoy IPR peace with certain of its competitors while also using IPRs to exploit the asymmetric advantages it enjoys over other companies.

In the evolving intellectual asset ecosystem, a company's own patents are less helpful in preventing patent litigation, especially when the plaintiff exploits an asymmetry not covered by defendant's own portfolio, leaving the defendant unable to file a countersuit against the plaintiff. The greatest asymmetry possible is the plaintiff's lack of producing any sort of product whatsoever (*i.e.*, an NPE), leaving the defendant with few options for disincentivizing the plaintiff's litigation. As a result, defensive strategies have been re-conceptualized to include new tactics, including sharing information, prevention, disruption, and coordination, for securing freedom to operate.

For several decades, companies have relied upon their own research laboratories as the primary source of new ideas and related Intellectual Assets. Companies no longer need to rely exclusively on Intellectual Assets developed from their own R&D processes. Companies may purchase external, third-party Intellectual Assets to fulfill a variety of needs. If a competitor has a product that threatens a company's own products, but the company owns no pertinent IPRs of its own, the company may purchase relevant IPRs in the market and sue the competitor for infringement. Similarly, if a company is sued for infringement but holds no pertinent IPRs to use in a countersuit, the company may purchase an appropriate IPR in the market. The growth of the Intellectual Asset markets has generally strengthened university and research laboratory commercialization programs.

The history of the pro-patent era shows that corporate IPR behaviors are influenced by those of their peers. Industry leadership, demonstration effects, and licensing practices have led firms to file for thousands of patents during the pro-patent era. The development of intellectual property management (IPM) has enabled intellectual asset owners to learn from their peers skills related to how to protect their intellectual assets, which innovations to protect, and how to exploit their intellectual assets. These actors have observed and learned from each other's application filing, patent litigation, and licensing practices. Companies are often very glib about their IPR strategies; the strategies themselves have value, and companies don't want their competitors to learn about any new strategies and use them, so they tend to say no more about their own programs than could be gathered from publicly available data.

One sign of the growth of Intellectual Assets has been the growth in the number of patents worldwide. According to WIPO figures for 2008, the last available report, the total number of active patents in the world amounts to some 6.7 million patents, an increase over 2007 figures. The US accounted for the largest share (28%) of patents in force by destination, followed by Japan (19%). In the US, there were nearly 1.9 million active patents, and in Japan, there were some 1.3 million active patents. Korea held the next highest number at 624,000 active patents, with Germany reporting the fourth highest number at 509,000 active patents. The patent offices of the US and Japan have respectively issued around 47.5% of all patents granted over the past 20 years, according to WIPO. Turning to patents in force by country of origin, residents of Japan hold some 1.85 million active patents, and residents of the US hold some 1.35 million active patents.

One can suppose that there may be a relative oversupply of patents in some jurisdictions, such as the US and Japan, and similarly, there may be a relatively under supply of patents in other jurisdictions. These figures likely relate to the strength of the patent right in particular jurisdictions. As noted above, a company looking to purchase patent rights may well find that there is a readily abundant supply of patents in some locations. Similarly, the purchaser of other intellectual assets will likely find that these assets are not uniformly distributed around the globe.

Universities and research institutions are often counted among the world's non-practicing entities (NPEs) because they do not typically manufacture anything commercially. The rise over the past decade of NPEs, particularly aggressive NPEs, has prompted further refinements to the IPR exploitation techniques pioneered by the early adopters of the aggressive NPE business model. The original NPE business model was pioneered by certain iconic figures and modes of operation but has likely over time shifted to more sophisticated drivers with access to significantly greater amounts of capital than the prototype NPEs enjoyed some 15-20 years ago. The NPEs, especially the so-called patent trolls, have possibly come to represent another face of the same actors who already control large portions of the economy.



Modern NPEs operate across a wide spectrum of business models. Some NPEs sue established companies for infringement of patents and other IPRs they have acquired, and others develop their own technology and seek to commercialize it. According to one taxonomy, there are twelve types of patent holders, eleven of which are non-practicing. The entities in this taxonomy are identified as: (1) Acquired patents, (2) University heritage, (3) Failed startup, (4) Corporate heritage, (5) Individual-inventor-started company, (6) University/Government/NGO, (7) Startup, pre-product, (8) Product company, (9) Individual, (10) Undetermined, (11) Industry consortium, and (12) IP subsidiary of product company. Some NPEs are considered "trolls," while others arguably should not be. The differing profiles complicate characterizations about companies based on whether they do or do not

practice their patents. Unlike public companies, many NPEs are not burdened by the need to manage investor expectations or minimize disruption to a core business. Similar expectations may also apply to the commercialization office – provided the university’s board of directors is reasonably patient.

The Wright Brothers, the aviation pioneers, operated in a mode that by modern standards could be considered NPEs. The Wrights were not particularly interested in becoming captains of industry. They wanted to retire to their home in Ohio and cash royalty checks from others who licensed their aviation patents in order to build flying machines. As often happens, few royalty checks arrived spontaneously, so the Wrights were forced to begin a licensing campaign. According to legend, the Wrights would travel to air shows all over the world and provide notices of infringement to other fliers.

The Wrights eventually sued fellow aviation pioneer Glenn Curtiss for patent infringement. The Wrights argued that Curtiss’ ailerons invention, or wing flaps (still used in aircraft today) infringed on the claims of their pioneering “wing warping” patent. The Wrights ultimately won their litigation, fighting off challenges related to validity and infringement. The Wrights eventually received royalty checks via a government-organized entity called the Aircraft Manufacturers Association that charged a fee for every airplane made in the US.

The modern commercialization office may take advantage of the rich heritage of its predecessors, both from purely commercial operations and from other universities and research organizations. Much has been learned over the past hundred years about how to find intellectual assets within an organization and exploit them commercially. As time progresses, intellectual asset commercialization becomes a better understood and more stable commercial endeavor.

## **1.4 Intellectual Property Infrastructure & Erehwon**

Technology commercialization programs can be undertaken in almost any country with almost any type of legal system. This is especially true in situations where the technology will be licensed to international entities. However, the

existence of certain laws and legal institutions may greatly simplify technology licensing and offer more predictable expectations.

The infrastructure needed for the operation of a successful commercialization effort for Intellectual Assets typically comprises:

- Legal control or other obligations that provide the research institute with the ability to restrict the flow of information out of the university and collect compensation when such actions happen without authorization;
- Recognition of trade secrets, patents, copyrights, trademarks, and other Intellectual Property Rights under the host countries' laws;
- Institutional ownership or control of inventions and innovations produced by university personnel or with university equipment; and
- Capacity for exploitation, e.g., someone who can negotiate binding agreements with third parties.

Erehwon is a fictional country in the developing world. At various times, Erehwon has gone from having a highly planned economy to unregulated *laissez faire* capitalism. Each of these eras in the country's past has impacted how the university handles its intellectual property rights and legal matters related to other intangible assets. Erehwon joined the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO) nearly a decade ago and has worked steadily towards developing a market-based economy. When Erehwon joined WIPO and the WTO, the country modernized its laws related to intangible assets and intellectual property. The country has also made sure that its judges and other court personnel have been brought up to speed on such issues. While Erehwon is far from being a hotbed of intellectual property litigation, its legal infrastructure can perform these tasks adequately and without complaints about the quality of the results.

Parliament recently passed the National University Act which strives to raise the funding of research and development in Erehwon to 3 percent of GDP. The current benchmark for R&D funding worldwide is roughly 2 percent of GDP, but since Erehwon is a developing country, the Parliament believed that Erehwon should spend a bit more in an effort to catch-up to the developed world.

A portion of the National University Act dedicates a small amount of funds to establish “commercialization institutes” at the nation’s universities. These institutes are intended to provide more than just narrowly defined “technology transfer” services. The goal of the commercialization institutes will be to seek commercial remuneration or “other advantage” for all activities conducted at the national universities but without detracting from the primary mission of these universities in education and research. The National University of Erehwon (NUE) is the largest public university in Erehwon, but it is not the only university.

One section of the National Universities Act changed an old rule regarding the ownership of university created inventions and innovations. Like many countries, the old rule granted rights to university-created inventions to the professors who created the inventions. However, the old law had numerous exceptions, and it was always difficult to determine who owned what. As a consequence of the old rule, university-created inventions were generally unexploited by both the universities and the professors. The new law gives ownership to the universities but requires significant compensation for the inventors. The new law also provides a “takings clause” that allows the university to seize ownership of older work performed by professors, students, and researchers and commercialize them. The law further provides a generous fixed percentage of compensation for any person who has prior work seized by a university. The compensation is based on the revenue ultimately obtained by the university.

Until the National Universities Act, there was always some uncertainty as to who actually owned what university-created inventions and innovations and under what circumstances. The idea behind this part of the new law is to prevent the possibility of a university commercialization center not being able to commercialize a new technology because of older technology out of the commercialization center’s control. All actors understand that the universities will not likely seize older technology already licensed to third parties. The National Universities Act also provides other changes to the nation’s intellectual property and intellectual asset laws as they relate to the national universities and research institutions. Some of these changes will be discussed later in this Guide.



## 1.5 Case Studies Using the National University of Erewhon

This Guide will use a fictional university, the National University of Erewhon or NUE in its examples. Many of these examples have been adapted from real-life situations. Rather than distracting the reader from the main topic by mentioning specific institutions, companies, and personalities, this Guide will still provide well-founded, real world advice using a fictional university whose activities the reader is free to copy and adapt to his/her own situation.

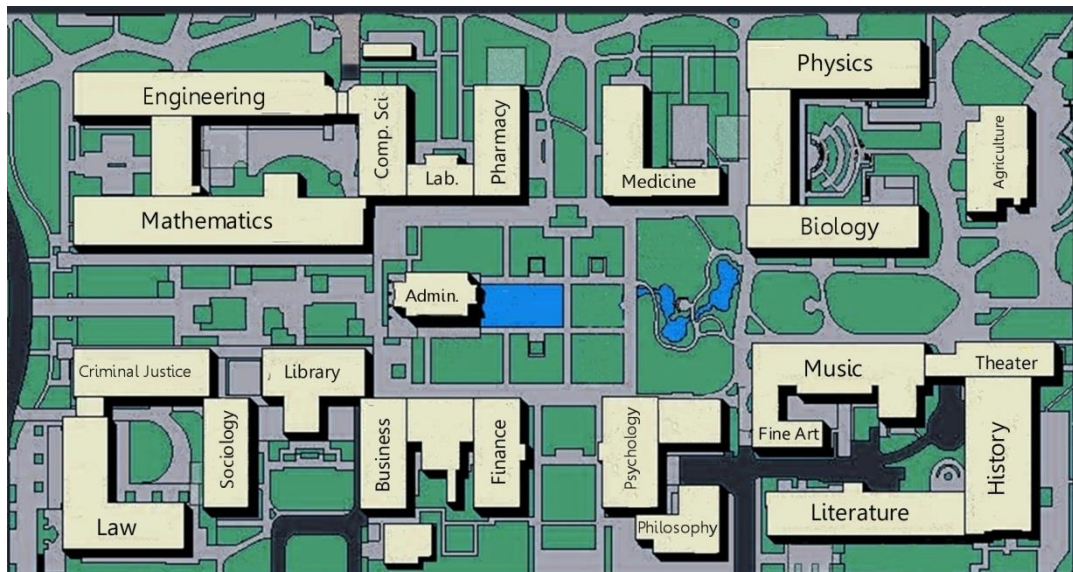
Erewhon is a developing country located on the world's eighth continent. Butler, its capital and largest city, boasts a population of some 3 million. NUE's main campus is located in Butler in a suburb named Utopia. Erewhon has historically provided many of the raw materials for the industrialized world, including various minerals and foodstuffs. Its people are known for periodically producing brilliant innovations, many of which have not been appropriately exploited within the country. Numerous inventions and artistic works attributed to other countries actually had their origin in Erewhon. For this reason, Erewhon is sometimes called "the most important country you never heard of."

The principal research and development organization in Erewhon is the National University of Erewhon (NUE). The university houses several schools, such as the School of Science and Engineering, the School of Medicine, and the School of Arts and Letters. These schools are organized into various departments, as we shall see. The university's origins date back before the end of the country's 120-year period of colonial rule. However, NUE was little more than a few old buildings until Erewhon's independence. The country's first president Dr. Ryu-Iktaz made the development of a truly great regional university a key goal of his administration. He served as NUE's dean and president shortly before his death in 1937.

NUE has developed several campuses, but the main campus is located in Butler. The student population comprises some 4,000 students from Erewhon along with another 300 visiting students who mostly come from neighboring countries. NUE offers undergraduate, graduate, and professional programs. Its academic structure somewhat resembles Anglo-American universities with some recent reforms along

the lines of the Lifelong Learning Programme offered by the European Union. NUE has enjoyed visitor status in the EU's Erasmus program since 2004. Various university departments have been asked on occasion to collaborate in programs sponsored by organizations such as the Eighth Framework Programme of the European Union, the National Science Foundation of the USA, and the Ministry of Industry and Trade in Japan. NUE does not always have the available matching funds to participate in these programs and has not historically had the expertise to review and negotiate these agreements

Each building on the Butler campus houses a different school or department. Only a few schools, such as the School of Engineering, have all their departments located in one building. Over the years, NUE has developed to service the higher academic needs for the whole country. Consequently, NUE includes professional schools such as medicine and law. NUE's Law School also includes the Department of Criminal Justice which provides training for the country's senior law enforcement officers as well as specialized training in various aspects of criminology. NUE's School of Agriculture works very closely with the Erehwon Ministry of Agriculture. Several other schools at the university are closely linked to various government ministries and departments. NUE has historically worked in close cooperation with other Erehwonian universities and colleges. The School of Engineering has enjoyed a particularly close relationship with the country's military academies. The entire history of NUE is one of collaboration with others, both locally and internationally.



National University of Erewhon

Butler, Erewhon

**FIG. 1 Campus Map of the National University of Erewhon (NUE)**

## 1.6 The New “Commercialization Institute” at NUE

The National Universities Act, as previously mentioned, has provided some limited funding for the creation of “Commercialization Institutes” at Erewhon’s public universities. This change in the law created your new position. You have just been appointed the first dean of the NUE Commercialization Institute.

The university was founded in 1912 shortly before Erewhonian independence. In the past century of NUE’s existence, technology commercialization has been handled on a very uncoordinated and *ad hoc* basis, sometimes by the university’s general counsel and sometimes by a small group of professors from the business school, but most of the time no one attended to or managed the university’s intellectual assets in a rigorous of organized manner.

On occasion, the university has reprimanded professors from the engineering school and the medical school because of agreements that they signed with various multi-national companies that were on favorable terms for the companies and the professors but not the university. We will discuss some of these legacy issues and their impacts on the commercialization institute later.

You meet with the university president and board of directors. They are quite keen on developing a robust commercialization program at NUE. They describe to you the university's various distinguished faculty members over the past 100 years, including some famous inventions and discoveries in which NUE has played a role. They also describe for you the various times that they believe outsiders have "cheated" NUE, aided by the university's unclear and lax policies.

As excited as the president and board members are about university-developed intellectual assets, they have a caution for you – "Remember: we are a university first and foremost. Your activities will not be allowed to jeopardize that role." Among other things, they describe for you the additional research funds that the university will receive because of the new law and the contacts that they have recently established with various multi-national companies and other universities.

The president leads you to your new office where your staff is waiting. The view from your new office looks out over the campus but the furniture is grim, reminding you again of your limited resources. You suspect that much of the furniture dates from the university's early years; you probably won't need the built-in ink wells. Your staff seems eager but extremely small. In addition to yourself, you have a secretary Kizbit and a skilled patent agent Raoul. They both seem very bright, eager, and flexible. You have no other formal staff, but you have also been appointed an assistant professor in the business school, and you may give your students assignments that will also benefit the commercialization institute.

You summarize your situation as follows:

|                         |  |
|-------------------------|--|
| Permanent Staff:        | 1 manager<br>1 patent agent<br>1 secretary                 |
| Budget:                 | Modest and limited to an initial three-year proving period |
| Immediate Prospects:    | Unknown and undeterminable                                 |
| Legacy Infrastructure:  | Nothing (best case); bad habits (worst case)               |
| Administrative Support: | Committed but not unlimited                                |

Note: Most of the examples in this manual use Erehwonian Ducats (EHD) as the currency. This fictional currency has been used so that the student may focus on the mathematics of the example and not be overly concerned about comparable real world values for the problems provided as pedagogical examples.

## **CHAPTER 2**

### **Building Bridges to the Producers of Intellectual Assets**

#### **2.1 Unknown Things Cannot be Commercialized**

The new Commercialization Institute at the National University of Erehwon (NUE) cannot commercialize intellectual assets that it does not know about. In a perfect world, professors, students, and researchers would voluntarily come to the institute with their latest and most brilliant creations. The reality is that these creative “producers” typically view their primary role as being something other than reporting new inventions and innovations – they believe they are advancing science or the arts or educating Erehwon’s next generation. Consequently, many professors and researchers view the commercialization center as something that takes time away from their perceived “primary mission.” In addition, the commercialization institute is new, and in the 100-year history of NUE, nothing like it has ever existed. Thus, everyone on campus needs to adjust to a new world, and you need to explain to them how your institute can aid their primary mission and that of the university’s as well.

In any event, the bottom line is that you cannot commercialize things that you don’t know about. You need to create communication networks within the university that will bring intellectual assets to you for commercial consideration. Of course, you will also pro-actively want to seek out intellectual assets as well.

#### **2.2 Institutional Infrastructure Changes**

The surveys discussed below should give you a reasonably good picture of the intellectual assets that have been created at the university in the recent past. But how will you monitor the situation going forward? You know that many of the legally protectable intellectual properties have time periods in which the rights must be registered or otherwise protected before they are lost. You must create a set of internal procedures that will provide a permanent monitoring tool.

You ask the university president to change the following policies:

1. No university personnel may publish information in any media without first submitting a copy of the article through the university library, which will forward the articles to the Commercialization Institute once they have been reviewed for adherence to the university's style manual by the library staff. This policy includes abstracts submitted for conferences as well as journal articles. The Commercialization Institute is now the only office on campus authorized to grant copyright waivers for journals. Professors may no longer sign copyright forms on their own behalf or on behalf of the university. The Commercialization Institute will complete a preliminary assessment and valuation quickly for the intellectual property mentioned in the papers and abstracts submitted. Copyright permission will be automatically given after 48 hours except in those cases where the Commercialization Institute has found intellectual property that is too valuable to be published before it is protected. When the Commercialization Institute finds valuable intellectual assets whose public disclosure would jeopardize their value, then the Commercialization Institute will seek whatever protection needs to be obtained before any information is made public.
2. Your department will review all new university contracts for intellectual asset issues. Your efforts will include the reviewing the intellectual asset-related terms in the agreements and will also provide you with an opportunity for gauging what intellectual asset is likely to be produced by carrying out the work described in the contract.
3. Your department will also review information related to the university's professional hiring activities and will be required to approve the hiring of all visiting staff. The first part of the policy will give you an idea about the depth of activities on campus, will give you early notice of new activities, and will also alert you to potential intellectual property issues related to previous employers. The second part of the policy will give you an idea whether

various “competitors” are trying to place employees at the university to acquire particular technical skills.

4. You provide the president with a new intellectual asset reporting form that replaces the form used infrequently since the 1960s. This form will be used primarily for voluntary intellectual property reporting. We will discuss this form later.

The university president agrees to these policy changes, and related documents have sufficient rewards for compliance and penalties for non-compliance that most of the university personnel will likely follow the procedures. The president warns you that if these policies become burdensome that this will likely cause a breakdown in the system that he will be unable to help you fix. He reminds you that making money from intellectual property is likely not the primary role for NUE although it is a very important one. You agree to be swift and fair in all cases.

You realize that to achieve these goals you will need to evaluate and value the intellectual property related to submitted papers and contracts very quickly. You will not often have the luxury of making in-depth studies. Otherwise, your department will become the loadstone that drags down the entire university, and you know that the president would not allow that to happen.

## **2.3 The Intellectual Asset Pamphlet**

The new Commercialization Institute at NUE needs to advertise its services to the community. After nearly 100 years of existence, the university finally intends to give serious consideration to the commercialization of university-created intellectual assets. You need to advertise; not just once or in one way, but frequently and in different ways.

You know that a pamphlet describing the Commercialization Institute alone is unlikely to solve all issues related to reporting inventions and innovations. On the other hand, some researchers might actually be excited about the prospect of reporting their work yet simply do not know that the Commercialization Institute exists.



You spend some time drafting the pamphlet and working with the graphics art department in the School of Fine Arts to give it an exciting look and professional feel. Of course, you adapt your pamphlet – its text, its photos, its graphics, and its layout – for what you believe will work best for the NUE community and people from Erehwon in general. You are positive that the sort of pamphlet that might work very well in one part of the world might not work well in Erehwon unless it was modified to suit the local culture.

Here's the text for your pamphlet:

The National University of Erehwon (NUE) conducts research and development activities across a wide range of academic disciplines. Some of this work is of a highly technical nature while other work is not of a technical nature. All of these activities, regardless of their technical character, have the potential for generating intangible assets (IA) for NUE and Erehwon. Intangible Assets represent non-monetary assets that cannot be seen, touched or physically measured, which are created through time and/or effort. Some forms of Intangible Assets can receive independent legal protection, such as copyrights, trademarks, and patents. Other forms of IA, such as know-how and human capital, can be protected via general mechanisms like contract. Everyone's work at NUE has the potential for producing valuable IA for the university.

NUE is a government-funded institution. Public law requires us to inform the Ministry of Trade and Industry and the Ministry of Education about the IA developed here at NUE. This reporting includes all research funded by the government of Erehwon or performed by NUE employees or contractors.

This pamphlet describes the procedures for reporting new Intellectual Assets created at NUE and/or by NUE staff. All NUE employees and contractor personnel should become familiar with this vital information and follow the suggested guidelines for compliance with our responsibilities to report new developments. Additionally, Intellectual Assets have independent value that the university can commercialize and provide greater resources for the university, its programs, and its students.

## INTELLECTUAL ASSET REPORTING

NUE's duty to report technical innovations fundamentally derives from the National University Act of 2011 and can be traced through NUE's prime contract with the Ministry of Education. The pertinent section of the Education Act states:

The National University of Erewhon is required to identify and promptly report to the Ministry of Education and any other relevant government ministries all new Intellectual Assets resulting from work performed at NUE and/or conducted by NUE employees or contractors.

As noted, this includes all work done for government agencies and for any non-government institutions and firms.

Since reporting is a contractual requirement, serious penalties may be incurred for our failure to report new Intellectual Assets. Individual innovators and inventors at NUE must comply with the terms of their Intellectual Asset Agreements, in which they have agreed to report inventions and innovations in a timely fashion through the proper channels. Inventors who are unsure whether or not a particular piece of work is reportable should contact the Commercialization Institute at telephone extension 0-7314.

## NEW INNOVATION REPORTS

One instrument for reporting innovations to the Government is the New Innovation Report (NIR), which is prepared by the Commercialization Office in cooperation with the innovator. The NIR consists of a brief section that outlines the innovation or invention and its history, identification of inventorship and utility. The NIR also includes a section describing the novelty of the invention, the problem the inventors were attempting to solve and the solution itself. The NIR concludes with a lengthy and more complete disclosure of the innovation. NIRs are not limited to just technical innovations.

NIRs must be submitted and completed in a timely manner. The university is required to notify the Ministry of Education and the Ministry of Industry and Trade via an NIR of the development of new intellectual assets as soon as practicable after identification. Innovators need not wait until the innovation or invention has actually been demonstrated. If a new intellectual asset is to be legally protected, then only a brief window of opportunity often

exists for protecting the intellectual asset. For example, under most patent laws, an invention cannot be patented if it has been publicly disclosed prior to the filing of the patent application.

All NUE employees must submit written materials, viewgraphs, videos, etc. to the Publication Review Section of the Library before presenting them to external organizations - individuals outside the NUE or agencies of the Erehwonian government. The Publication Review Group will forward those materials to the Commercialization Office for a review procedure to identify any new Intellectual Assets described in the work. The Commercialization Office will then decide if and how the newly identified Intellectual Asset will be protected. Premature disclosures to representatives of external organizations could render an otherwise protectable innovation unprotectable and thereby cause the loss of valuable commercial rights to NUE.

#### DEFINING NEW INTELLECTUAL ASSETS

The formal definition of reportable items may be found in NUE Policy Manual, Sec. I-18, which defines such reportable items as:

Any innovation, invention, discovery, improvement thereof, whether independently protectable or not under Erehwonian laws, which was conceived or first reduced to practice in the performance of any work by an employee in the line of duty or with the use of NUE facilities. The item may be a scientific discovery, a literary creation, a work of fine art, a new or improved product, material, process, machine, apparatus, device, fixture, hand tool, etc.

Computer programs are included in this definition.

Please note that new innovations must be reported "whether independently protectable or not." The determination of whether or not a particular innovation must be reported to the government will be made by the Commercialization Office.

Innovations developed at NUE, including computer programs, are not in the "public domain," and NUE maintains vigorous intellectual asset protection and licensing programs through which innovations developed at NUE is made available to commercial entities.

The Invention/Innovation Agreement, which must be signed by all employees, contains language similar to that of NUE Policy

Manual, Sec. I-18. Likewise, all subcontracts between NUE and outside firms contain similar requirements.

## COMPUTER PROGRAMS

All computer programs developed at NUE must be reported to the Library. The majority of programs will be made available to other NUE departments. Our library's extensive computer software collection gives NUE employees access to over 1,000 computer programs developed for NUE and/or other governmental agencies. Programs available range from management through information science (retrieval systems) to both hardware and software computer operations. Authors of computer programs should report their work via the NUE Library at extension 8-1243.

## THE REPORTING PROCESS

NUE is required to report the work performed by NUE employees and/or those working on NUE projects. The Commercialization Office also reviews contracts for reportable New Intellectual Assets. For many contracts, an NUE representative may be asked for comments regarding the nature of the work involved. Departmental managers are urged to cooperate in this effort.

When an NUE employee or contractor employee identifies a possible invention or innovation, the individual(s) involved should alert the Commercialization Office as soon as possible. This may be done either by telephone or by completion of a "Notice of New Innovation" form, which is available from the Commercialization Office or any NUE departmental office.

Upon receipt of information regarding a reportable item, the Commercialization Office will supply the innovator with the required disclosure forms. Many NUE departmental offices also retain copies of these forms. After at least one innovator has signed the forms, they should, they should be forwarded to the Commercialization Office, which will docket the item and complete the NIR.

Inventions often come to the attention of the Commercialization Office during review of external publications requests from the Publication Review Group in the Library. After an external publication request, the Commercialization Office often will send NIR disclosure forms directly to the innovators - if the forms have not previously been submitted. An external publication may be

delayed until its impact on the commercialization of the underlying intellectual assets has been considered.

It is important that adequate time be allowed for the preparation of an NIR and review of a publication. While no one wishes to impede the publication process, it is recommended that inventors allow adequate time before a publication deadline for NIR preparation and intellectual asset review. If this is not observed, the paper may not be cleared in time.

NIRs that disclose possibly legally protectable commercial subject matter are forwarded to NUE's Commercialization Institute for possible protection. On occasion, NUE may forward certain new intellectual assets to various agencies of the NUE government for commercialization.

When NUE elects to protect a new innovation by filing a patent application, a search of existing patents is often undertaken to determine if meaningful patent protection is obtainable to that event, results of the search will be made available to the inventors and their comments solicited. Once a patent application is authorized, the inventors may be asked to aid the attorney in preparing the patent application. Inventors will receive copies of the patent application for review and relevant correspondence to and from the relevant patent office for comments. A similar process is followed for other legally protectable intellectual assets

All NIRs are considered for publication in the NUE Development Review, a monthly journal that describes the development of new intellectual assets at NUE. The Development Review, which is available free of charge to qualified requesters, currently has a circulation of approximately 20,000. If publication in the Development Review is approved, the inventor will be able to review the draft article prior to publication.

#### AWARDS & REPORTING INCENTIVES

Inventors who comply with NUE's reporting procedures are eligible for a variety of monetary and service awards. As noted, all NIRs are considered for publication in NUE's prestigious Development Review. Publication in the Development Review, furthermore, results in a 150 Erehwonian Ducats (EHD) award for each innovator.

Any sole inventor named in a patent application filed on behalf of NUE receives a 500 EHD award; in the case of two or more inventors, each receives an award of 250 EHD. An inventor named in a patent application filed on behalf of NUE is also eligible for a share of the patent royalties if the invention is licensed to a commercial entity. Similar arrangements will be provided for other forms of intellectual assets.

Also, a NUE awards program for inventors who have provided major contributions to developments in a particular area — whether from a single innovation or from a lifetime of contributions — offers awards ranging from a few hundred dollars to over 10,000 EHD.

#### MORE INFORMATION

For most information about reporting new Intellectual Assets at NUE, contact:

The Commercialization Office  
Mail Code 12B-34f  
Campus Extension 01-2359

## **2.4 The Weekly Walkabout**

You gather your staff together and announce a second “eyes and ears” program. The intellectual asset pamphlet, you say, will likely only help people find your office who want to find it. You need more ways of ferreting out the intellectual assets being created on campus. To this end, you ask your secretary Kizbit to collect every announcement and flyer about public lectures, performances, and other events taking place on campus. You will review this list, and someone from your office will attend those events that suggest they may involve potentially commercial intellectual assets. If no one can attend, then the relevant personal will be called to discuss intellectual assets.

In addition, each week, your staff will be assigned the task of visiting a new university department. The objective will be to see and hear what seems to be going on in the department. The visits may be somewhat unannounced on occasion. American aviation executive Donald Douglas was famous for walking around his company’s offices and asking engineers to explain what they were working on.

According to legend, if an employee could explain what he was working on in a manner that reflected good commercial sense, then the employee might receive a promotion on the spot, but if the employee could not explain what he was working on, then he might be immediately terminated. This is not what will happen at NUE, of course - but Information flows sporadically and imperfectly in any large organization, and NUE certainly qualifies as a large organization.

You will assess the information that your staff unearths from these programs. For those items that seem promising, you will make a proactive visit to the relevant professors, researchers, and students and seek further information and their agreement to consideration of commercialization efforts.

## **2.5 The Intellectual Asset Survey & What to Commercialize**

You look out over the campus. You review the list of schools and departments. In the 100 years of the university's existence, no sustained commercialization program has ever existed. No one has been systematically required to report their findings to the university. The upper echelon of the university basically has no comprehensive view of what's been done or how good it is.

You decide that one of your first steps must be to conduct a survey of the university – but you have many other things to do and your activities simply cannot wait until a survey has been completed.

### **2.5.1 What to Commercialize**

Intangible Assets and Intellectual Property are rarely recognizable in their raw form. They are, after all, intangible. Many Intellectual Property Rights require their owner to take some affirmative step in protecting the right (e.g., patents and trademarks in most countries must be filed with a government office) or refrain from taking certain actions (e.g., publicizing trade secrets).

Your raw ingredients include: 1) what the university has done, 2) merged with your knowledge about what comprises an Intangible Asset capable of commercialization, and 3) overlaid with knowledge of market conditions for these Intellectual Assets.

You must also remember that important intellectual assets can go far beyond those that are legally protectable in their own right, such as patents and trademarks. The university's intellectual assets comprise anything that can be retained in confidence and/or things that are not generally known. This list is not exhaustive, but it provides a reasonable glimpse over the subject. Technology-related Intellectual Property comprises inventions, formulations, recipes, processes, specialized technical information, designs, patterns, and/or know-how. Marketing-related Intellectual Property includes trademarks, trade names, trade dress, brands, and service marks. Documents, including software, can be protected by copyright and trade secret, and software may be patented in some jurisdictions under certain conditions. Human Capital-related Intellectual Property comprises the university's workforce and certain key staff. Other Intellectual Property comprises methods, franchises, programs, business systems, procedures, campaigns, surveys, studies, forecasts, estimates, training materials, future sales/order books, or use rights. Similarly, services may include research and development, engineering, or marketing. Similarly, data and databases like compiled results from clinical trials and collaborative research agreements and document these developments in a proprietary manner.

### **2.5.2 Organizing the Survey**

You decide to create a database that tracks the various intellectual property activities occurring at NUE. You suspect that the faculty will likely view the project as an additional burden and may respond somewhat unenthusiastically. You decide to build the database using a variety of reference points that can be independently measured.

Here are the reference points you will use for building the list:

- An intellectual property brochure distributed throughout the university;
- A survey of existing university contracts;
- A survey of publications originating from the university; and
- Onsite interviews of the university's staff.



You ask Raoul to visit the neighboring general counsel's office and make a list of every contract signed by the university in the past five years that involves science or technology and to note in the list what exactly the university was supposed to create or research. You also ask Raoul to copy any intellectual property clauses found in these agreements. This chart should give you some idea about what might have been created during the past five years that has an intellectual property component and whether there might be anything that you could protect and commercialize.

You ask Kizbit to visit the library and see if they have a list of university publications for the past five years. You tell her that if the library doesn't have such a list that she is to use the library's periodical databases to compile such a list based on author affiliation. You tell her that the list should include the author's name, department, publication title, and any information about the funding source for the publications. You also ask her to visit the university human relations department to pick up a list of names for all the university's professors. Kizbit is to also search the periodical databases to see if any of the professors have published without identifying their university affiliation.

Meanwhile, you sit down to write an Intellectual Property brochure for the university. You spend several days writing this brochure, which has been discussed.

You are also teaching an undergraduate course in the business school on technology management and technology transfer. The course is attended primarily by students from the business school as well as students from the engineering school along with a few students from the medical school.

You tell your students that you cannot manage or exploit that which you do not know about. The students have already taken an exam covering the various types of intellectual properties and how they can be protected and exploited. They are to survey the university looking for patentable inventions, trade secrets, copyrights, domain names, design rights, trademarks, know how, skilled human capital, innovation processes, and management organization. You tell the students that their first assignment is to conduct a survey in the various schools of the university, note all that is going on in these departments, and identify what forms of intellectual property they may be creating.

Collectively, the students will complete this chart:

| Schools/<br>Departments | Activities | Possible Intellectual<br>Asset/Property | Notes  |
|-------------------------|------------|---|--|
| Engineering             |            |   |  |
| Mathematics             |            |   |  |
| Computer                |            |   |  |
| Science                 |            |   |  |
| Pharmacy                |            |   |  |
| Medicine                |            |   |  |
| Physics                 |            |   |  |
| Biology                 |            |   |  |
| Agriculture             |            |   |  |
| Music                   |            |   |  |
| Theater                 |            |   |  |
| Literature              |            |   |  |
| History                 |            |   |  |
| Fine Art                |            |   |  |
| Psychology              |            |   |  |
| Philosophy              |            |   |  |
| Finance                 |            |   |  |
| Business                |            |   |  |
| Sociology               |            |   |  |
| Criminal Justice        |            |   |  |
| Law                     |            |   |  |
| Laboratory              |            |   | While the "lab" isn't a formal department, you ask the students to find out what they're doing there anyway. |

Some of the students complain that particular departments will be unlikely to have intellectual property and that they will consequently get lower grades than the students who survey the intellectual property "rich" departments like engineering. You assure them that they will find "something" and remind them that their task is to identify intellectual property and that extra credit will not be awarded to the team that finds the most valuable intellectual property. In fact, you say that you're more likely to reward the students who have thought creatively about Intellectual Assets, which means that the Philosophy Dept. might be a richer resource than the Engineering School. The students will submit their reports in a few weeks.

### 2.5.3 Analyzing the Survey

Your students submit their papers regarding the intellectual property survey. You ask each team to make a presentation about what they have found. Most groups admit that they had to think long and hard about what they were hearing and whether it had commercial value. You ask Kizbit to assemble the information from their papers into a completed table. She provides you with the following:

| School/<br>Department   | Activities                        | Possible Intellectual<br>Property           | Notes   |
|-------------------------|-----------------------------------|---|---|
| <b>Engineering</b>      | Electric locks                    | Patents, trade secret, know how             | Prof. Zarkanian; <a href="#">see, Ch. 4.1</a>       |
|                         | Nanotechnology                    | Patents, trade secret, know how             | Prof. Btpang; <a href="#">see, Ch. 6.1</a>          |
|                         | Photovoltaic shingles             | Patents, trade secret, know how             | Prof. Sparkman; <a href="#">see, Ch. 6.3</a>        |
|                         | Self-propelled electric wheel     | Patents, trade secret, know how, reputation | Prof. Randiz; <a href="#">see, Ch. 6.6</a>          |
|                         | Enclosed liquid flow measurements | Patents, know how, reputation               | Prof. Huly-Gritaz; <a href="#">see, Ch. 10.1</a>    |
| <b>Mathematics</b>      | Primary school tutorial           | Copyright                                   | Prof. Hling; <a href="#">see, Ch. 7.1</a>           |
| <b>Computer Science</b> | Magicians of Kabron game          | Patent, trade secret, copyright, trademark  | Prof. Lir-Ghan; <a href="#">see, Ch. 6.4</a>        |
| <b>Pharmacy</b>         | Compounding                       | Trade secret, know how                      | Dr. Wro-Brok; <a href="#">see, Ch. 9.1</a>          |
| <b>Medicine</b>         | Allergy treatment                 | Patent, trade secret, know how              | Dr. Uh-Rang; <a href="#">see, Ch. 9.4</a>           |
| <b>Physics</b>          | Jurassic string theory            | Copyright, trade secret, know how           | Dr. Wree-Ling; <a href="#">see, Ch. 8.1</a>         |
| <b>Biology</b>          | Wrutlu frogs                      | Patent, trade secret                        | Dr. Hryller; <a href="#">see, Ch. 5.3</a>           |
| <b>Agriculture</b>      | Stronba roots                     | Plant protection, know how, trade secret    | Prof. Grel; <a href="#">see, Ch. 6.2</a>            |
| <b>Music</b>            | Heartland songs                   | Copyright                                   | Dr. Rone; <a href="#">see, Ch. 7.2.</a>             |
| <b>Theater</b>          | Xloshzn dance                     | Copyright, know how, traditional knowledge  | Profs. Ewaq and Jones; <a href="#">see, Ch. 4.2</a> |
| <b>Literature</b>       | Inspector Gerschlon               | Copyright                                   | Prof. Doughlin; <a href="#">see,</a>                |

| School/<br>Department   | Activities                                | Possible Intellectual<br>Property                               | Notes  |
|-------------------------|---|---|--|
| <b>Fine Art</b>         | Mysteries                                 |   | <b>Ch. 6.5</b>   |
|                         | Ghu Motors                                | Design rights   | Prof. Yuhg<br><b>see, Ch. 4.3</b>                      |
| <b>History</b>          | Erehwon, the<br>Cradle of<br>Civilization | Copyright   | Prof.<br>MicFrang; <b>see,</b><br><b>Ch. 4.4</b>       |
| <b>Psychology</b>       | Trauma care                               | Copyright, know how   | Prof.<br>Finkghoan;<br><b>see, Ch. 7.3</b>             |
| <b>Philosophy</b>       | Junior<br>Philosophy<br>Guide             | Copyright   | Prof. Llyret;<br><b>see, Ch. 8.5</b>                   |
| <b>Finance</b>          | Institutional<br>Investor<br>Advising     | Copyright, know how,<br>trade secret                            | Prof. LaGrayu;<br><b>see, Ch. 8.4</b>                  |
| <b>Business</b>         | Business Lab<br>software                  | Copyright, know how,<br>trade secret                            | Prof. LeRoon;<br><b>see, Ch. 8.3</b>                   |
| <b>Sociology</b>        | Happiness<br>ratings                      | Copyright, trade secret,<br>trademark                           | Prof. Shlony;<br><b>see, Ch. 5.2</b>                   |
| <b>Criminal Justice</b> | Assault profiling                         | Copyright, trade secret,<br>trademark, traditional<br>knowledge | Col. Prof. de<br>Januge; <b>see,</b><br><b>Ch. 5.1</b> |
| <b>Law</b>              | Litigation<br>treatise                    | Copyright   | Prof. Pewtri;<br><b>see, Ch. 4.5</b>                   |
| <b>Laboratory</b>       | Endothermic<br>chemicals                  | Patent, trade secret,<br>know how                               | Prof. Karmlri;<br><b>see, Ch. 8.2</b>                  |

You make a note to assess the intellectual property in each of these items at the earliest opportunity. (In fact, much of the rest of this Guide will involve the actions you take in processing the results of this survey.)

#### 2.5.4 Rating and Ranking IP Assets

As the university continues making advancements across a wide number of fields, the Commercialization Institute will need to continue surveying and tracking the Intangible Assets that are created. The Commercialization Institute's ability to exploit the university's Intangible Assets will almost certainly pale in comparison to the number of assets created by the university's staff. This means that the Commercialization Institute will need to create a system for rating and ranking identified Intangible Assets. The rating and ranking system will help the Commercialization Institute prioritize its resources.

We will discuss all of the Intangible Assets uncovered in the survey above. However, in a real life university, we might likely need to apply a rating and ranking system to narrow the list down to those opportunities that our resources could handle. The detailed discussion for several of the assets discovered in the survey will implicitly and/or explicitly involve rating an IP asset for commercial exploitation.

We will explain one operable rating and ranking system here. There are many others. As the commercialization officer grows in experience and as the university commercialization programs mature, this rating and ranking system can be adjusted to suit the best needs of the institution.

A rating and ranking system involves exploring several seemingly unrelated issues and integrating the results to form a coherent picture. One topic involves exploring the commercial potential for an intellectual asset. Let's say a university researcher has invented a new method for making paper from papyrus. After just a few minutes research, you can tell that the method offers no improvements over conventionally made paper. The method's only use would be for hobbyists and lost explorers. You quickly investigate the market for papyrus hobbyists and discover that while there are more such hobbyists than you suspect, they are already well-furnished with low cost raw materials. As for lost explorers, they would all take paper with them and only need papyrus if they lost their paper. So, you conclude there is extremely limited commercial potential for this improved method. Thus, you have no need to compare it with competing solutions, see how readily you could find licensees, or estimate the time horizon for commercialization.

Assume the above hypothesis changes slightly, and you do find some possibility for commercial potential. You next compare the innovation with competing solutions to determine what, if any market (niche or otherwise) it might be used. Let's assume for the papyrus example that you discover that the only market of any size would be the specialty handmade paper market. You conclude that it might be possible to enter this market, but you also conclude from the size of the market that you likely have many other and better uses of your time.

Again, assume the hypothesis above changes slightly, and you discover that there is a niche paper market in which the improved papyrus could play a significant role.

You investigate (quickly) how ready this market is for a new entrant such as your papyrus improvement and you ask the researchers how soon the papyrus would be ready for commercialization. If the researchers tell you that it will be several years before their improvement could be commercialized, then all things considered, you may choose to give this innovation a low priority. Of course, in some cases, the university may opt to hold certain pioneering inventions and innovations so that these early and fundamental rights will be available when the market matures. (Even universities with the greatest possible resources, however, cannot afford to place too many bets on the future.)

Changing the hypothesis again, assume that the papyrus is ready for commercialization now and the market itself could potentially absorb a new entrant. You make some inquiries about potential licensees and discover that this specialty paper market is dominated by a handful of companies that never in-license technology. Thus, you conclude that while the papyrus could be commercialized you will have to spend an inordinate amount of time chasing down an unknown pool of potential licensees.

Assume now, however, that a few months after you had conducted this inquiry, one of the inventors comes back from a conference with the business card of a specialty paper company in a foreign country that seemed very intrigued about the papyrus business. You're glad that you have done some initial commercialization work on this technology. The papyrus invention rises now in your ranking since the one obstacle – chasing down a potential licensee – has also been solved. Now you can also consider issues such as valuation and the commercial terms that you would like to seek from the potential acquirer. Chapter 3 provides an introduction to the formal process of evaluation and valuation.

Rating and ranking the university's IP assets allows you to know where to concentrate your efforts. This also gives you a base to build from as new developments (both good and bad) transpire.

## 2.6 Valuation Guidelines

Your work will involve evaluating and valuing new developments at the university. You know that whatever you do, you will need to do it quickly. In some instances, you may not have more than a few hours to decide an issue, and in other cases you may have just a few days. Apart from everything else, if you take several weeks to arrive at a “perfect” valuation for something created at the university, your efforts will likely have “failed” nevertheless because your other work will have been neglected.

So, you realize that you will have to modify, at least in some cases the methodology that would be performed by a professional valuation expert in providing a professional opinion for a client. You do not have the time, resources, or budget for such an approach. You will reserve, however, the right to hire valuation consultants from time to time for especially large deals and to improve your own techniques.

You have also heard it said many times that intellectual asset valuation is part science, part art. The science is in the financial formulas that valuation experts use to quantify the various considerations that comprise value. Most valuation experts, regardless of their training, tend to apply the same techniques and formulas. The art of valuation lies in how the valuation expert applies these techniques and formulas to generate a meaningful, statistically valid, and defensible value. Understanding the technical details correctly can mean the difference between money being left on the table during licensing negotiations and obtaining an agreement that will earn respect from peers and future licensees.

You review the basics of valuation and note where your situation may change or alter some of the basics. As the university president hinted, NUE is not a commercial enterprise, and there are many goals for commercialization other than just bringing in piles of cash. Among other things, you know that it would be better for you to close 100 deals for a bit less than fair market value than to close 10 deals at or better than fair market value because if you close 100 deals, then NUE itself will become more visible regionally and internationally than it would with just 10 deals.

In your review of valuation basics, you recollect that these fundamentals apply to all assessments. You also recognize that the most accurate fair market valuation is useless if no other party will accept corresponding commercial terms. You further realize that building your organization's expertise will take some time, and you remind yourself to be patient.



## CHAPTER 3

### Valuation Methodologies

You are the director of the Commercialization Institute at the National University of Erewhon (NUE). You have put in place processes that will harvest the university's Intangible Assets. You realize that commercialization of any asset must include some measure of its value. You will rarely have the budget to hire a professional appraiser, and in many contexts, the expense would not be justified. You have no other choice than to learn some valuation techniques. You also know that the more you study valuation and apply it to your work, the greater your abilities will grow.

Intellectual assets are typically viewed as being difficult to value. First, the appraiser has a limited ability to compare with other sales of similar assets. The details of intellectual asset transfers are not usually made public. Second, there are no genuine public markets for buying and selling intellectual assets. There are been some attempts to create such markets, but they have not yet succeeded in establishing a genuine public market. Third, intellectual assets are dissimilar. The legal intangibles by their nature must be different in order to enjoy legal protection. Fourth, most transactions have unique motivations which not surprisingly end up being reflected in the terms of the resulting transaction. Fifth, even when motivations are similar, the terms and conditions of intellectual asset transfers vary significantly and may include other non-intellectual assets such that it becomes difficult to determine the actual value the parties placed on the intellectual asset portion of the transaction.

For these reasons, the market for intellectual assets is one of the world's last arbitrage markets. A buyer or seller can enjoy tremendous returns simply by leveraging the different informational and value components given to intellectual assets by different parties. Greater awareness and access to information over time will cause this market to lose its arbitrage edge, but this will likely not occur for a many years.

Damage calculations in litigation may possibly provide the greatest access to the valuation of intellectual assets. We will discuss some of the litigation mechanisms later in this Guide. However, the process by which a court goes about assessing damages in a patent case, for example, is not typically a procedure that can be followed by an entity seeking to commercialize its intellectual assets.

Many endeavors involve two critical components – data and theories for how to apply the data to a given problem. In the 16<sup>th</sup> Century, the field of astronomy was plagued by poor and inaccurate data which allowed a plethora of theories to flourish using this spotty data. Danish astronomer Tycho Brahe eventually compiled large volumes of very accurate astronomical data. Using this data, Johannes Kepler was able to create his pioneering laws of planetary motion. The situation in valuation today is somewhat similar to astronomy in earlier ages. The field enjoys numerous theories, but a truly rich and robust pool of data has not yet become available, although there are some notable attempts to solve the data problem.

You know that in many instances, you may need to modify the formal procedures followed by an appraiser in doing your work. In many instances, you will simply not have the time to conduct a formal valuation. In those instances where you do have the time, you will likely not have the budget to pay a formal appraiser's fees. However, an understanding of the basic tools used by an appraiser should give you many advantages in conducting your work. In some instances, you may even ask others at the university to conduct formal appraisals for you – the computing students, for example, could be given the assignment of building you a Monte Carlo valuation tool. The students from the business school class you teach could be given valuation assignments. For the most part, however, you will need to tailor these formal techniques to suit your situation. In the later chapters in this Guide, we will provide suggestions for modifying the formal techniques to fit specific exploitation scenarios.

### **3.1 Fair Market Value and the Valuation Context**

You will need to determine a fair price for each university Intellectual Asset to be commercialized. Among other things, this fair price will allow you to: 1) gauge the reasonableness of the terms that a third party has presented you, 2) avoid

presenting unreasonable (deal killing) terms of your own, and 3) come close to obtaining a reasonable return for the university (e.g., avoid “leaving money on the table.”). Thus, you will often want to estimate a current Fair Market Value to support your negotiation position and/or for your own internal decision-making processes related to Intellectual Assets.

Fair Market Value is the most common valuation objective for Intangible Assets such as Intellectual Property. Fair Market Value can be defined as “the price at which the asset would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts.” The two parties engage in “arm’s length” negotiations, meaning that they are both well informed and willing and able to complete an exchange. Fair Market Value assumes that if a comparable property has fetched a specific price, then the Intangible Asset being evaluated would command a similar price.

Determining the Fair Market Value will be the primary approach used in this Guide, although there are other valuation approaches. One can discuss value in a number of ways, but not all of them are relevant for the typical university or research institution. The commercialization officer should realize that there are other perspectives related to valuation, investment, and commercialization. One can perform valuation calculations with absolute perfection and never arrive at the same value as someone else who has made different calculations from a different perspective. Such differences in valuation arise frequently in commercial negotiations. Do not be surprised if your counterpart in a negotiation has a completely different value proposition. Sometimes your counterpart may be merely bluffing in hopes that you’ll agree to his suggested number; other times, there will be no bluff and the differences will reflect genuine differences in the value of the intellectual asset. This is when your negotiation skills will become important.

Every valuation has a context or purpose, and different techniques may be employed for different purposes. For example, you may not find it wise, or have the resources, to conduct a complete valuation every time a researcher asks to publish a journal article that could compromise the rights to a related Intellectual Asset (e.g., patent rights). If time is short (and in many cases often is), then you can only take a

small amount of time to consider the commercial implications of not having a patent before you must take a decision. On the other hand, if a third party approaches you with a business proposition related to a large collection of the university's Intellectual Assets, then the situation is different because the time pressures are different, the rights have already been obtained, and the scale of the transaction is much larger and much more certain. As you progress, you will develop a better sense of knowing the appropriate level of effort that you should apply for different situations.

Some of the key valuation criteria to keep in mind are the scope of relevant uses by potential acquirers, the profitability of the specific Intellectual Asset, its remaining economic life, and the availability of suitable alternatives. In the practice of valuation, these characteristics are encapsulated in the valuation context and the valuation method(s) applied. So, for example, if the specific use contemplated for an intangible asset is not its primary use, then the valuation may be somewhat lower. In terms of potential acquirers, a large manufacturer may often be able to use a new technology more robustly than a small business investor. Because these factors differ from one scenario to the next, the same intangible asset may have different values when viewed in the context of different uses and different exploitation scenarios.

Researchers typically conduct their work without much consideration about the specific types of Intellectual Assets they might be creating along the way. Thus, they tend to produce more than just a single, narrowly defined Intellectual Asset. This situation is fine, and no one needs to change how researchers approach their work. However, you need to think “inclusively” in conducting your commercialization work. Assume you are negotiating a patent sale with a third party, and the third party only wants the patent and does not want any other related Intellectual Assets, such as trademarks, trade names, know how, key personnel, etc. You can also assume in this example that the other assets will be significantly deprived of value once the patent has been sold to a third party. So, if you just conducted a valuation of the patent without also considering the value of the package of related Intellectual Assets, you may end up missing something. It is perfectly fine that the potential purchaser just wants the patent – but you will need to consider whether and to what extent the related Intellectual Assets will be difficult to commercialize without the

patent. You might even want to charge a premium (small other otherwise) to the purchaser of the patent to recover some of the lost value for the other Intellectual Assets.

In summary, each valuation has its own context. You should think about collections of related intangible assets as well as “pieces” of them, and you should consider each of them in various contexts. While considering the context, it is important to view assets in terms of their relation to one another. For example, the intangible assets employed in a technical process may be more accurately valued as an integrated package or bundle of assets. Related assets tend to reinforce each other.

## **3.2 Qualitative Aspects of the Valuation Process**

Valuing an Intangible Asset comprises at least two distinct tasks. The first task involves collecting and analyzing qualitative information pertinent to the Intangible Asset. The second task involves using one or more quantitative methods to perform the valuation based on the qualitative analysis. The first task may be considered “evaluation” of the pertinent Intellectual Asset(s) and the second task may be considered “valuation” of those assets.

### **3.2.1 Assessment of Relevant Information**

The appraiser should assemble all relevant information about the pertinent Intangible Asset(s). This should include a description of the Intangible Asset appropriate for the valuation. The evaluator should also note the context for the valuation.

The appraiser should review pertinent legal documents (e.g., a copyright, trademark, or patent), any presentations that discuss the benefits of the Intellectual Asset and its commercialization possibilities, any studies (internal or external) that discuss the overall commercial market for products/services in this particular area, any existing licensee agreements for the subject assets, and any prior assessments of the strength of the Intellectual Asset. If a product incorporating the technology has already been commercialized, then related documents may include pertinent information. The appraiser may also want to study the history of the Intangible

Asset's development, who funded its development, what rights, if any other parties may have, and the extent to which there are related Intangible Assets that should also be considered and valued.

The appraiser understands that reviewing various third-party information may be necessary in a valuation assignment. Some of these resources contain information that can be obtained free of charge, others are resources that require either one-time payments or subscription services to access critical data that cannot be found elsewhere. Examples of free and for-purchase information, which the appraiser may need to consult comprise:

- Annual reports and financial statements of companies that have commercialized related and/or competing technologies;
- Websites for the prospective acquirer and competitors of the prospective acquirer;
- Related technical information, and
- Websites pertaining to background information about the subject Intellectual Asset.

The appraiser should identify the traits and characteristics that might render this Intellectual Asset superior to others in the same category. The appraiser will want to note the size of the market relative to the Intangible Asset. The appraiser will also want to note items such as market penetration, if available. The appraiser will further want to note annual sales of related product/services and gauge the relative profits if available.

These calculations should be performed on the pertinent national, regional, and/or international levels. At the start of each assignment the international breadth of subject Intellectual Assets should be identified in order for the appraiser to frame the analysis accurately. The appraiser should note the consistency between the countries/regions of interest to the product/service area generally, the countries/regions of interest to the prospective buyer, and the extent to which the subject Intellectual Assets apply to the countries/regions of interest.

The appraiser should describe the market for products/services closely related to the Intangible Asset. The appraiser will want to note things such as whether the

market is growing or shrinking, how intense competition has been, levels of investment (if available), and other such information. The appraiser will want to know what competitive advantage the Intangible Asset being sold brings to the market.

The appraiser may also want to make these calculations relative to that of the potential acquirer of the Intangible Asset in preparation for a negotiation. So, for example, if the Intangible Asset comprises innovations related to a given product, the appraiser will want to note the potential acquirer's global sales in recent years for related products and the percentage of the total market these products represented.

The appraiser should also consider items such as consumer tastes, where relevant. This could mean reviewing pertinent consumer surveys or other relevant materials. Assume the appraiser was preparing a fair market valuation for a definitive history of field hockey and noted that public demand for products related to field hockey had risen tremendously in recent years. Information such as this could be factored into the valuation. The appraiser should note the extent to which the Intangible Asset satisfies consumer demand, especially in ways not met by other products/services. It is especially helpful if the appraiser can also find information related to the weight that consumers place on different features of a related product.

### **3.2.2 Risk Profile**

The appraiser should also develop a "risk profile" to better understand the level of risk inherent in the Intangible Asset being valued. Assume, for example, that the appraiser is attempting to determine the value of a trade secret. Assume further that there is already a known risk that this trade secret may have been disclosed and might no longer enjoy trade secret protection if this matter was adjudicated. The appraiser should account for this risk (and other risks) in some manner in performing his estimate of fair market value. In the patent context, for example, the appraiser will want to understand how close the patent comes to the known prior art. We will discuss risks further in the quantitative section below.

The risk profile includes any weaknesses in the intangible asset. There are many forms of potential weaknesses, and the appraiser will want to note the pertinent ones. This does not necessarily mean that the appraiser needs to expose all the potential or theoretical weaknesses during negotiations with a prospective buyer,

but it does mean that the appraiser will be ready to explain his valuation in light of the weaknesses. For example, the appraiser will also want to account for considerations such as the remaining life of the Intangible Asset being valued. This remaining life may include anything that could cut the life of the Intangible Asset short, such as the end of legal protection (patent expiration) or the end of its usefulness (technical obsolescence).

Some appraisers employ various rating and ranking systems in the evaluative qualitative assessment of an intellectual asset. This technique compares the intellectual asset against a metric of some sort, such as perceived norms within a given industry or technical area. The approach may involve (1) a scoring criteria, (2) scoring system, (3) scoring scale, (4) weighting factors, and (5) decision rules. Such metrics may be helpful in making a rapid commercialization decision, but the appraiser should also bear in mind that other factors are also likely in play in the valuation.

### **3.2.3 Remaining Useful Life**

A key valuation consideration is the determination of the Remaining Useful Life (RUL) of the subject Intellectual Asset. For example, the legal life of a patent is 20 years from the filing date. However, in industries with rapid technological innovation, such as telecommunications, the patented technology may be obsolete in a significantly shorter time period. Therefore, a much shorter useful life may be appropriate for some valuation calculations. By contrast, in other technical areas, such as pharmaceuticals, the lifetime of Intellectual Property Rights such as patents, more often determine the remaining useful life of the asset.

Assume that a given patent for a particular technology has 16 years of remaining legal protection. Assume further that the patent owner has a license agreement in place for 10 years with Company A. Company A's management has decided to abandon the technology after seven years. The next-generation of technology will render the present technology obsolete in five years. Under these assumptions, the remaining useful life for the technology may well be an amount of time significantly less than the remaining 16 years of the patent.



### **3.2.4 Objectivity**

The appraiser must be objective in performing qualitative tasks, as well as quantitative ones. This does not mean that the appraiser should be more pessimistic than optimistic, or vice versa. The appraiser should strive to be reasonable in valuation so as to arrive at a figure that resembles the figure that other reasonable people would arrive at – how the appraiser chooses to negotiate with third parties on the basis of this information is a completely different matter.

## **3.3 Quantitative Aspects of the Valuation Process**

Intellectual Asset valuation attempts to quantify the financial benefit of having access to the intellectual assets, and in some cases the legal rights to prevent others from using them. For example, having the rights to a patent allows its owner to use the invention freely and to have the ability to license the technology to others.

When valuing any Intellectual Asset, there are three primary methods: Income, Cost, and Market. These methods are sometimes known as the classical valuation methods. In the Income Method, the value of an Intellectual asset is measured by examining the net present value of the predicted future income benefits expected to be generated by the asset, taking into account all of the risks inherent in achieving those cash flows. In the Cost Method, the value of an asset is measured by examining the cost to recreate the asset or create an asset of similar utility. In the Market Method, the value of an asset can be measured by examining market transactions for similar assets. There are other valuation methods, which we will mention, although we will devote most of our attention on these classical methods.

The Income method is widely used by purchasers of Intellectual Assets. The Cost and Market methods can provide informative results. The market method is often difficult to apply due to the lack of comparability among Intellectual Assets and intellectual asset sales, and the market and cost methods may not take into account the ability of the intangible asset to generate cash flow. Typically, the Cost Method fails to capture the potential commercialization benefit of technology, and the Market Method is extremely difficult to apply since intellectual assets by their nature are unique. Thus, the Income Method is typically preferred over the other methods

where it can be applied. As we will discuss, the Income Method includes related methodologies, such as “excess earnings” and “profit apportionment.”

### **3.3.1 The Market Approach**

The Market Approach focuses on determining what others have paid for comparable Intellectual Assets. Market-based transactions of similar technologies or intellectual assets provide insight into the value of the intellectual asset under consideration. Thus, the market approach examines market-based transactions for the asset under consideration or similar assets.

Assume for example that a valuation expert must find the fair market value for a Rembrandt portrait from 1642. She might glean probative information from market transactions of other Rembrandts of the same subject matter (same person, similar pose, similar social position, etc.), year painted, and other characteristics. The same approach can be used with respect to intangible assets. In the end, the appraiser will need to account for differences as well as similarities with the market-based transactions found.

Key considerations in the market approach include identifying transactions involving both IP assets and related non-IP assets which occurred in the recent past and distinguishing the value attributed to intellectual assets apart from other transferred assets. The appraiser has to be careful in that Intellectual Asset allocation may include more than just the subject asset. Assume that a company has recently purchased an entire division of a competitor. Press reports may say that the transaction was based primarily on intellectual asset considerations. This may be true; however, the appraiser may have trouble in parsing such a huge sale into various components so as to arrive at a value for the intellectual assets. It is also quite possible that the parties to the transaction never really separated the values in their own negotiations. In addition, many times the quantity of the Intellectual Asset is not reflected in public information; therefore, it may be impossible to confirm the size of each asset category in order to perform a per asset price analysis. Transactions of certain large or notable portfolios can also influence market pricing as future participants will analyze the per asset price benchmarks from these prior deals as a reasonableness check.

The market approach works very well when market data is readily available. Market information is often available about commodities and in some places about real property, e.g., the price of houses in many countries. The market approach does not work well when this information is not available or not analogous to the asset being valued, which is often the case with intellectual assets. In fact, the biggest hindrance to widespread application of the Market method is the absence of an abundance of accurate and readily accessible data for comparable transactions. The appraiser must carefully scrutinize all purported market data for accuracy, as many times the reported amounts are not as applicable (for various reasons) as they might appear on their face.

The market approach is subject to criticism even when data is available. The criticism is that the method involves “apportionment” and not valuation in that the method reflects “perceived” industry norms. There is some merit to this criticism, but then again, most markets are about perceived value. Of course, the perceived value of many commodities is likely to be more stable than the perceived value of many intellectual assets.

### **3.3.2 The Cost Approach**

The Cost Approach comprises determining how much the Intellectual Asset or its close alternatives cost to reproduce. In particular, the cost approach examines the replacement cost of the Intellectual Asset under consideration, or an alternative asset of comparable utility. The situation is similar to a homebuyer deciding between purchasing an existing home or building a new one. If the alternative to constructing a new home can be purchased for 250,000 euros, this information can offer insight into the amount the homebuyer should be willing to pay for a new home.

The advantage of the cost approach is that it is relatively easy to calculate. The disadvantage of the cost approach is that it has little to no relationship to market value, and for some underlying intellectual assets it overlooks or ignores the value of being first.

The cost approach can sometimes serve as a useful tool for valuing assets such as computer software. The method can also be used for determining exclusive rates for software licenses. The example below illustrates representative expenses for a

software development project. Project management tools may approximate costs to develop a software project including projections for time and labor for software projects based on the number of lines of source code. This information may be helpful in determining a licensing price for Intellectual Assets that can be priced in a similar manner.

|  | Development<br>Year 1 | Development<br>Year 2 | Development<br>Year 3 | Total<br>Cost |
|--|-----------------------|-----------------------|-----------------------|---------------|
| Design & specifications development (€k) | €1,000                | €500                  | €100                  | €1,600        |
| Computer operations testing (€k)         | €400                  | €400                  | €600                  | €1,400        |
| Systems analysis (€k)                    | €50                   | \$200                 | \$300                 | €550          |
| Programming & testing (€k)               | €500                  | €1,500                | €2,400                | €4,400        |
| Documentation (€k)                       | €10                   | €10                   | €10                   | €30           |
|  | <b>€1,960</b>         | <b>€2,610</b>         | <b>€3,410</b>         | <b>€7,980</b> |

Entities may also value a desired Intellectual Asset based on alternative costs to design and manufacture in a way that avoids infringing any legal rights pertinent to the Intellectual Asset.

Historical cost categories can be useful in determining the current cost to replicate the asset. Cost projections may also be used to determine value. The cost method does not take into account the income generating capability of the asset. Other issues to be aware of include a potential heavy reliance on information from the asset’s developers, and ensuring that the cost values are fully “burdened” to include all software costs.

### 3.3.3 The Income Method

The income method examines the future income generated by the intellectual assets under consideration, and produces an estimate by calculating the present worth of these future economic benefits. There are various methodologies that can be applied using the principles of the Income Approach. These methods include:

relief from royalty, excess earnings/incremental income, and profit apportionment. Each of these approaches may be easier to apply and/or more applicable for different valuation scenarios.

The Relief from Royalty methodology is based on the premise that a property's value can be measured by what the owner or prospective owner of the property would pay in royalties if it had to license the intellectual asset from a third party. This approach may also quantify the amount of income the present owner would generate by licensing the intellectual property to others. This method requires the determination of projected royalty payments, which are derived by applying a royalty rate to an appropriate royalty base.

The Excess Earnings/Incremental Income methodology is based on the premise that a property's value can be measured by the incremental earnings achieved by a proprietary product relative to similar but non-proprietary product (e.g., a generic version of the same product). The excess earnings may result from the proprietary product commanding a price premium, providing manufacturing cost savings, and/or achieving larger sales quantities. To perform this method, one may have to first compare the intellectual asset from a similar asset lacking the intellectual asset. So, assume a genetically modified potato whose cost of production is 2 euro per kilogram lower than a traditional potato's production costs. Thus, the value added by the genetically modified potato in comparison to the traditional potato would be 2 euro per kilogram, and the equation using the income approach would use this value. A potential acquirer of this intellectual asset may value the property based on the additional, incremental income that the acquirer can earn from owning the requisite legal rights.

The Profit Apportionment methodology determines a reasonable royalty rate or valuation in a hypothetical arm's-length transaction. This approach attempts to evaluate the share of the licensee's (or purchaser's) anticipated profit that a licensor (or seller) would seek in return for providing the licensee with access to the subject intellectual asset.

As mentioned, when considering the income method or other valuation approaches, it is important to note the purpose and context of the valuation. Typical

reasons for performing a valuation using the income method include acquisitions/divestitures, strategic portfolio management, and intellectual asset licensing, both exclusive and non-exclusive. The Income Method can also be used for venture capital investment in an early stage technology or economic damages quantification during litigation. Of course, these scenarios less commonly arise in a university setting.

The value of an intangible asset, such as intellectual property, generally increases as the technology becomes closer to market and the certainty surrounding cash flows increases. A simple example is a biotech or pharmaceutical scenario in which a patented product or technology goes through several regulatory phases and the chance of success increases over time.

### **3.3.4 Time Value of Money and Risk**

To understand how time and risk profiles impact value, one must understand the notion of the Time Value of Money. This concept is based on the assumption that a unit of money in hand today may be worth more than at a future point in time. The time value of money is based on inflation that reduces the purchasing power of a unit of money over time and the fact that alternative uses for the money are foreclosed.

The Time Value of Money applies to valuation techniques, such as the Income Method, because the goal is to estimate the present worth of potential future benefits. The word “potential” is emphasized because there is an inherent risk in attempting to predict future economic events affecting estimated future cash flows. This risk increases over time, as the predictability of the future becomes increasingly speculative. It is important to understand that risk can be related to many factors such as competition, internal execution, and availability of funding. Therefore, the appraiser should take care to understand the factors driving the risk profile of each project. In summary, the assumption holds that as risk increases, value decreases.

In a valuation context, the risk concept is captured in a calculation known as a discount rate. The word “discount” is used to describe the notion that money in the future is commonly worth less than the same money today. The discount rate is the discount factor that is applied annually to a respective cash flow projection period,

and is typically calculated on an after-tax basis to match its application to after-tax cash flows.

The table below emphasizes the correlation of increasing risk to increasing discount rates. For low discount rates (approx. 10% or less) the expected cash flows are predictable and nearly certain to occur. For medium discount rates (20-30%), the subject asset has a risk consistent with a firm's other assets or there is uncertainty related to the amount and timing of cash flows with the risk high relative to a firm's other investments. In the highest discount rate (e.g., 50%), there is an extremely high risk and high probability of failure. The required return on the investment is higher to account for the risk factor.

Once the discount rate has been selected, based on the risk profile of the subject asset, a discount factor is computed using the following formula and assumes the cash flows will be collected at the end of the year:

$$1 / (1 + K)^N$$

Wherein, (K) equals the discount rate, and (N) equals the estimated cash flow period. It should be noted that many programs such as Microsoft Excel includes a function to calculate this factor, but it does not automatically account of the "mid-year convention" issue described below.

As an example, assume a patent has just been issued in the United States and the patent protected product is to be immediately marketed utilizing the benefits of the invention. Therefore, given the assumption of a selected 30% discount rate, the discount factors for the first three years of projected income estimates follows. The example on the next page shows how these factors are applied in valuation context.

| Discount Factor<br>(30%) | Year 1 | Year 2 | Year 3 |
|--------------------------|--------|--------|--------|
|                          | 0.769  | 0.592  | 0.455  |

It is common in valuation assignments to adjust the discount factor based upon the assumption that in most instances the cash flows are received throughout the year as opposed to a lump sum at the end. Therefore, the calculation is altered as follows:  $1 / (1 + K)^{N-0.5}$ . As a result, the year-end cash flow factors shown above would now be calculated as: Year 1 is 0.877; Year 2 is 0.675, and Year 3 is 0.519.

The calculations below demonstrate discount rates of 30% and 40% applied to the cash flows projected annually for the first three years of use of a certain asset. This exemplifies the relationship between increased risk and decreased value, and vice versa.

|  | <b>Year 1</b>  | <b>Year 2</b> | <b>Year 3</b> |
|--|----------------|---------------|---------------|
| <b>Net Cash Flow</b>                           | €100           | €100          | €100          |
| <b>Discount Factor<br/>(30% discount rate)</b> | 0.769          | 0.592         | 0.455         |
| <b>Present Value of<br/>Future Cash Flows</b>  | €76.92         | €59.17        | €45.52        |
| <b>Total NPV</b>                               | <b>€181.61</b> |               |               |

Additional risks applied to the discount rate are represented by the Risk Adjusted Hurdle Rates (RAHR) chart below. Please note that these rates are applicable to return expectations on intellectual asset based investments and are not reflective of other interest rates (e.g., corporate borrowing). As a reference, a “floor” would be a rate considered “risk free”, such as an investment in U.S. Treasury securities.

| <b>Characterization of Risk</b>   | <b>Approximate RAHR</b>  |
|---|--|
| “Risk-free” such as building a duplicate plant to make more of a currently made and sold product in response to presently high demand.  | Approximates the corporate rate of borrowing, which can be in the range of 8-18%               |
| Very low risk, such as incremental improvements with a well-understood technology into making a product presently made and sold in response to existing demand.   | 15-20%; discernibly above the corporation’s goals for return on investment to its shareholders |
| Low risk, such as making a product with new features using well-understood technology into a presently served and understood customer segment with evidence of demand for such features.                          | 20-30%   |
| Moderate risk, such as making a new product using well-understood technology to a customer segment presently served by other products made by the corporation and with evidence of demand for such a new product. | 25-35%   |
| High risk, such as making a new product using a not well-understood technology and marketing it to an existing segment or a well-understood technology to a new market segment.                                   | 30-40%   |



| Characterization of Risk   | Approximate RAHR      |
|--|-----------------------|
| Very high risk, such as making a new product with new technology to a new segment.   | 35-45%                |
| Extremely high risk (sometimes known as “wildcatting,” borrowing an expression from the oil exploration industry), such as creating a startup company to go into the business of making a product not presently sold or even known to exist using unproven technologies. | 50-70% or even higher |

You will need to estimate or calculate the Discount Rate/Factors. The table below outlines the calculation of discount factors, using a 30% discount rate and a calculation based upon mid-year convention formula.

|                               | Year  |       |       |       |       |       |       |       |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| (30% discount rate)           | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  |
| Years from Valuation Date (N) | 0.50  | 1.50  | 2.50  | 3.50  | 4.50  | 5.50  | 6.50  | 7.50  |
| Discount Factor               | 0.878 | 0.675 | 0.519 | 0.399 | 0.307 | 0.236 | 0.182 | 0.140 |
|                               | 2019  | 2020  | 2021  | 2022  | 2023  | 2024  | 2025  |       |
| Years from Valuation Date (N) | 8.50  | 9.50  | 10.50 | 11.50 | 12.50 | 13.51 | 14.51 |       |
| Discount Factor               | 0.107 | 0.083 | 0.064 | 0.049 | 0.038 | 0.029 | 0.022 |       |

### 3.3.5 Relief from Royalty

The analysis of the Relief from Royalty Approach can be segmented into the following four considerations. The four factors are: the estimated royalty base, the royalty rate, the risk assessment/discount rate, and taxes. The estimated royalty base is the amount of revenues and/or units the subject intellectual asset could generate if the owner was able to license the technology to a third party that subsequently generated commercial sales. The Royalty Rate can be determined from prior licensing transactions (both internal and external) and “rule of thumb” guidelines if verifiable comparables do not exist. The Risk Assessment/Discounting Rate can be captured through an estimation or calculation of the appropriate discount rate/risk adjusted hurdle rate. The effect of taxes can be calculated on after-tax net present value is standard procedure for valuing intangible assets

### 3.3.6 Incremental Profit/Excess Earnings Method

The excess earnings method provides a valuation based on the incremental income that will be generated by owning the IP assets under consideration. Future projected income based on use of the Intellectual Asset is compared to future projected income without using the Intellectual Asset being valued. As an example, intellectual property and related high tech equipment is designed that highly automates the manner in which prescription medications are sorted, packaged and delivered to patients in an assisted living facility. An analysis of the business pre- and post- implementation of this new technology indicates that fixed operating costs (e.g., salaried employees) can be reduced by up to 40% by utilizing the technology compared to the old method of intensive manual labor. In addition, error rates are greatly reduced, which assists in mitigating serious patient risk and insurance premiums. This is a quantifiable benefit directly attributable to the development and commercialization of the Intellectual Assets being valued. Companies will analyze, in the case of infringing technologies, how important the infringing feature is. If critical, the value conclusion “without” scenario would be reduced more than a scenario where the feature is barely used.

| With IP   | Without IP                        |
|---|-----------------------------------|
| <b>Revenue</b>  | Revenue                           |
| <b>Less: Cost of Goods Sold</b>                                       | Less: Cost of Goods Sold          |
| <b>Less: Operating Expenses</b>                                       | Less: Operating Expenses          |
| <b>Less: Taxes</b>  | Less: Taxes                       |
| <b>Equals: After Tax Income</b>                                       | Equals: After Tax Income          |
| <b>Plus: Depreciation &amp; Amortization</b>                          | Plus: Depreciation & Amortization |
| <b>Less: Capital Expenditures</b>                                     | Less: Capital Expenditures        |
| <b>Less: Change in Working Capital</b>                                | Less: Change in Working Capital   |
| <b>Cash Flow With IP</b>  | Cash Flow Without IP              |
| <b>Apportion Incremental Cash Flows and Discount to Present Value</b> |                                   |

### **3.3.7 Profit Apportionment**

The profit apportionment method determines value based on the expected or current income that can be directly attributed to an intangible asset. This method is typically implemented by determining a percentage of income that may be apportioned to the asset under consideration, with the remainder apportioned to all other assets that contribute to the expected income.

A percentage split is highly subjective, and can vary depending on factors such as the pertinent industry, the importance of the intangible asset relative to other assets, and the nature of the asset. An intellectual asset which represents one of many features in a product may command a lower percentage apportionment than a fundamental innovation that enables an entire technology. For example, a wireless handset may embody several intellectual assets. Apportionment to any single feature or function may therefore command a lower percentage allocation. As another example, a soda can technology may command a higher allocation of income if its contribution is relatively important compared to other assets.

One framework for the split of estimated profits between the hypothetical licensee and licensor has been along the lines of a 25% profit allocation to Intellectual Assets. This metric seeks to split the profits in a manner such that each party could expect to benefit from the relationship proportionately to its investment and level of risk. The 25% metric assumes as a benchmark that in a “normal” technology licensing relationship – where the licensee bears the risks of investment in manufacturing and commercialization of the technology and the risks of competition from the marketplace while the licensor provides a strong technology package. In such a scenario, the licensor should be entitled to 25% of the predicted “profits.” However, this 25% royalty metric is only a starting point. The profit split should then be adjusted up or down to reflect the exact circumstances of the license, and it is not unreasonable for the ratio to be adjusted so far as to be reversed.

The 25% metric has grown steadily disfavored in recent years because it does not have a solid empirical grounding and is sometimes viewed as an irrelevant starting point. Its use is no longer allowed in patent infringement cases in the US, for example. However, while a “rule of thumb” may seem perplexing in an area where

reliability and precision are often deigned paramount, the 25% metric may provide the university appraiser with a rough metric for comparing against the other calculations that he may perform.

### **3.3.8 Example of the Income Method Using Relief from Royalty**

The following section provides a rough outline for a valuation using the relief from royalty methodology of the Income method. For these sections, assume that the appraiser has already gathered and reviewed the pertinent background information, understands the context for the valuation, and has already qualitatively studied the intellectual asset to be valued.

#### **3.3.8.1 Estimate the Royalty Base**

The estimated royalty base may be based on the projected revenue of the prospective acquirer from launching a product/service that uses the Intellectual Assets being valued. The appraiser will need to consider, however, whether the proposed agreement is exclusive or non-exclusive. If the proposed agreement is non-exclusive, then the appraiser should note that the results of the valuation using this approach will be based on the value of the Intellectual Assets to just the proposed acquirer and not necessarily to its entire market.

To estimate the potential Acquirer's product revenue, the appraiser establishes a selling price and number of units expected to be sold by the Acquirer. This estimate can be derived in a number of ways. Among other things, during negotiations with the potential acquirer, the owner may ask how much a prospective unit will sell for. Of course, the acquirer might not actually know the unit's sales price or be willing to disclose it accurately. The appraiser can use as a proxy, for example, the price of related products. Similarly, the appraiser also estimates how many units will be sold in the first year of deployment. This estimate can be prepared using a number of variables, such as a percentage of the volume of related products that are sold. Assume, for example that the sales price estimate is 150 euro and the sales volume for the first year is 20,000 units. Thus, the estimated revenue for the first year is 3 million euro (150 euro x 20,000 units).

The appraiser next estimates the unit sales throughout the effective remaining lifetime of the Intellectual Asset being appraised. For some Intellectual Assets with legally defined terms, this may be relatively easy to determine. For others, the effective remaining lifetime may be difficult to estimate. Other factors need to be considered such as obsolescence, as previously mentioned. In many instances, the appraiser may be forced to select a term that seems “reasonable” based on the information at hand.

The appraiser will next determine projected sales for the product over the course of the selected lifetime range. The appraiser can obtain projected growth factors by examining a number of data, such as the growth rates of previous products/services in this area and/or previous products having characteristics similar to the Intellectual Asset being appraised. Using the example above, assume that the selected range is 10 years and that sales are estimated to double each year for the first five years before plateauing for the remaining 5 years in which further sales growth is estimated to be just 10% per year. (Note: in this example, we have ignored inflation over the 10-year period which would likely raise the sales price.)

#### **Acquirer Revenue Estimates**

| <b>Year</b> | <b>Revenue<br/>(millions €)</b> | <b>Calculation</b>   |
|-------------|---------------------------------|----------------------|
| 1           | 3.0                             | €150 × 20,000 units  |
| 2           | 6.0                             | €150 × 40,000 units  |
| 3           | 12.0                            | €150 × 80,000 units  |
| 4           | 24.0                            | €150 × 160,000 units |
| 5           | 48.0                            | €150 × 320,000 units |
| 6           | 52.8                            | €150 × 352,000 units |
| 7           | 58.1                            | €150 × 387,000 units |
| 8           | 63.9                            | €150 × 425,920 units |
| 9           | 70.3                            | €150 × 468,512 units |
| 10          | 77.3                            | €150 × 515,363 units |

For simplicity in the equations above, we used a constant 10% growth rate for product sales in the later years. Some appraisers may wish to use a compound annual growth rate (CAGR). Using CAGR, the appraiser determines a smooth rate of growth over a given time period and then applies it to the later time periods.

CAGR is believed to dampen the effect of volatility of periodic returns. The appraiser may not want to apply CAGR over a time period that is likely not representative, e.g., a rapid early growth phase. The appraiser could base the CAGR on analysis of the growth rate of a similar product over a similar time period, e.g., the growth rate of an early product line of the prospective acquirer and/or the growth rate of a competing product.

To test the reasonableness of the royalty base, the Appraiser researches sales of similar devices. While sales for many items will not generally be available in the public domain as manufacturers typically keep this information confidential, the Appraiser can likely find additional data points that permit testing of the reasonableness of the Appraiser's projected sales levels.

Reasonableness Tests: The potential acquirer's related product sold X million units in its first Y years on the market. The product's unit sales were 40,000 units (in Europe) in its first year; 100,000 units (in Europe) in its second year, with peak annual sales of approximately 250,000 units in its seventh year. The potential acquirer's follow-on product sold approximately 30,000 units (in Europe) in its first year available and sold approximately 131,000 cumulative units (in Europe) through its second year. The Acquirer's projected unit sales in its first five years were approximately 1.5 million based on an average selling price of €300. Under the circumstances, the appraiser may view the results of the estimated royalty base as reasonable given that the estimate falls within this range.

### **3.3.8.2 Estimate the Royalty Rate**

There are various resources for obtaining comparable license agreements and royalty rates that can be used as the starting point in identifying appropriate comparables. Many of these resources are fee based or subscription services; however, public information can also be obtained. Some of these resources are listed in Appendix C.

After quantifying the royalty base described above, it is necessary to determine a reasonable royalty rate, *i.e.*, one at which the university would license the subject Intellectual Asset. The appraiser begins his/her analysis by examining quantitative

royalty indicators using techniques such as the Market Approach and the Profit Apportionment Approach.

Assume that the appraiser is not aware of any licenses of the subject Intellectual Asset to any third party. Therefore, the appraiser attempts to identify transactions between unrelated parties for intellectual property assets similar to the subject Intellectual Asset. This is one application of the Market Approach. To identify potentially comparable transactions, the appraiser reviews publicly-available information from sources, such as the RoyaltyStat LLC database and U.S. Securities and Exchange Commission filings. While the appraiser reviews all of the aforementioned sources, he/she is unable to identify specific transactions that relate to the subject intellectual asset. However, the appraiser identifies historical industry royalty rates that are applicable to the subject intellectual asset from a royalty rate guidebook. For example, in certain electronics technologies, the appraiser may find a mean royalty rate of 4.5%. If a license does exist from the existing documents collected, this rate could act as a foundation and be adjusted accordingly.

The appraiser can also consider as a comparable some form of profit apportionment. But the appraiser must employ something more sophisticated than the 25% rule if he expects the other party to accept his approach. Whatever profit apportionment the appraiser proposes should have a rational and defensible empirical basis.

One of the most common questions in intellectual asset valuation profession is how one finds comparable royalty rates for the subject assets/royalty agreements. It is also common to question what clauses or terms in an agreement impact the royalty rate selection. IP valuation specialists sometimes misunderstand the need for proper due diligence when selecting royalty rates. While there is never a perfect comparable due to the inherent unique nature of IP and the multitude of licensing structures available, market data on royalty rates can serve as an appropriate benchmark for these types of analysis. In the tables below, we have chosen the royalty rate of 4% purely for illustrative purposes.

Assume for this example that future sales of the prospective Acquirer's products could be characterized as having low to moderate risk. Accordingly, based on the

information at the appraiser's disposal, the appraiser selects a 30% discount rate for his/her analysis. The appraiser may also need to find information related to applicable tax rates that will apply to sales of the product. Here, a tax rate of 20% was chosen purely for illustrative purposes.

### 3.3.8.3 Results from the Income Approach

The Relief from Royalty approach provides one estimate of the fair market value of the Subject Assets as shown below. This estimate can be used in negotiating a transaction price with the Acquirer.

|   | Year        |       |       |       |       |       |       |       |       |       |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|   | 1           | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
| Royalty Base (million €)                                | 3.0         | 6.0   | 12.0  | 24.0  | 48.0  | 52.8  | 58.1  | 63.9  | 70.3  | 77.3  |
| Royalty Rate  | 4.0%        | 4.0%  | 4.0%  | 4.0%  | 4.0%  | 4.0%  | 4.0%  | 4.0%  | 4.0%  | 4.0%  |
| Pre Tax Royalty Stream (million €)                      | 0.12        | 0.24  | 0.48  | 0.96  | 1.92  | 2.11  | 2.32  | 2.56  | 2.81  | 3.1   |
| Tax Rate  | 20%         | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   | 20%   |
| After Tax Royalty Stream (million €)                    | 0.096       | 0.192 | 0.384 | 0.768 | 1.536 | 1.688 | 1.856 | 2.048 | 2.248 | 2.48  |
| Present Value Factor                                    | 0.878       | 0.675 | 0.519 | 0.399 | 0.307 | 0.236 | 0.182 | 0.140 | 0.107 | 0.083 |
| Present Value of Royalty Stream (million €)             | 0.084       | 0.13  | 0.199 | 0.306 | 0.472 | 0.398 | 0.338 | 0.287 | 0.241 | 0.206 |
| <b>Total Present Value of Royalty Streams (mill. €)</b> | <b>2.66</b> |       |       |       |       |       |       |       |       |       |

The university could negotiate a range of terms with the prospective acquirer – from a running royalty rate of 4% of revenue for products incorporating the intellectual asset to a fully paid up license fee of 2.66 million euro. The university could also set terms that included a one-time payment plus a running royalty or set terms that included a one-time payment plus a running royalty should cumulative product sales exceed a certain level.

### 3.3.8.4 Rationalization of Results

In the example shown above, a single value was reached through the application of a single approach. Given the previous discussion about the lack of market comparables typically encountered by the IP appraiser, there are typically few



independent benchmarks, or “rules of thumb,” against which to measure or test results. Therefore, the appraiser must first draw on his/her experience and common sense to estimate whether the conclusion is well reasoned. For example, it is difficult to rationalize that a very early stage technology could be worth hundreds of millions of dollars if a fully functioning prototype does not exist, and there are no commercialization plans. It can certainly be the case that a groundbreaking technology with global demand could have a potentially large royalty base; however, the combination of the estimate of market penetration timing and rates, and the proper discount rate in these instances will have a material impact on value.

Another manner in which to analyze the result is to consider the value of the intellectual asset in relation to the estimated value of the entire business enterprise. Intellectual Assets are but one of the components of an asset base that make up the value of an entire enterprise. Basic valuation principles hold that the fair market value of one of the asset categories cannot be worth more than the entire business enterprise. For this reason, it is critical that the practitioner review all key inputs and assumptions for reasonableness and accuracy and review the work as dispassionately as possible.

### **3.4 Other Valuation Methods**

We have focused thus far on three classical valuation methods and their associated methodologies. There are other valuation methods. We will discuss a few of them here. The interested reader is welcome to find others, but should be advised that there is likely not a “silver bullet” methodology that solves all problems, is highly accurate, and is easy to apply. As noted above, the main problem in valuation is the absence of recent and representative comparative data. This problem is not likely to be solved by simply using another method.

#### **3.4.1 Monte Carlo Analysis**

Monte Carlo simulations have been used for many years to study a variety of topics. The general premises behind Monte Carlo simulations may be applied to a valuation exercise.

The Monte Carlo valuation approach is a refinement of Income method. In the Monte Carlo approach, the appraiser assigns a value range to various variables in the equation, such as the price and cost variables used to calculate the net present value (NPV). The appraiser assigns a probability to individual values within a range. The appraiser calculates NPV repeatedly using a random selection of the probability weighting values assigned to each variable. The appraiser next plots multiple NPVs by frequency of occurrence, which serves to indicate which NPV is the most likely to occur.

If the appraiser performs these equations for a suitable number of iterations, then the resulting NPV should converge to a range that might be somewhat more accurate than the appraiser's calculation of a single instance. Unfortunately, the accuracy of the NPE values cannot be better than the accuracy of the value ranges and probabilities that the appraiser assigned to various individual values. Nevertheless, the approach may be helpful in uncovering ranges and conditions that were not readily apparent to the appraiser, and in some instances, the simulation may effectively point out errors to the appraiser that allows him to improve the equations he is using.

### **3.4.2 Real Options**

The Black-Scholes methodology may also be applied to valuation. The method is based on the famous Black-Scholes formula for valuing stock options. Here, the option value arises from the right to wait and see what happens to the stock price where the IP "investment" is viewed as an "option" to develop the IP further depending on future technology and market developments.

The Black-Scholes formula may employ variables such as: (1) development cost to commercialize; (2) mean market value of products embodying similar patents; (3) time before commercial utilization; (4) product value volatility; (5) risk-free rate of return; and (6) patent expiration. This approach recognizes that risk is not uniform over time but decreases as additional information becomes available.

As with many other methods, the methodology of Black-Scholes is sound, but the trouble in applying this method to intellectual asset valuation is that most of the numbers being used as inputs are estimates and very uncertain estimates at that.

Thus, the resulting answers may have the appearance of computational certainty while simply being a composition of guesses.

### 3.5 Understanding the “Sensitivity” of Changes to Variables

The appraiser must also understand how small adjustments to any of the variables may impact the valuation results. Key considerations in the relief from royalty method include the selection of the royalty base, royalty rate, tax rate, and risk factor/discount rate. Any adjustments to these factors, or any combination thereof, can have a very material impact on the valuation result. This fact emphasizes the importance in the selection and reasonable values for each variable.

To illustrate this fact, review the figures in the sensitivity table presented below (unrelated to the example thus far) where the results from sixteen calculations are shown based upon four different discount rate and royalty rate combinations (values presented in millions of dollars). Utilizing the lowest royalty rate (.10%) and highest discount rate (16%) produces a valuation of \$279 million dollars (rounded). Utilizing the highest royalty rate (1%) and the lowest discount rate produces a valuation of \$5.3 billion dollars (rounded). The difference between the two valuations is greater than 1,800%. If you look at each vertical column, you will see that the valuation increases by 1000% in each case as the discount rate increases from 0.1% to 1.00%. In summary, this table highlights the care that must be taken in the analysis and selection of each critical variable in the process. This is especially true for royalty rates. The practitioner must be careful not to include or exclude a particular rate due to poor due diligence, and must take special care when a comparable agreement includes multiple rates as the use of minimums/maximums, averages or medians can produce wildly inaccurate figures.

|              |       | Discount Rate |           |            |           |
|--------------|-------|---------------|-----------|------------|-----------|
|              |       | 9.0%          | 10.0%     | 12.0%      | 16.0%     |
| Royalty Rate | 0.10% | \$531.8       | \$480.7   | \$396.50   | \$278.9   |
|              | 0.30% | \$1,595.3     | \$1,442.0 | \$1,189.6  | \$836.6   |
|              | 0.50% | \$2,658.9     | \$2,403.4 | \$1,982.7  | \$1,394.4 |
|              | 1.00% | \$5,317.7     | \$4,806.8 | \$3,965.40 | \$2,788.8 |

### **3.6 Recheck Critical Valuation Inputs**

The appraiser should reflectively consider questions like: Are there any remaining development costs required to complete the product prototype and related testing so that the intellectual asset can be considered ready for transfer? When is the expected year of commercialization? What are all of the risk factors that can impact when the product can be introduced? When are these risks highest? Lowest? How many new units can reasonably expect to be sold, on annual basis that will include the benefits of the IP developed? What are the expected fixed and variable costs of implementation and sale?

How do the risk factors translate into an estimation of the discount rate? A proper estimation of the discount rate based upon factors that include, but are not limited to: the exact current stage of the technology from a functional standpoint; the time remaining to commercial introduction and an acknowledgement of the risks that could delay that introduction; the financial stability of the commercialization entities; analyses of competing technologies; and how any lack of legal protection of the IP could affect the sales projections and overall risk profile of the investment.

What is the typical market royalty rate, based upon independent research completed, for this type of technology? If the IP developed is going to be patented, when is the patent reasonably expected to be issued? Will commercial product be issued prior to patent issuance?

If the conversations lead to a consideration of licensing over sale, how will the royalty agreement between university and acquirer be established? Upfront fee plus running royalty? One-time fee? Non-exclusive royalty free?

### **3.7 Probability Weighted Outcomes**

There are many instances with early stage technologies where there are too many uncertainties to rely on a single conclusion within the income approach. A “probability weighted” method allows the practitioner to utilize the same methodology to derive multiple value conclusions based upon differences in assumptions on the key variables. Each conclusion is then weighted based upon the

best estimate of the probability of its outcome, relying upon known facts as of the effective date of the valuation assignment. In the Relief from Royalty example presented above, the fair market value conclusion was €2.66 million. In the table below various outcomes (unrelated to the previous example) have been “probability” weighted.

| Scenario     | Description   | Unweighted DCF Valuation | Probability | Weighted DCF Valuation |
|--------------|---|--------------------------|-------------|------------------------|
| 1            | Continued investment in IP for a limited time horizon. Sales are not successful and probability is not realized. Further development is discontinued. | (€500,000)               | 45%         | (€225,000)             |
| 2            | Company is moderately successful in selling its product. There are financial resources to weather product development and product launch.             | €2,940,000               | 40%         | €1,170,000             |
| 3            | Company experiences robust sales growth.  | €5,000,000               | 15%         | €750,000               |
| <b>Total</b> |   |                          | 100%        | €2,150,000             |

Although the appeal of this method is that it allows for multiple potential outcomes, its problem lies in the difficulty in determining the appropriate probabilities to assign to the different outcomes. This is particularly true when considering new, unique technologies for which there is no established track record. Even when historic information is available for similar projects, it is difficult to use historic information and make correlations to predict success and failure probabilities. In addition, sometimes the sheer volume of potential outcomes can make the analysis unmanageable.

### 3.8 Putting the Valuation Together

The appraiser knows that each valuation measure has flaws. Some valuation approaches work best for particular situations. Many valuation specialists apply a combination of methods. When using a combination of methods to arrive at a valuation, the goal is not to arrive at a better number by diluting a good estimate with worse estimates – the goal instead is to arrive at a better valuation by taking into account the different components of valuation that one method highlights over another method.

We mentioned earlier that the appraiser should be objective. If one is trying to find a range of prices to open a sales negotiation with a third party, then the negotiation is likely to be more productive if the appraiser has some idea as to what a “neutral” valuation would be. Of course, the typical valuation tends to show that which was expected. If a valuation is conducted on behalf of a seller, it tends to be a higher number (maybe a much higher number), then a valuation conducted on behalf of a buyer.

As the head of the commercialization office, you know that you will need a keen appreciation for the fair market value of the university’s valuable intellectual assets. You know that you will need to understand valuation nearly as well as the most accurate and dispassionate appraiser imaginable. You also know that you will need to understand valuation from many points of view – especially the point of view for anyone with whom you are negotiating a transaction. But apart from your ability to value the university’s valuable intellectual assets, you are also keenly aware that your ability to negotiate licenses and sales of these assets is a skill that’s very different from your ability to value these assets.

## CHAPTER 4

### Valuation in the Context of Negotiations with Third Parties

#### 4.1 Negotiating New Arrangements for an Old Relationship

The university president tells you that Prof. Antoine Zarkanian from the Physics Department has been discussing a new research project with local representatives from Amartroll, a multi-national electronics company. He would like you to participate in the contract negotiations. The president tells you that he has some other tasks for you to perform as well.

The university president asked you to sit in on a meeting between Professor Zarkanian and the representatives from Amartroll. Prof. Zarkanian is a quiet, humble man who just happens to be one of the world's top experts in electronic locking systems. He has written some 10 books on the subject of electronic locks along with hundreds of journal articles on various aspects of the topic. Amartroll has previously worked with Prof. Zarkanian in the development of its X-10 biometric lock. You did some research on the X-10 prior to the meeting and discovered that revenue for the X-10 amounts to some 20 million euro annually. Amartroll is a huge public company so its annual reports don't provide enough information to easily tell what profits are attributable to the X-10, but you suspect they probably amount to about 5 million euro per year. Amartroll paid the university 200,000 euro for Prof. Zarkanian's design work on the X-10 and hired two of his top students. The original contract gave Amartroll all legal rights to the intellectual property resulting from the contract, except for a limited right of Prof. Zarkanian to continue research in the field.

You also do some research in royalty rates for electronic locking systems. You're not surprised that it's nearly impossible to find comparable rates. There are publicly available royalty rates for some technologies, but these lists often do not include the other deal terms related to the rates and they are sometimes based on very non-representative contracts. Both producers and suppliers typically strive to keep such information hidden so that among other things they don't become locked into particular rates and terms. To complicate things, this particular technical field is

a fairly obscure one, so there's even less information available. But you are eventually able to find some information related to royalty rates in the security services field, and you locate some information regarding royalty rates in custom and specialty electronics. You also find a company called LockItTight which makes electronic locks, although of a different class than X-10. Nevertheless, LockItTight is a public company, so you find their annual report on line, which provides some helpful information about profits. This report convinces you that somewhere between 10-15% of the revenues from such systems can be attributed to the totality of the included intellectual property. But this figure includes intellectual property beyond Prof. Zarkanian's foundational work, and you consider it a "high side" figure.

You also consider what Amartroll would pay consultants by the hour to design such a system. You look up wage information for engineers in the types of disciplines that could design an X-10 system, and you also consider the appropriate level of seniority. You calculate an annual contracting rate of 200,000 to 300,000 euros. You discuss with Prof. Zarkanian how long it would typically take him to develop a new locking system and conclude that it would take one year. So, now you have a "floor" figure which you should go below in negotiations.

You now have to think where between your floor and ceiling Prof. Zarkanian falls and calculate various alternatives ways of stating what essentially amounts to the same proposition. Once you have these figures, then you'll have to decide how much you want to inflate them, if at all, for initial discussions. You know that the net present value of the final agreement will never be higher than your starting price; it will only come down. But you also know that if you start out too high that many parties will simply leave under the assumption that you are too unreasonable. (Of course, sometimes people pretend that you're being unreasonable as a negotiating tactic. All you can do is make sure that you know your initial price is not actually unreasonable.)

Prof. Zarkanian is thrilled that his work has achieved international recognition. You are also delighted by the outcome, but you also realize that Amartroll got outstanding returns from the small amount of money it provided the professor. You tell yourself that this may have been "somewhat" fair at the time because back then Prof. Zarkanian was a somewhat unknown entity from a little known university in the developing world. Under those conditions if the university had presented Amartroll



with serious commercial terms, they likely would have broken off negotiations. But the professor's work has now been proven, which changes things.

You've also done research on Prof. Zarkanian. He is a native of the Btoubmo region of Erehwon where kinship and loyalty mean everything. He's likely about 10 years away from retirement, and from the other questions you've asked, you surmise that he's unlikely to leave Erehwon to work directly for Amartroll as their nearest facility is some 2,000 miles away. Although the professor is not likely to work directly for Amartroll, that's always a possibility, especially if you push too hard on Amartroll. Another possibility is that Amartroll may induce another university, maybe a more prestigious one, to hire Prof. Zarkanian. This is just one limit on your ability to drive for the toughest commercial terms. There are others.

Two representatives from Amartroll arrive for the meeting. Prof. Zarkanian introduces them to you as "Jerry" and "Pete." You conclude from these introductions that the three men know each other very well. You also notice instantly that Jerry and Pete seem to be sizing you up and testing you. They would clearly much prefer the 20-year-old intern from the general counsel's office who attended their last meeting at NUE. They sense (correctly) that your role is to prevent them from getting another outrageously good deal from Prof. Zarkanian's research.

Jerry outlines the work that Amartroll would like Prof. Zarkanian to do. In a nutshell, it's a next generation of the X-10 but with some new features that will likely require some very clever thinking. For this work, they propose to pay the university another 200,000 euro for Prof. Zarkanian's efforts. Pete also mentions that Amartroll must have all rights to the research, including Prof. Zarkanian's right to continue further research. He adds, "Of course, we won't enforce that, but our general counsel was insistent that we needed to have this for the deal." In short, Amartroll's initial proposal is less generous one than the one negotiated for blockbuster X-10 product. You suppress a small sensation that feels like anger; this is business.

You figure that if you start out too hard that the Amartroll guys will get upset and leave, and it could be months before you have another meeting with them. On the other hand, if you don't appear to be firm, they may assume that you're not serious or weak. If you don't appear to have a strong mandate for your work, they

will likely contact people who they think are your superiors and/or try to get Prof. Zarkanian on their “side.” Because NUE has operated for nearly 100 years without any organized commercial thinking, you realize that it is going to take a while before you can begin having serious conversations with outsiders in the first instance.

You begin by commenting how thrilled the university is to be working with Amartroll. You hint that the university has been approached by some of their competitors but has thus far turned them down because of its good feelings toward Amartroll. You also note that the original collaboration was a good faith effort by Amartroll since Prof. Zarkanian and NUE were somewhat unknown quantities.

“Of course,” you add, “that’s why we accepted such a low rate of compensation for the work.”

“We had other options, you know,” comments Jerry.

“Yes, and so did and do we,” you say, adding, “But we have enjoyed our collaboration with Amartroll and that why we’re here to see if it’s still possible for us to find common ground again.”

“Sounds like you’re going gouge us this time,” says Pete.

“Pete, I’m trying to stay productive. But let’s face facts. For a 200,000 euro investment in NUE, Amartroll was able to develop a product that makes it some 20 million euro in revenue and 5 million euro in profit.”

“You know we had to do a lot of additional work to get the X-10 going. Zarkanian’s prototype was pretty rough,” says Jerry.

You notice Prof. Zarkanian cringe at this last comment. In every negotiation, someone will eventually say something damaging whose veracity is not known to you. So, you make a judgment that Jerry was merely posturing and carry on. You find out later that there is some truth to Jerry’s statement but that it was mostly an exaggeration.

“Let me cut to the chase, guys. We have other options; you have other options. Here’s the deal we’re willing to make this time: a 400,000 euro investment in NUE and 2.5% of net revenue for any product containing the intellectual property.”

“But we’re the ones taking all the risks; not you guys,” says Jerry.

“We both know that if you were sued for patent infringement that the plaintiff would want way more than this,” you say.

“But IP isn’t the only risk,” says Pete.

“I understand that, and we’ve considered it. We can accept greater risk – a 300,000 euro investment and 3.5% of revenue.”

“You value 100,000 euros as equal to 1 percent of revenue?”

“In this option, ‘Yes’. There are risks, so I’ve discounted the royalties accordingly.”

“We could haggle about 1 percent, 2 percent, or 2.567 percent all day. Do you have a lump sum figure?”

“Yes. If you want to go the lump sum route, we’d want 1 million euro, which we think is extremely fair.”

“But wait, wait. How do you go from valuing a percentage of revenue at 100,000 euros in one scenario to something greater in another? It should be 650,000 euros.”

“You’re right, but we have a premium for foregoing a share of revenue, which here is 350,000 euros.”

“Ok. Going the other way, your scale would be 6.5% of revenue for no upfront payment.”

“No. We need a minimum upfront payment of 100,000 euro at 5.5% of revenue. There is no option without an upfront payment because you might decide not to make the product.”

“Okay, we’ll think about it. But don’t get your hopes up. Anything else?”

“Yes, under our new rules, the university must own all IPRs and improvements in university collaborations. We’ll grant you an exclusive license to the IPRs, however, which is effectively the same thing as ownership. I’m sure you know this already. I should point out that this work includes a huge amount of knowledge transfer from Prof. Zarkanian that is well outside the scope of any patent obtained or obtainable.

“Yup. We understand. The professor is a gold mine of good information. Let’s just hope that you haven’t priced outside the market. We’ll have to think about all of this,” says Jerry. Peter mentions something about a sports team at an American university to Prof. Zarkanian who smiles at the comment. You quickly surmise that this might be the school where they have been trying to get the professor to relocate. You look at Prof. Zarkanian and say a well-known Btoubmo saying that relates to loyalty. He nods in agreement. Jerry and Pete don’t know what you said, but they know it was important. With that Pete and Jerry finish their coffee and Erehwonian saffron biscuits and leave.

Now they’ll think about the four proposals – a) a 400,000 euro investment and 2.5% of revenue, or b) 300,000 euro investment and 3.5% of revenue, or c) 100,000 euro and 5.5% of revenue, or d) 1.0 million euro. If you haven’t miscalculated terribly, they’ll formulate a counteroffer based on at least one of these proposals. Of course, they might re-state their original proposal as a way of testing you and/or how committed NUE is to commercialization.

After they leave, Prof. Zarkanian tells you that he is worried that Amartroll will be offended and walk away, but he adds, “You know, however, they would never have given us anything close to a real commercial deal on their own. Why should they? Your proposals were all fair. I can see what you based them on, and they’ll know that, too. I like Amartroll; Jerry is great to work with, but I suppose we could work with other people.”

“Yes, professor, I thought about that, and that’s why we’re having a meeting next week with Gold Safes & Locks.” The proposal was within the region of the reasonable. It wasn’t so crazily high that Amartroll would be genuinely offended.

The message was delivered with sufficient professionalism that Amartroll didn't probe the university for weaknesses, although they later hinted to Prof. Zarkanian that he could receive a great position with Amartroll if he wanted it, but Prof. Zarkanian told them that he could never leave Erehwon. A few weeks later, Amartroll provided a counteroffer – a 300,000 euro investment and 1.75% of revenue. Agreement was eventually reached at 350,000 euro and 2.1% of revenue. The university knew that it was still selling Prof. Zarkanian's expertise too cheaply, but then again, it's not really possible to move from 100 years of no serious commercial considerations to perfectly serious ones overnight. Some things take time and require patience. The university president, however, was still pleased with the results. "Keep up the good work," he said.

## 4.2 Negotiating with a Strong-Willed Party

Before your appointment, Profs. Toby Ewaq and Bpato Jones had discussed the licensing of their Xloshzn dance routines to the Wilmer Trishmar Company, an internationally known entertainment company. Wilmer's hit animated feature film, the *Mangrove Prince* included some traditional Xloshzn dances. Filmgoers all over the world were taken with the beauty of these colorful dances, but many commentators in Erehwon thought that Wilmer should have compensated Erehwon for using this portion of the country's cultural heritage. The public controversy regarding compensation for the dances may be one of the reasons why Wilmer seems eager to obtain a license for the dances from NUE for its sequel to the *Mangrove Prince* – *Crabs to the Rescue, the Mangrove Prince II*.

On the other hand, Wilmer's initial terms for the dances are anything but generous, and Profs. Ewaq and Jones have described their discussions with Wilmer as "intense and very unpleasant." In addition to copyright and traditional knowledge, the professors also have a great degree of know how built up in how one performs some of the more complicated moves of the Xloshzn dances. You will need to value this intellectual asset so that you can make an appropriate presentation to Wilmer that lets them know that NUE is a serious organization, but you don't want to ask for so much that they can justifiably describe you as being unreasonable.

Many valuation problems amount to finding the closest and most reliable comparable information and then making rational adjustments to the comparable valuation. This is especially true in situations where you must work quickly. You have learned from Prof. Ewaq that Wilmer has indicated that it will “go in another direction” if matters are not resolved within a fortnight.

While the *Mangrove Prince* was an animated film, it was heavily supported by computers and a variety of sophisticated techniques. You ask Kizbit to do a bit of research about the *Mangrove Prince*, especially with regard to costs. She shows you several articles that indicate the Xloshzn dance sequences were actually performed by Kimberly Duvall and Robert Houghton, two well-known dancers from the developed world. The film of their dances was transformed into computer images that were placed into the appropriate scenes in the *Mangrove Prince*. The dancers were apparently paid \$250,000 a piece for their efforts, which appeared in about 45 seconds of the final film. Kizbit also finds a shorter article that indicates that Prof. Jackson Roe from the dance department at the Univ. of Southern California was paid some \$150,000 to teach the Xloshzn dances to Duvall and Houghton. Prof. Roe had been a visiting professor at NUE in 1996 which is apparently where he learned how these dances are performed. However, Prof. Roe never learned the advanced versions of the dances that Wilmer has requested for the *Mangrove Prince* sequel. You ask the professors how much more difficult the other Xloshzn dances are to the ones used in the movie. They assure you that the other dances are significantly more difficult and sometimes require years of training.

You now have comparable cost information. You have learned that in most intellectual property licensing situations back license payments need to be heavily discounted. Wilmer spent \$650,000 for performances of the Xloshzn dances in the original *Mangrove Prince* apart from its computer image processing costs. These dances are arguably the cultural property of the Erehwonian people, but it is unclear to what extent other countries’ laws recognize things like traditional knowledge and cultural property. Of course, there is also the “court” of public opinion. In any event, on a cost basis, you have a comparable now for the sequel and for any possible back payments.

Kizbit hands you an article about a university scholarship program that was sponsored by Capri Films International in Froblandia, another developing country. Capri produced a film called *Ice Wine* that included recitations of the whistling poetry style that originated in Froblandia. According to the article, Capri obtained the help and cooperation of a Froblandia poetry association once it had established a million euro scholarship program. While Xloshzn dances are not the same things as Froblandian poetry, this information does provide you with another comparable, especially since the *Ice Wine* film, while popular, sold far fewer tickets than the *Mangrove Prince*. This comparable information pertains to the market approach.

For precision, you could calculate a value based on the Income Method. If you did this, you would want to determine how much money the *Mangrove Prince* had made and then estimate how much money the sequel was likely to make. This task might be somewhat time consuming but it would be possible to do. Once you had this number, then you would need to determine how many people attended the movie because, at least in part, they had heard good things about the Xloshzn dances. This would likely not be an easy number to arrive at. You could probably create a proxy for this information by conducting something akin to a focus group for viewing the film. But this focus group would need to comprise the types of developed world consumers who bought tickets for the movie. However, you suspect that even with unlimited time and unlimited budget that it would be nearly impossible to untangle from the movie's revenue the amount of the movie's success that could be attributed to the Xloshzn dances. More importantly, you don't have unlimited time and an unlimited budget. In fact, you have a very limited time and a very limited budget.

You decide that you will combine the answers from the cost and market methods. You ask the dance professors if they have students who could perform the advanced Xloshzn dances, and they answer "yes" without hesitation. You assume that Wilmer will want at least one well-known dancer from the developed world in the movie for advertising purposes – but you also know that the advanced dances require multiple dancers. You also figure that Wilmer might likely be able to obtain better tax treatment in its home country if it made a donation to NUE as opposed to paying NUE for services.

You put together the following package to discuss with Wilmer – NUE will license the Xloshzn dances to Wilmer for up to four movies and provide the dancers and training for up to five other dancers in exchange for a one million euro donation to NUE's School of Arts plus 100,000 euros each to Profs. Ewaq and Jones, a 30,000 euro payment to each NUE dancer who performs for the film regardless of whether their performance is included in the movie as well as film credits for Profs. Ewaq and Jones. One of the four films will be the original *Mangrove Prince*. Thus, the deal will allow Wilmer to make three new films that include Xloshzn dances, including the *Mangrove Prince* sequel. The might also want to consider whether the agreement should have a mutual non-disparagement clause.

You also prepare a host of arguments that support and defend your asking price based on the comparable cost and market information discussed above. You become well-versed in the history of the Xloshzn dances, how few people can perform them well, and how Erehwon comprises the largest repository of skilled Xloshzn dancers in the world by far. You are aware, of course, that Wilmer will likely not accept your initial proposal and that it will ultimately be reduced. In fact, you are prepared for Wilmer to say that they are prepared to pay nothing for the dances. To counter this argument, you have Kizbit prepare a list of articles related to the topic of how film studios, Wilmer in particular, have expropriated cultural heritage without payment. You realize that this will be a tough card to play in the negotiations because you will need to deliver the message to Wilmer with subtlety. The raw message, of course, is that if Wilmer makes a film that includes Xloshzn dances without NUE's blessing that it will do everything possible to create a public relations nightmare for them. You realize that this is one licensing situation where there are few to no legal means at your disposal. As a final step, you rehearse your negotiations with some of the brighter students from the business school. The students give you some great feedback on your presentation style.

You have a rocky initial meeting with Wilmer, but in the end, Wilmer could see that they needed to pay something for the dances, and they also realized that NUE had the best dancers in the world. The negotiations were tough, unpleasant at times, but in the end, you succeeded in negotiating an 850,000 euro scholarship for NUE, film credits for the dancers and the professors, and a 25,000 euro payment to



each dancer, and a 200,000 euro contract for Prof. Ewaq and Jones. The performers are invited to perform at the opening night premier. Your skill in this valuation was in determining a starting point number that didn't surrender too much value while also avoiding presentation of an initial number that drove the other side away regardless of its accuracy.

### **4.3 Negotiating with a Very Large Party**

Prof. Walter Yuhg has developed a series of component designs that can be used on various automobile exterior and interiors. The designs are very striking and have won awards at several international design competitions. Ghu Motors, a very large international manufacturer has approached NUE with an offer to buy or acquire rights to the designs. One problem in dealing with Ghu is that the company is so large that it can typically afford to be inflexible and at other times it's inflexible simply due to its size. In negotiation, you need to know precisely what these designs are worth because if you do not believe that NUE will get a fair deal, then you might not want to go any further in discussions with Ghu. On the other hand, there would be a lot of bragging rights for the university if the new Ghu sport coupe sold worldwide boasted a body designed at NUE.

Calculating a fair market value range for this problem might be easier than you expected. After doing a bit of research, you learn that Ghu has struck a number of deals that were essentially worth nothing to the other party. In fact, Ghu has such a horrible reputation that there are several websites (having names that cannot be repeated here) that essentially explore the theme that Ghu has never dealt with anyone that it did not cajole, badger, or manipulate into taking a much worse deal than it should have.

You conclude from this information that if you get anything from Ghu easily, then Prof. Yuhg's designs must be phenomenally lucrative, and you also conclude that if you get anything greater than zero after a long battle that you can hold your head up relatively high. Not many people, especially people in the developing world, ever get a good deal from Ghu Motors. Its famous founder, Henry Ghu once said, "Business is warfare conducted without guns – generally." and in the forty years since his death, the company's executives have done their best to live up to that saying.

Prof. Yuhg's component designs are much less about defining one specific shape than they are about presenting a library of available shapes. One big plus for his approach is that each design is made in a way such that it will connect with any of the other Yuhg designs and do so in a visually pleasing manner. You're not certain, but you suspect that Ghu plans to use the designs to build the exteriors of either its new Ghu Coupe Grande or its new Ghu Sport Extraordinaire. Both cars are staples of the Ghu automobile line, and both have been criticized for years on the basis of their rather uninspiring looks.

You research various design magazines and discover information about how much other automobile companies have paid design firms for particularly stylish and noteworthy automobiles. Much of the information that you find does not break down the design costs for new automobiles very clearly. However, you can find enough information from public companies that you get a reasonably good sense about design costs. You also find enough information about the salaries for automotive designers and the average number of designers on a team, so that you get also get a good sense regarding costs. Of course, these two calculations seem a bit far apart. The design firm's profit is included in one figure while the other calculation mostly focuses on costs. As a third back-up, you phone a couple of design firms in California (where a huge percentage of the world's automotive designers are located), tell them that you represent a company in the developing world that is thinking about manufacturing an automobile, and ask them how much a comprehensive design typically costs. You realize, of course, that the numbers you have calculated are subject to a huge variation. On the other hand, you have obtained some reasonable numbers and you have obtained them quickly.

You recall that the point of this exercise was not so much about calculating precisely a license/sales price that you know that Ghu Motors would almost certainly never accept – but instead calculating a number that would give you a sense of just how unreasonable Ghu was being in negotiations. These quick calculations fulfill their purpose perfectly. You now have a sense of an opening number for Prof. Yuhg's designs, and you have a sense as to how far back you can fall in your negotiations before you simply tell Ghu that a deal is not possible.

You meet with representatives of Ghu in the university's finest meeting room, one that adjoins the faculty club. The representatives are superficially friendly – at

first – and then you can see where the company’s reputation for ruthlessness comes from. One minute, the Ghu representatives are calling Prof. Yuhg’s work “merely derivative,” and the next minute they are asking for all designs produced by the university for the next 20 years, then they are asking for IP indemnities provisions that the university could never meet (and would never agree to), and then they are quoting a licensing fee that’s less than 20% of the lowest fee you calculated. You rebut each of their attacks and continually justify your position. You eventually tell them, “Look, guys, we both know that all we’re asking for here is about 60% of what your competitors would typically pay for these designs on the open market. We both know this. Let’s not kid around. So, either accept our price on these terms, or let’s just agree to disagree, and go our separate ways.” The Ghu team feigns being offended and leaves abruptly.

Two weeks later they call back and offer you 50% of your final offer. You decline, and again, they feign offense, tell you that developing countries “need to get real,” and hurl more abuse at you before hanging up in anger. You receive something akin to an apology email the next morning. You assume that this is all part of Ghu’s posturing.

Four weeks later, after apparently realizing that you never planned to call them, they phone again and offer you 90% of your last offer. You think about this proposition for a few minutes before accepting. As usual, Ghu Motors will be getting a very good deal for itself. But you also know that the further work on the designs will be good for Prof. Yuhg, good for his department, and ultimately good for the university and perhaps the country itself.

#### **4.4 Negotiating a Defined Field of Use, Part A**

Prof. Cheryl MicFrang has written a history of Erehwon and its role in the development of the world’s other great societies. The book is titled, “Erehwon, the Cradle of Civilization.” Houghton House Publishers are preparing a series of books about the world’s great ancient civilizations and would like to include Prof. MicFrang’s book in the series. All the books in the series will have the same covers, jacket styles, and be bound in a faux leather case. This would seemingly be a good way of commercially exploiting the book but you know that Prof. MicFrang’s work is

very serious and you would not want to jeopardize her abilities to publish in academic literature. Consequently, you need to propose a defined field of use for the agreement. You should also prepare a valuation for the book that recognizes its value in both the popular and academic press.

Haughton House Publishers sends Prof. MicFrang its standard agreement, which she forwards to you. The agreement includes some very broad language that could possibly be interpreted as giving Haughton House any writings prepared by Prof. MicFrang related to Erehwon. This is not an issue that the university will want to battle with Houghton House every time that Prof. MicFrang writes a new book, especially given that Erehwonian history comprises Prof. MicFrang's sole research area. You mark out the broad language in the agreement and insert a new "defined field of use" paragraph that limits Houghton House's rights to "overviews" and "summaries" of Erehwonian history prepared for "general audiences."

A representative of Haughton House phones you and tells you in a somewhat irritated voice that Haughton House never negotiates the clauses in its agreements, especially for small projects such as this one. You explain the situation to the editor who seems somewhat understanding but insists that he will need approval from the company's legal department to even consider modifying that agreement and that the legal department only agrees to modifications for certain bestselling authors only. He agrees that he will phone you again next week once he has an answer.

You have learned over the years that many companies say one thing in negotiations and do something considerably different in practice. You phone colleagues at various universities in the developed world and ask them if they have ever negotiated a contract with Haughton House. They all tell you that Haughton House's routinely modifies clauses in its agreements but likes to act as if it never does. You explain your situation and your proposed field of use, and all of your colleagues agree that it seems reasonable. In fact, a few of them suggest that you should even go further in narrowing the field of use.

You know that Prof. MicFrang's book is unlikely to be highly lucrative, but you would like a sense of how fair Houghton House's offer was. You suspect that most revenue figures that you'll find for history books will be for extremely popular history books that are essentially outliers – in this case ones having values significantly higher than the average history book. You don't have to review too

many annual reports for academic publishers to see that profits are not generally very high in much of the university-led sector of this industry. On the retail side, you learn that bookselling is a seasonal and cyclical industry in many countries, and one that is also highly competitive. It also appears that revenues are primarily led by a small group of popular books with the vast majority of books either barely breaking even or even losing small amounts of money. You conclude from this that Houghton House's offer was overall likely reasonable under the circumstances.

You contact Houghton House again in a few weeks, and they grumble again about not modifying their terms and insist that you can trust that they will not enforce certain terms to the letter of its definition. You respond that if they don't plan to enforce a term to the letter of its definition that they should be willing to define terms at the level at which they will enforce the term. A few days later, Houghton House sends you a modified agreement that is essentially in a form that you can sign. You suggest a few minor modifications, and two weeks later, an agreement is signed between NUE and Houghton House.

#### **4.5 Negotiating a Defined Field of Use, Part B**

Prof. Langston Pewtri from the Law School has written a litigation treatise that comprehensively examines the ways in which litigation is carried out worldwide. He has been approached by Bulren Academic Publishers to publish a textbook, and he has been approached by Yan-Tree Scholastic Services for the publication of various academic study aids for law students. You would like to say "yes" to both offers but you need to develop some appropriate field of use language for negotiations. You also need to have a sense of how much Prof. Pewtri's work is worth so that you don't inadvertently license the work for too much or too little.

You prepare two draft field of use clauses that separate the two uses of Prof. Pewtri's treatise. There may be other uses for his treatise, but these are the two distinct uses that you know about now. You may tighten or expand these field of use definitions depending on various factors, including how your negotiations go with these two parties. For the field of use related to academic publishing, you draft the following clause:

“License. NUE hereby grants Bulren Academic Publishers an exclusive license to make, have made, use, sell, offer for sale the litigation treatise written by Prof. Pewtri within the field of Academic Textbooks, where Academic Textbooks may include electronic books whose content is substantially similar to the written version of Prof. Pewtri’s textbook. For purposes of clarity, this license grant does not extend to materials whose primary purpose constitutes a study guide for students preparing for an academic exam.”

For the field of use related to study guides, you draft the following clause:

“License. NUE hereby grants Yan-Tree Scholastic Services an exclusive license to make, have made, use, sell, and offer for sale the litigation treatise written by Prof. Pewtri within the field of Academic Study Aids, where Academic Study Aids may include materials in either paper or electronic media and where such study aids are for students who will soon take an exam. For purposes of clarity, this license grant does not extend to materials that comprise a textbook substantially similar to Prof. Pewtri’s textbook.”

You are certain that both Bulren and Yan-Tree will provide you with agreements into which you can insert these fields of use clauses. You are also certain that neither company will voluntarily ask for less than all rights, even though their anticipated use is something far less than the whole.

Now that you have divided Prof. Pewtri’s treaty into two separate uses, you know to look for valuations for each of the separate uses. You may conduct each of the valuations separately using the methods discussed above in Chapter 3. As is often the case, you may discover that the valuation of one use is worth substantially more than the valuation of another use. You can ponder over why this might be so, but in the end, you will most likely have to accept that it is simply true – assuming that you have not made a mistake in your calculations.

## CHAPTER 5

### Valuation and the Commercialization of Scientific Know How

#### 5.1 Licensing Techniques in the Social Sciences

Domestic violence in Erehwon has always been low, even in colonial times. The traditional “barbaytu” way of life seems to lower tensions between couples. Col. Marco de Januge, a retired chief constable of the Erehwonian national police force, and professor in the Criminal Justice School teamed up with Prof. Preston Garjain of the Sociology school to distill the essence of the lessons provided by the barbaytu customs. Their work led to a six-stop diagnostic procedure followed by a 30-day program. They trained constables in the two regions of Erehwon that had the highest domestic violence problems, and incidents of domestic violence have declined dramatically, placing them essentially at the same levels as the of the country. Four years ago, Col. de Januge and Prof. Garjain trained constables from neighboring Atlanticia in their techniques. They were curious to learn how generalizable the teachings were outside of Erehwon. The results in Atlanticia have been very similar to the results in Erehwon. Two years ago, Col. de Januge and Prof. Garjain wrote a book about their technique that has sold wildly throughout the region but has not been marketed for international audiences. You became familiar with their work from the survey conducted by the students in your business school class. The pertinent intellectual properties seem to be copyright, trade secret, trademark, and traditional knowledge.

When you first approach Col. de Januge and Prof. Garjain about intellectual property protection, they seem particularly disturbed by the idea of protecting their work. “We are here to spread information to make a better world. This is not about profit,” said Prof. Garjain. You know that both professors benefitted from the sales of their book and NUE made 40,000 euro from the training conducted in Atlanticia, so commercial concerns have not been entirely forgotten by them. But the more important point is that the commercial world expects certain commercial

norms. Their work is likely to have less impact if it is not commercial than if it is a commercial product.

“Look, guys, I know what you mean. But if you give away your work for free, it’s likely to be diluted and with the dilution will come imperfections, and the imperfections will cause the whole thing to be discredited and then forgotten. Erehwon is not the sort of place people think of when they think of peace and harmony, right, despite whatever its domestic abuse history might actually be,” you tell them. Thinking of Erehwon’s infamously violent war of independence, both men reluctantly nod. You continue, saying, “And how can you keep your lessons pure? Just hope everything turns out well? That’s not the way the world works.” They ask what you have in mind.

“We can establish a barbaytu certification program for practitioners of barbaytu domestic therapy.” Some of your techniques are probably no longer protectable by trade secret – but you have your copyrights and your know how, and because barbaytu originated in Erehwon and has stayed in Erehwon, only someone from Erehwon can offer “Barbaytian Couples Therapy,” so we should also register a geographical indication and trademark. Of the population of Erehwon, there’s no one who could better provide this service than you two,” you add. “So, you’re saying that we should create a certified training program in our methods?” asks Col. de Januge. “Absolutely, and the geographical indicator and the trademark that we’ll create will provide the glue that separates the legitimate trainers from the wannabees,” you say, adding, “We can also apply for traditional knowledge protection as well.”

The two professors agree and establish a certification program that rapidly gains international acceptance. Couples therapists from all over the world attend the three-week training program given by Col. de Januge and Prof. Garjain.

A representative from a large healthcare company in the US approaches Prof. Garjain and offers him the job as chief clinical research fellow at their headquarters facility where he will train their clinicians in the Barbaytian techniques. His proposed salary far exceeds that of the NUE president. Tempted as Prof. Garjain is by the offer, he knows that NUE is serious about its intellectual property, and he suspects



that he just couldn't quit NUE and accept a position at Amalgamated Health Coop without crossing some boundary that shouldn't be crossed without raising the prospect of litigation along with some very bad feelings. After he tells you about the employment offer, you ask him what he'd like to do, and Prof. Garjain says that he would like to take the position.

"There's a huge potential for Barbaytian techniques in countries like the US. The money would be wonderful, but I think there's something even bigger at stake."

"You have a tenured position here. Would you consider keeping your post - maybe taking a dual position where you still taught seminars here on occasion?" you ask.

"Yes, I would like something like that," he says.

You fly to Amalgamated Health Coop's headquarters in San Luis Obispo, Calif. You do not take Prof. Garjain with you. Amalgamated makes a point of demonstrating for you how wealthy and powerful they are as a company. They also make a point of letting you know how "unimportant" Barbaytu is for their overall business. You think to yourself, "Yes, on the one hand, Amalgamated's annual turnover is more than \$1 billion and Barbaytu would be unlikely to even register in their annual reports. On the other hand, insurance payouts related to domestic violence in the US amount to billions and Amalgamated has to bear some portion of those costs. So, you make a point of not letting yourself get distracted or knocked off track by their techniques.

"We have discussed your employment offer with Prof. Garjain," you tell your counterpart at Amalgamated, adding, "He is excited about the possibility of becoming your chief clinical research fellow. But he is also interested in retaining a position at NUE. More importantly, we own the Barbaytu certification mark internationally, and there's also Col. de Januge. We have developed - and are continuing to develop - a number of advanced techniques related to Barbaytu. For example, there's a small population high up in the Green Mountains of Erehwon that practice a slightly different version of Barbaytu that has even greater results, especially for problems like substance abuse. By hiring only Prof. Garjain, you would never get any of that,

not clearly anyway. But we would like to license Barbaytu to you for use in the United States.”

“We would need a worldwide license – outside of your continent, of course,” says Derrick from Amalgamated. You remember that Amalgamated also runs the healthcare systems of three small countries in Africa, and you seem to recall reading that each of those countries has extreme domestic violence problems.”

“I’m sure we could come to an agreement regarding territoriality. We’re currently in talks with the national healthcare systems of several other countries, however.”

“Okay. What are your proposed terms?”

“You will contract through us for Prof. Garjain’s services for five years on renewable terms. He’s already told us how much you offered him and that sounds like adequate compensation to us, even with the high cost of living here. We propose to offer you the exclusive use of the Barbaytu service mark in the covered territories for \$300/annual per licensed practitioner and \$10/session/couple.”

“Hmm. Would you take a lump sum payment of say \$2 million?”

“I don’t think so. The net present value for the level of treatments that we expect you’ll be running in just two years amounts to more than that based on the terms above.”

“You’ve done some research. Ok then, tell me all about my business.”

“Oh, we’ll also allow you to sublicense the mark to others within the territory provided that we perform the certification and that our fees will be the same as above.”

“You’re saying that we can mark up the charges.”

“If you wish. We’re primarily focused on maintaining quality.”

A few months later NUE signs a definitive agreement with Amalgamated on substantially the same terms outlined above covering North America, Africa, and Central America.

## 5.2 Valuation in Contract Research

Prof. Auric Shlony has developed a system for determining the net happiness of the population within a defined geographical region ranging from approximately 50,000-100,000 people. His approach is based on a number of unique factors and can also reveal the interpersonal dynamics among groups of actors within the region. Among other things, the system can reveal which groups are happy or even happier when other groups are less happy. Prof. Shlony's maps of Erehwon's population were reported favorably by news organizations such as the *New York Times* and the BBC. In terms of its intellectual assets, the work comprises copyright, trade secret, and trademark.

The city of Wallyton in Canita, a highly developed country, would like to hire Prof. Shlony to perform a happiness mapping of the city. Wallyton is a small but very wealthy coastal city. Its homes are frequently featured on magazine covers. You need to value Prof. Shlony's work on something like a per application basis in order to determine a reasonable price for the service.

You have to first determine how much of a difference the size of a city matters in performing the mapping. You assume that mapping a really large city would be more expensive than mapping a small city, but you wonder how much overhead is involved in cities of any size. You speak about this with Prof. Shlony who helps you understand that there are some complex background variables that underlie the method and that the difficulty of performing a mapping has much less to do with the population number than with the complexities of an area's history. "I could map a city of 3 million totally homogenous people in a week, but it would take me six months to map a city of 100,000 where the population was extremely diverse," says the professor. This information provides you with some valuable insight.

Your initial assumption is that the service should be charged on something akin to a cost basis with a premium added on. You're also worried about leakage of Prof.

Shlony's method as the results of any reports he might write. He assures you that while he has published accounts of the method in a number of journals that there are certain practicalities of performing the measurements that he has never disclosed. "These practical techniques aren't the sorts of things that a journal would really even want to publish, but if you didn't use them, then every mapping would require two to three times the effort," he says,

This information tells you that the service should be priced at some multiple of the cost for performing the mapping without using the practicalities. You realize that this is more of a business issue than a valuation issue, but it's your job to do both. You decide that you will charge clients 75% of the fee for performing a mapping that does not use the professor's trade secrets. This way, no competitor could undercut your price without losing money, and customers will see that your approach provides greater value for the money spent.

With the professor's help, you proceed to estimate the cost for performing a mapping for Wallyton without applying the professor's trade secrets. Once you have computed the amount, then you calculate 75% of this amount for your proposal to Wallyton. You make sure to include in your contract with Wallyton that they are receiving a discount of 25%. You also bind the city leaders to a certain level of secrecy regarding how the study has been performed. You include a term that the completed study can be published elsewhere by Prof. Shlony.

Wallyton accepts your terms and Prof. Shlony proceeds with the work. The results are highly entertaining and provide a great deal of publicity for Prof. Shlony and NUE.

### **5.3 Valuation and Corporate Structures for Spinouts**

Acrostic International, a large chemical company, has approached the university to conduct further research into the Wrutlu frog that only lives in Erehwon. Dr. Irwin Hryller has been researching these frogs for many years and synthesized many of their properties. The frogs have a variety of interesting properties, including the ability to "melt" when an enemy approaches and then re-solidify themselves. The chemical company has proposed that the university and the chemical company

form a jointly owned corporation that will own and exploit Dr. Hryller's work. You need to evaluate and value Dr. Hryller's work to date and the skills that he brings to the effort in order to then evaluate and negotiate the proposals provided by Acrostic.

The giant chemical company has suggested that it and the university form two small companies, one that will hold the intellectual assets related to the Wrutlu frogs and another company that will be authorized to exclusively license intellectual property related to the Wrutlu frogs. Each company will be owned 50% by NUE and Acrostic. The chemical company has also suggested that these two companies be of a limited liability form and located in a jurisdiction with fairly low public disclosure requirements. The chemical company has proposed a 2M euro donation to Prof. Hryller's lab, followed by a 1M euro investment in the holding company with profits shared on a 60/40 basis.

You are not quite certain yet why the chemical company wants to keep its involvement quiet, but their proposals seem to be fairly lucrative for the university. Nothing compels corporations to volunteer their intentions, goals, and even their interests in any given business endeavor, including IP. In particular, recent years have seen the growth of non-practicing entities (NPEs). The NPEs make and sell no products; they own IPRs simply for the money they can derive from licensing and litigation. Thus, a licensing settlement or litigation victory is often their only way for making money. Many NPEs are very well financed. However, the typical NPE tends to obscure its ownership via specific corporate forms, such as the limited liability company.

Before a litigation is filed, and sometimes even afterwards, an NPE's licensing target may have no idea who is ultimately behind the rent-seeking entity. Many investors, including companies, operating in this area have sufficient access to capital and legal resources to prepare for a host of contingencies. Among other things, these investors sometimes architect elaborate corporate networks that narrowly confine the legal claims that can be brought by licensing targets, providing a firewall that protects the larger organization.

Many countries offer corporate forms that provide enormous privacy from public disclosure for the company's owners. Such companies typically have a "limited liability company" format. In some jurisdictions, no public information is provided regarding the owners of such companies. Other jurisdictions allow some public disclosure for LLCs. Thus, for example, the only outward public fact of the proposed company would be NUE. This does not mean that the government does not have access to this information. It simply means that the public does not have access.

Operating companies have sought to replicate the IPR strategies of the NPEs in a further refinement of indirect IP strategies. The innovations coalesced as "IP privateering," the beneficial application of third-party IPRs for a sponsoring entity against a competitor to achieve a corporate goal of the sponsor. In an IP privateering engagement, a corporation or investor serving as the sponsor employs third-party IPRs as competitive tools. The privateer, a specialized form of NPE, asserts the IPRs against target companies selected by the sponsor. The sponsor's benefits do not typically arise directly from the third party's case against a target but arise consequentially from the changed competitive environment brought about by the third party's IPR assertion. The sponsor's benefits may include nudging the target into a less competitive position, facilitating the licensing of a larger collection of the sponsor's own IPRs, and causing a beneficial change to the target's share price and/or corporate valuation. The third-party privateer's motivation comprises collecting a litigation settlement or damages award. IP privateering can be defined as: the assertion of IPRs by an entity (the privateer), typically in the form of an NPE, against a target company for the direct benefit of the privateer and the consequential benefit of a sponsor, where the consequential benefits are significantly greater than the direct benefits. The strategy, in part, relies upon the intransparencies of ownership and motivation permitted in the IP system, which we discussed above.

You don't mind Prof. Hryller's work being owned by Acrostic for some business purpose – so long as it creates no liabilities, including reputation injury, for the university or Prof. Hryller and so long as Prof. Hryller is interested in doing the work.

This is one instance where you decide to seek guidance and counsel from the university president. He agrees with you that there should be no possibility of reputational injury. He also requires that Acrostic indemnify NUE for any demonstrable harm that comes to the university as the result of this engagement.

You ask Prof. Hryller why Acrostic might be interested in such a business arrangement. He explains that the chemicals related to the Wrutlu frogs are an area in which Acrostic ignored for years. In fact, Acrostic was somewhat famous for ignoring this area, despite its commercial potential. In the meantime, a smallish chemical company, Raeder Chemicals, began synthesizing and independently developing a similar group of chemicals. You note that several of Prof. Hryller's patents were filed in time periods that predated Raeder Chemicals patent filings. Depending on various facts that you don't presently know, this could mean that Prof. Hryller's patents are broader and more fundamental than anything in Raeder's portfolio. Thus, one of the LLC's first missions might be something along the lines of attacking Raeder's competing product. The benefit of such a strategy for Acrostic is that Raeder would gain almost nothing by filing a countersuit against Acrostic, especially if Acrostic did not control the patents being asserted.

You ask Prof. Hryller about short-term and long-term uses for the chemicals. He tells you that in the long term the chemicals will likely be the center of a multi-billion dollar market. Many uses just simply haven't been thought about yet, and many others will require years of testing. The short-term uses are fairly clear, the professor tells you. The chemicals have immediate applicability in the high-end lubricants market. This is precisely the market where Acrostic and Raeder compete. You learn that Acrostic and Raeder each hold about 25% market shares in this high-end lubricants business, with more than a dozen other companies holding 50% of the market.

The market is presently about 300 million Erehwonian ducats (EHD), according to information found by Kizbit. This means that Raeder's annual revenue from these lubricant products is approximately 75 million EHD. You research licensing rates in this high-end lubricants business. You can't find anything on point, but you find some very similar markets where key IPRs are licensed for 8-12% of revenue. This

suggests to you that the mid-point of the royalty stream would be 7.5 million EHD per year, and the proposed arrangement with Acrostic would then amount to at least 3 million EHD per year for NUE.

Prof. Hryller also has some trade secrets and know-how, but you figure that Acrostic's main objective will be to license the patents to Raeder. Nevertheless, you figure that additional income might be received from granting technology licenses to the other 12 companies in the field who could make use of the trade secrets and well as the know-how.

Thus, in summary, the proposed arrangement appears to be one that would be beneficial to the university in many respects. Consequently, you recommend to the university president that he sign the agreement with Acrostic.



## CHAPTER 6

### Valuation in Strategic Decision Making

#### 6.1 Valuation and Annuity Payment Decisions

Prof. Ramon Btpang has patented many key developments in femtotechnology. These patents, which reside in six patent families, exist all over the world. There are high annuity rates associated with them. The dean of the Engineering School tells you that those annuities ultimately come from his budget and he's going to stop paying all of them. You need to undertake a rapid review to rank these patents and determine which ones should be kept.

There are also some trade secrets and know how associated with Prof. Btpang's femtotech work that further complicates your validation work, and you will need to value them as well. The trade secrets and know how will obviously be worth less if you allow the patents to expire and slip into the public domain.

You first construct a chart of these six patent families and sum their current annual annuity rates worldwide. Of course, the annuity rates change each year as older patents are typically assessed a higher annuity and countries sometimes raise the rates as well. In addition, not all patent families are active in the same jurisdictions, and few countries have identical annuity fee structures. In your chart, you convert all the various currencies to their present value in Erehwonian Ducats (EHD), the national currency.

| Patent Family | Current Year Annual Annuity | Priority Filing Age |
|---------------|-----------------------------|---------------------|
| One           | 550,000 EHD                 | 15 years            |
| Two           | 350,000 EHD                 | 10 years            |
| Three         | 345,000 EHD                 | 10 years            |
| Four          | 275,000 EHD                 | 8 years             |
| Five          | 215,000 EHD                 | 7 years             |
| Six           | 120,000 EHD                 | 4 years             |
| <b>Total</b>  | <b>1,855,000 EHD</b>        |                     |

You are about to begin working on a lifetime annuity cost projection for the portfolio and also about to link the trade secrets to the patents when Dean Steven Khra-Shong phones. The dean tells you that he might not have made himself clear. He simply wants all the annuity payments to stop right now, today. He's not interested in any sort of triage of the patents. He's not interested in commercial exploitation. "We've had some of these patents for 15 years and nothing has happened beyond an annual charge to my budget," he says. You tell him that you understand his position, but you also remind him that over the years, no one has seriously tried to license these patents and their related to technology to anyone.

The dean relents slightly. He knows that you have a good point, but he simply can't afford to continue losing nearly 2 million Erehwonian Ducats from his budget every year. The dean eventually agrees that he would be willing to spend 1 million EHD this year and 500K EHD for the next 3 years without the patents being licensed, but if nothing happens then the patents need to go abandoned. "Look, if you can license these patents, then we can use the license fees to pay the annuities, and that's fine with me. But I just can afford to keep draining my budget of this much money every year. It makes no economic sense," he says.

As an aside, you tell the dean that you are working on changing university policy such that all IPR expenses will come from your budget and not from any individual department's budget. Such a policy change would simplify the retention of IPRs and focus retention on economic value over other considerations.

After your conversation with the dean, you realize that you should not overly complicate your task. A grand evaluation of the patents and the trade secrets is not presently necessary and wouldn't be helpful. The dean has essentially given you a set time period in which to begin a license program for these patents and the related trade secrets or let them go abandoned. Their intrinsic scientific and technical merit is no longer quite so important.

You decide that the best approach is to assess this IPR collection in terms of its technology readiness level (TRL). This analysis will tell you which of the patent families and related trade secrets, regardless of their age, are the most ready for commercialization. These are the technologies that you will lead with, and if you

can't find a licensee quickly, then you agree with the dean, the IPRs should be allowed to expire. There is no reason to keep them if they don't make money.

TRL is a tool for measuring the maturity of a new technology. Researchers have observed that new technologies tend to pass through particular stages before they become commercially useful products. As a general rule, a new technology is not typically suitable for immediate commercial application upon its creation. To become commercially useful, new technologies typically pass through distinct and predictable phases such as experimentation, refinement, testing, and further revision before they become sufficiently mature for exploitation.

A number of different agencies around the world have created TRL scales. For our work here, we will borrow a modified version of the European Space Agency's TRL:

| Technology Readiness Level | Description (Modified)   |
|----------------------------|--|
| TRL 1.                     | Basic principles observed and reported   |
| TRL 2.                     | Technology concept and/or application formulated                                   |
| TRL 3.                     | Analytical & experimental critical function and/or characteristic proof-of-concept |
| TRL 4.                     | Component and/or breadboard validation in laboratory environment                   |
| TRL 5.                     | Component and/or breadboard validation in relevant environment                     |
| TRL 6.                     | System/subsystem model or prototype demonstration in a relevant environment        |
| TRL 7.                     | System prototype demonstration in a realistic environment                          |
| TRL 8.                     | Actual system completed and tested   |
| TRL 9.                     | Actual system "proven" through successful operation                                |

You contact Prof. Btpang and ask him to meet with you so that you can assess the TRL's for his femtotechnology inventions. You ask him first to help you match up the trade secrets with the patents. As you can imagine, some of the trade secrets extend through all the patent families while others just pertain to one or more particular patent families. You discover over all that there are approximately 9 groups of trade secrets that line-up with the patent families in approximately the manner shown in the chart below, showing TS-1 through TS-9.

Working with Prof. Btpang, you construct a TRL for each of the six patent families. You could complete the TRL assessment in a much more rigorous manner. However, you recall that the dean is about to stop paying the annuity fees and a higher level of accuracy is not really warranted for your purpose here.

| Patent Family | Trade Secrets          | TRL |
|---------------|------------------------|-----|
| One           | TS-1, TS-2, TS-3       | 1   |
| Two           | TS-1, TS-2, TS-5, TS-6 | 4   |
| Three         | TS-4, TS-5, TS-6, TS-7 | 3   |
| Four          | TS-1, TS-3, TS-5, TS-8 | 7   |
| Five          | TS-2, TS-6, TS-8, TS-9 | 8   |
| Six           | TS-2, TS-7, TS-8, TS-9 | 3   |

From this exercise, you know that you should concentrate your initial licensing efforts on the fourth and fifth patent families and their related trade secrets. Your licensing effort does not need to be to the exclusion of the other patent families. This simply means that you will lead with Patent Families 4 and 5. You will first explore commercial markets for these patent families. You will conduct your most intense valuation efforts on these technologies, and when you have found a set of candidate licensees, you will focus your initial efforts in licensing these patent families and their related trade secrets and know how. You will conduct your valuation following the same general principles discussed previously and identify which of the three main methods will be used. The point of this particular exercise, you realize, has been learning what to focus on and what to ignore – at least initially. It occurs to you that after an initial licensing discussion, it may turn out that Patent Family 1 is the easiest to license since that patent family likely has the broadest claims, and certainly a license to Patent Families 4 and 5 might be extremely difficult to license without a patent license to Patent Family 1 as well.

Patent annuities in different countries may come due at different times. You allow some of the patents in certain jurisdictions to expire while you are in the process of trying to license the whole portfolio. You know that you must satisfy some of the dean's objectives, which did not strike you as being unreasonable. After nine months of effort, you are able to license Patent Family 4 to a manufacturing company at a rate that will allow you to pay 40% of the annual annuities for the

entire portfolio. The dean agrees to continue paying the uncovered portion of the annuities for at least another 2 years. Meanwhile, you continue trying to license the whole of the femtotechnology IPR holdings. You also learn that the dean would like to patent another of the professor's improvements in the femtotechnology sector.

## 6.2 Valuation in Release of Patent Rights

Prof. Zuban Grel has prepared a paper on Erehwonian Stronba roots for presentation and publication at an international conference on commercial produce. The conference will be held in a few weeks. You need to evaluate Prof. Grel's paper quickly to see if the university would like to file a patent application on his work related to Stronba roots. Otherwise, you can capture any valuable IPRs later.

The Stronba root work is almost certainly patentable, so the primary question is: What is the value of a patent and complimentary technology related to Stronba roots? Your choices are to waive the patent rights (which will be lost once the article is published) or to hold up publication of the paper long enough for a patent application to be filed, and/or to publish for the present just an abstract of the paper that will not jeopardize any patentable subject matter. You must make your decision quickly because of publication deadlines related to the conference.

You first research the market for Stronba roots. The world market for Stronba roots is 235 million EHD/year. They are mostly used as a flavoring for "Birmingham cookies," a type of a cookie that has nothing to do with Birmingham, England but for the name of a corporal in the British army who helped popularize the cookies throughout England and Europe in the 1920s.

Second, you ask, "What does the professor's improvement related to Stronba roots concern?" After reading the paper and speaking with Prof. Grel, you describe the improvement as follows. Stronba roots are conventionally shredded then boiled then shredded again and then pressed in order to extract a thick syrup which is used to flavor the Birmingham cookies. This process is somewhat expensive and results in a relatively low yield of syrup weight to root weight. Prof. Grel has learned that if the Stronba roots are covered with coconut oil, then frozen at a temperature just below the freezing point of water, then baked in an oven and then pressed that the

yields are significantly higher. Prof. Grel has tested this process using only very small bunches of Stronba roots. However, the professor further explains that whole Stronba roots are very fragile. They cannot have any weight placed on top of them without beginning to disintegrate, which means that they cannot be stacked together during cooking. Consequently, his present process would require huge ovens having enormous surface areas – ovens that would not be commercially feasible for even the largest bakers of Birmingham cookies. You ask Prof. Grel if he thinks this bottleneck could ever be overcome. He explains that it should be possible, but he adds that he's already applied every technique in the Stronba, Bomg-go, Celery, Onion, Carmango, and Rtanga root literature, and none of these approaches work. He says it could be some time (e.g., years) before he overcomes this bottleneck.

You decide to apply the technology readiness level (TRL) factors described above. On the basis of the information that you have learned thus far, you rate the invention described in Prof. Grel's paper at a TRL of 4. You also study the Stronba root market a bit more and learn that it is a relatively price insensitive market. In other words, even if the improved method was available today, it's unclear how many of the manufacturers would be interested as they don't presently compete too much in terms of lowering their costs.

Consequently, you sign the papers related to Prof. Grel's publication and allow him to publish the paper, knowing that this will likely waive the patent rights to his invention for any jurisdiction without a grace period and likely render his related trade secrets also of limited commercial value. As you have learned, the university cannot afford to patent everything that is patentable.

### 6.3 Valuation in Rapid Asset Sale, Part 1

An attorney representing an unnamed large multinational company says that his client is currently in litigation against a competitor but his client has no patents that can really harm this competitor. His client would like to buy one of Prof. Rama Sparkman's patents related to photovoltaic shingles to use in the litigation as a counterclaim against the competitor. He gives you the precise patent number. He also gives you a price which seems genuinely reasonable and gives you 24 hours to decide. He tells you that time is the limiting factor here. You need to quickly determine how fair the price is and whether you could ask for more, knowing that he will not agree to any sort of prolonged negotiations with you. You know that he is not bluffing as he really needs to have an answer within a day.

To complicate matters, Prof. Sparkman also has some related trade secrets and know how related to photovoltaic shingle technology that is not disclosed in the patents. You know that the multi-national company won't be interested in these trade secrets because their interest lies solely in the litigation value of the patent – assuming they're telling you the whole story. (You really never know if the other side in a negotiation is telling you the truth until long after the negotiation is over.)

You know that over time, innovative IP managers have developed techniques for the indirect application of IP assets. Increasing competition among firms has stimulated the development of markets for IPRs and the increasing presence of intermediaries entering the market. The rich varieties of IPRs available in these markets enabled the development of indirect IPR strategies. These indirect techniques have included buying third-party patents in the technology markets for assertion against competitors and acquiring third-party patents for use in a countersuit in an ongoing infringement litigation, a practice known as “just-in-time patenting.”

These just-in-time patent transactions, which is what the unnamed party here seems to want to do, become even more interesting when the arrangement allows the purchaser to sell the patent back to the original owner at the conclusion of the litigation. Litigated patents are generally more valuable than non-litigated patents,

which is why the original owner often wants the patent back at the end of the litigation. The just-in-time practice resembles a leasing program, or perhaps a form of a patent library, in which those companies with sufficient capital can obtain just the right patent at just the right moment, returning the patent when the need has passed. The purchaser might even be able to make a profit on the transaction, given that a litigation-tested patent is presumably more valuable than an untested patent.

So, you make a note of your deal terms for this transaction – they include the ability to repurchase Prof. Sparkman’s patent once the litigation is over at your option at a price that is significantly lower than the sales price. You are not certain whether the university will want to buy the patent back, but it’s a nice option to keep open. You also doubt that the buyer will put up too much of a fuss if they really only want the patent for one litigation. You also want the university to be indemnified by the buyers for all related causes of action that the defendant in the litigation might bring.

The price that the attorney quoted you was 5 million Erehwonian ducats. Without performing any calculations, you can tell that this is a reasonable price. It is a multiple of the price ranges often quoted for the “average” patent in a transaction. However, your valuation tools here should be ones related to premium pricing. Premium pricing refers to pricing for an item or service that exceeds its normal valuation because the purchaser needs the item or service in a rush, and the extra price covers the “rush” value. You don’t want to become too greedy – but on the other hand, having this patent will provide the multinational corporation with a tool that is not presently at its disposal and a tool which is desperately needed.

You also know that the multinational corporation likely conducted a search of patent claims through various international patent databases and found that the claims in Prof. Sparkman’s patent were the best suited for use against its litigation opponent. You realize that they probably had other candidate patents as well. In fact, Sparkman’s patent might actually be second or third patent on the list with the earlier candidates having quoted prices way too high or having taken too long to decide or providing terms and requirements that required prolonged negotiations. You also realize that there are likely candidates below you on the list, so if you



quote a price too high, then the multinational corporation will likely contact the next company on the list.

The attorney didn't tell you who the multinational corporation was, but he did tell you that they were interested in Prof. Sparkman's patent. You look at Prof. Sparkman's patent to gain a sense as to what the technology area is. You also look at the patent's international patent classification (IPC) codes. Every patent has a classification code; these codes provide an identification of the technical subject matter disclosed in the patent. You then look for a patent litigation involving a multinational party in which Prof. Sparkman's patent might apply.

While you find a couple of candidate litigations, the one that seems most likely to be the litigation of interest is – *TraGira, Inc. v. Bloat-o International*. Bloat-o is a huge company, but your search through their patent portfolio shows that they have very few patents that relate to TraGira's business and owns no patents having the same IPC code as Prof. Sparkman's patent. So, it would seem reasonable for Bloat-o to buy Prof. Sparkman's patent to use in a counterclaim against TraGira.

Assuming this is the litigation, then you need to determine what the value of Prof. Sparkman's patent is when applied to this litigation. It doesn't matter quite so much for this exercise what value Prof. Sparkman's patent might have in another context. Prof. Sparkman's patent had never previously been litigated or licensed.

Countries vary in the types of damages available in patent infringement cases. The *TraGira v. Bloat-o* litigation is being tried in a country that offers fairly low damages but does grant injunctions in patent cases. This means that while the litigants might not earn much directly from the litigation, they can earn huge sums settling the litigation between themselves in order to get the injunction lifted. You research the litigation a bit further and discover that TraGira's lawsuit is aimed at Bloat-o's Zimtastic line of products. While TraGira has filed suit in just one country, it could presumably file suit in other countries based on your review of its patent portfolio. Bloat-o's revenues for Zimtastic last year were more than 120 million euro.

As best as you can tell, Prof. Sparkman's patent could be applied against TraGira's Niftyloo product line. The global market for Niftyloo products amounts to some 100 million euro. Thus, Bloat-o's ownership of Prof. Sparkman's patent might well offset the settlement value in the TraGira case. You assume that each side would like ask the other for approximately a 5-8% running royalty for this technology, which would be 12M euro/year versus 10M euro/year, and could possibly be valued as a one-time payment of 5 years of royalties for something like 60M euro versus 50 million euro. In the absence of Prof. Sparkman's patent, Bloat-o would have to pay at least 60M euro to end the lawsuit – but with Prof. Sparkman's patent, it would only pay about 10M euro. Thus, Prof. Sparkman's patent saves Bloat-o 50M euro.

In some countries, patent misuse can be used as an affirmative defense for patent infringement and/or mitigation of infringement damages that may be used in instances where the plaintiff patent owner has engaged in a short list of bad acts that include:

- Improper expansion of the patent's term or scope;
- Inequitable conduct in the procurement or enforcement of the patent; and
- Violation of the antitrust laws.

The courts sometimes recognize a narrow scope for the patent misuse doctrine, emphasizing that the defense of patent misuse is not available to a presumptive infringer simply because a patentee engages in some kind of wrongful commercial conduct, even conduct that may have anticompetitive effects. So, even if a patent owner's behavior is "morally wrong" or an "economic danger," patent misuse is generally not likely to provide the defendant with a specific legal avenue to demonstrate that it was been harmed.

The courts have often stated that the key inquiry for patent misuse is whether, by imposing conditions that derive their force from the patent, the patentee has impermissibly broadened the scope of the patent grant with anticompetitive effect. In a patent infringement case, the plaintiff may have sought to impose certain licensing conditions on the defendant that had the effect of expanding the scope of

the patent grant, such as by tying a license to the patent to the purchase of products/services not protected by the patent.

You know that Bloat-o and/or its attorneys could have applied a number of different financial calculations in terms of their offering price for Prof. Sparkman's patent. You know that they have valued this patent as having a high probability for success, but the probability would never be set at 100%. You also know that while you could calculate a much more precise value for Prof. Sparkman's patent, you are certain that Bloat-o will simply not engage in a protracted negotiation with you over the value of this patent. You don't want to leave money on the table, but the opening offer of 5 million Erehwonian ducats (EHD) is a fairly large amount of money. For all these reasons, you decide to accept the attorney's offer – provided that the university has the option of buying the patent back after the litigation for a small sum and the other deal terms you mentioned above.

## **6.4 Valuation in Rapid Asset Sale, Part 2**

Prof. Rajiv Lir-Ghan and his students have developed a computer game based on an Erehwonian legend called "The Magicians of Kabron." A multi-national game-making company is preparing a series of international games and would like to include the Magicians of Kabron in the series. However, the gamemaker wants to own all rights to the game and any improvements later made by Prof. Lir-Ghan. The gamemaker's proposed price seems reasonable but you need to verify this.

Previous versions of the Magicians game have been trademarked by NUE. Prof. Lir-Ghan explains that there are also some trade secrets associated with the game. In particular, it would be extremely difficult, if not impossible, for someone to reverse engineer the "wizard's turban" function in the game without access to the source code and a small embedded data file that is periodically updated by a server operated by Prof. Lir-Ghan and his students.

Prof. Lir-Ghan has also told you that he doesn't mind spending another few years working on the Magicians game but he would be very reluctant to continue spending his time on the game for more than four years. He and his graduate students have

discussed new research areas outside the gaming space, and they are eager to begin working on something new.

Before you calculate a fair market value for the Magicians game, you need to think about what your terms for a deal will be, as the terms will impact what property is actually transferred to the multi-national game company. You know that the university has recently renovated its student recreation areas. You know that some specialized computer gaming consoles have been added. You assume that the students might like to play the games that will be included in the set that the gaming company is planning to compile. You conclude that a site license to the whole game collection would be something fairly easy to obtain with not insubstantial recreational benefits to the university's students.

Based on the information from Prof. Lir-Ghan, the university has no problem with transferring all rights to the game. Similarly, the university is willing to have Prof. Lir-Ghan and his staff support the game for up to 4 years.

You decide that the components for this valuation are:

1. The value of the software for the game,
2. The value of the trade secret related to the wizard's turban function, and
3. The value of supporting the game for 4 years.

For the first valuation component, Prof. Lir-Ghan provides you with information about how many hours his team spent writing the code for the Magicians game. You also obtain from the professor the relative skill level of the students and engineers who worked on the game. The international game company is a developed world country, so you apply the wage rates for developed world programmers having the skill levels described by Prof. Lir-Ghan.

For the second valuation component, you discuss with Prof. Lir-Ghan how long the wizard hat trade secret took to develop. You learn from Prof. Lir-Ghan that coding the wizard hat function took very little time. You try to gain from the professor a sense of how much more attractive the wizard's game is because of this trade secret. In the end, you decide to value the wizard hat trade secret as an

amount related to the amount of time that Prof Lir-Ghan spent thinking about the function and coding it.

For the third valuation component, you get a sense from Prof. Lir-Ghan how much support the game would likely require over the next four years and the relative skill level of the engineers required to support the game. Again, you apply developed world wage rates in your calculations

You sum these three components to arrive at a final valuation. Fortunately, the number is reasonably close to the number that the international gamemaker gave you for buying the game. You decide to accept their offer, subject to the additional terms that you described above, including the site license for the entire set of games

## **6.5 Valuation in Rapid Asset Sale, Part 3**

Prof. Bispak Doughlin has written a number of mysteries about a detective named Inspector Gerschlon. The Gerschlon Mysteries have become international bestsellers in part because there are not many famous detective novels set in developing countries. The Grimms-LaMarr Publishing Co. has now approached the university, which owns controlling interest in the books, for the outright sale of all rights in the books and for the next eight books to be published in the series. Grimms-LaMarr has published some of the Gerschlon books but not all of them. Prof. Doughlin has five unpublished Inspector Gerschlon mysteries.

Grimms-LaMarr has certain legitimate financial reasons for not wanting a protracted negotiation with the university. Their base offer seems extremely fair, but you still need to evaluate the mysteries, value them, prepare any warranted counteroffer, and negotiate the deal points for a definitive agreement with Grimms-LaMarr – and this must all be done fairly quickly. Grimms-LaMarr is assembling a new collection of detective novels, entitled “World’s Greatest,” and they would like to include Inspector Gerschlon in the same series with Sherlock Holmes, Miss Marple, Sam Spade, Lisbeth Salander, and several other household name detectives. They plan to finalize the series for advertising purposes within the next two months.

Inspector Gerschlon is one of few developing world detectives who is internationally known. You assume that the novelty of the inspector's position must be worth something, but you not completely sure how that novelty translates into money. You are also aware that much of the rest of the world does not follow the Erehwonian notion that "cultural goods" should generally be provided at extremely low cost based on government subsidies. In Erehwon, literary works are considered cultural goods. You have learned from Prof. Doughlin that the Inspector Gerschlon mysteries seem to sell the best in the very countries whose governments provide no subsidies for the literary arts.

As a deal point, it occurs to you that the film rights for Inspector Gerschlon should not be given away in the same transaction as the books, and it similarly occurs to you that certain merchandizing rights should also not be given away in the transaction. In fact, you can think of a number of other rights that should not be given away free of charge. You note that the deal terms that Grimms-LaMarr outlined to you over the phone were for "all rights," yet you also find in your notes a mention that Grimms-LaMarr was just interested in publishing the mysteries. They certainly don't have the film rights for Sherlock Holmes and Mrs. Marple.

You decide that you will simply exclude from the negotiations the transfer of any right to Grimms-LaMarr beyond the rights to the mystery books. If they want "everything," then you are going to separately value each individual aspect of the mysteries and tag that aspect with a price. If Grimms-LaMarr wants to provide a lump sum "everything" payment, you will welcome it, but such a proposal should be higher than the sum of the parts rather than lower because one never knows for sure what new individual right one is inadvertently giving away for free, especially in the artistic community where fashions and styles change frequently and where technology creates new avenues for diversification.

You determine how many copies of the Inspector Gerschlon mysteries have been sold to date. You next compute where the Inspector Gerschlon books fall in terms of all fiction, fiction originating from the developing world, crime fiction, and general fiction from the developing world. You next populate this list with whatever information you can find in terms of revenues and royalty payments for various

popular works of fiction. You note that Inspector Gerschlon has only been marginally promoted in the developed world but has nevertheless sold fairly well. You conclude from this that the Inspector Gerschlon books would likely sell quite well with a bit of promotion, and you also figure that Inspector Gerschlon's origin in the developing world should also command a small premium since the author's own roots in the developing world render the works undeniably authentic.

Rather than basing your copyright valuation on some multiple of Inspector Gerschlon's present sales revenue, you decide to estimate how many copies of Inspector Gerschlon will likely sell within some number of years after the books are appropriately promoted. As noted above, the books have sold well but with almost no promotion whatsoever. You telephone several developing world authors whose works have enjoyed success in the developed world to gain a sense of how much sales of their works increased once they were fully promoted in the developing world. You note that their comments are pleasantly consistent in terms of a sales multiple. You average the increased sales enjoyed by these authors to arrive at a consistent sales improvement multiple for when a developing world fiction work is promoted in the developed world.

You next apply this sales multiple to the Inspector Gerschlon books. You try to determine if there is a consistent growth rate for fictional works. You discover that there is no consistent increase found in the sales literature. Some works enjoyed fantastically increased sales over a 5-year period while many other works see negative growth. A few works languish for years before becoming "discovered." After much consideration, you decide to simply multiply the developed world sales multiple by the present sales of Inspector Gerschlon books and then assume this number remains steady for 5 years.

Just in case you have significantly underestimated an appropriate sales price, you decide to ask for a 10% royalty to begin after 5 years and only for sales of Gerschlon books beginning after sale of 250,000 copies. Your pre-negotiation guess is that this term will not prove too contentious because it will only kick-in after 5 years and only if the Inspector Gerschlon books become wildly popular, and if that's the case, the publisher should be willing to share a bit of the good fortune.

As mentioned above, you suspect that the publisher will also want film rights, but you decide that you will not specifically value those until – and if – the publisher insists on them in negotiation. Once you have your term sheet prepared, you send an email to the publisher to begin discussions.

## **6.6 Valuation in Reputational Injury Context**

Prof. Anders Randiz has spent years researching electric motors, focusing in recent years on self-propelled electric wheels for next generation all electric vehicles. Prof. Randiz has just returned from the World Electric Vehicle Forum where he presented the results of his latest research. He had been expecting a proposal from the multinational Hjord Motor Co., but no such proposal was forthcoming. The Hjord representatives told him nothing more than that the company had decided “to go in another direction.”

Prof. Randiz later heard from a friend that two other professors, both from developed countries had apparently phoned, written, and visited a number of companies, including Hjord, criticizing Prof. Randiz work. In particular, they said that Prof. Randiz approach was inherently dangerous, and these two professors had apparently presented elaborate “safety” demonstrations to some companies. Prof. Randiz confirmed this rumor with other colleagues. He is understandably angry and upset. The professor tells you that he has never had an accident or safety concern in some 20 years of research, and he tells you that the other two professors are jealous simply because he thought of a better idea than they did despite their having more impressive academic credentials and vastly greater research funds.

Both the university chancellor and the dean of the engineering school tell you that Prof. Randiz’ reputation needs to be protected – both for the professor’s sake and for the university’s sake. The university has several options available to it for correcting this situation. Litigation would be the most extreme but effective solution. If you decide to litigate against the other professors and/or their institutions, you first need to have some idea about how much this case might be worth and an understanding of the potential liabilities. The value of a potential settlement is a factor in whether the university opts for this type of solution.



The two professors involved both live in a common law country, and most of the reputational injuries to Prof. Randiz occurred at meetings conducted in common law countries. The world has two huge legal systems, civil and common law. Thus, if you bring a litigation, it will likely be in a common law court. Your attorneys tell you that based on the information you have provided them, the best legal cause of action will be tortious interference with prospective business advantage. You don't know much about common law, so you ask your attorney to give you an overview.

Your attorney explains that the history behind tortious interference is colorful and provides insight into the essence of this common law tort. Off the coast of Cameroon about 200 years ago, a group of local residents paddled their canoe out to the *Bannister*, an English ship that had been loaded with goods for trade. As the canoe paddled back to shore, presumably to bring back others to trade with the ship, the canoe was struck by cannon fire from another ship, the *Othello*, killing at least one of the men onboard the canoe. No one on the *Bannister* was harmed. Capt. McGawley, commander of the *Othello*, was determined that the locals would not trade with anyone else until they had settled a debt that he believed they owed him. When the *Bannister* returned to England, its owners sued Capt. McGawley for tortious interference with their prospective business in Cameroon. In rendering his decision, Chief Justice Kenyon noted that McGawley had no right to take the law into his own hands and therefore he owed a debt to the *Bannister* and its owners for driving away their business with deadly cannon fire. But Justice Kenyon added that there would have been no case had the *Othello* driven the prospective customers away by accident or by legal means.

Over time, the rule of *Tarleton v. M'Gawley* has become known as tortious interference with business relationships. Tortious interference is a common law tort that occurs when one intentionally damages another's contractual or business relationships. One branch of the tort comprises impairing an existing contractual relationship and the other branch comprises interfering with business relationships, generally. *Tarleton* dealt with this later branch of the tort since the *Bannister* had no contract with the locals who were fired upon by the *Othello*.

Tortious interference with business relationships occurs where one party prevents another party from successfully establishing or maintaining business relationships. Thus, the first party's conduct intentionally causes the injured party not to enter into a business relationship with a third party that otherwise would likely have occurred. Here, the two professors acted to prevent a business relationship with Hjord Motor Co. and Prof. Randiz.

Your attorneys outline more elements of this tort. They also explain to you the apparent strong points and weak points of your case against the professors. Among other things, they tell you that the intent element of this tort has often been difficult for plaintiffs to prove. The tortious actor (here, the professors) needs to have the purpose to cause the result, and if they do not have this purpose, then their conduct does not subject them to liability under this tort even if it has the unintended effect of deterring a third party (here, the huge car manufacturer) from dealing with the plaintiff. It is not enough that the actor intended to perform the acts which caused the result - he or she must have intended to cause the result itself. Your litigators tell you that this will likely be one of the professors' defenses if a lawsuit is filed. The professor will claim they had the public interest at heart. However, Prof. Randiz has given you some other information that strongly suggests the opposite.

To prove tortious interference, the injured party must also prove that there is a reasonable probability that the lost economic advantage would have been realized but for the tortfeasor's interference. This element may also provide an extra layer of defense for the professors. But from the professors' emails from Hjord, it seems that a deal had been all but signed.

You ask the attorneys about downside risks. They explain the frivolous case rules. Also, the case would be brought in a jurisdiction with a colorable case requirement for the award of attorneys' fees.

If the cases go to trial, the attorneys will appoint a skilled economist as their damages expert. But what you must determine right now is the prospective damages award – how much is this case worth? This information will help the university decide how it wants to respond.

You must work quickly. The chancellor has scheduled a lunchtime meeting for tomorrow with all the relevant stakeholders. This gives you less than 24 hours to make a rough assessment of the value of this case.

Understanding competing technologies to the subject property to be valued is essential, especially for determining market size. One means to analyze various technologies is to create a table that displays a feature-by-feature comparative analysis with competing technologies that have been commercialized. For example, if a subject patent teaches a technology related to increasing the efficiency in the internal combustion process for smaller aircraft engines, a chart can be created that shows all competing small aircraft engines and respective attributes.

You learn that self-propelled electric wheels show great promise in a number of applications. The greatest application area lies in all electric vehicles. The market for electric vehicles, based on the research collected by Kizbit, is growing rapidly and will reach 20% of the world market by 2020. According to forecasts that you found quickly, the electric wheel approach may be found in 40% of the all-electric vehicles. By 2020, the all-electric vehicles market is expected to reach \$30 billion in annual sales. Thus, the electric wheel market will be \$12 billion by 2020. From articles you have read, Hjord is one of the leaders in all electric vehicles among the world's large manufacturers. Thus, one would expect Hjord to be a key player in this \$12 billion market forecast for 2020.

Of course, there are competing technologies, and thus, there is great uncertainty. You assume that the effective lifetime for this technology would be 15 years at most. According to your calculations, after fitting a development curve to this data, the cumulative sales will amount to approximately \$60 billion in sales to Hjord over this period. If Hjord enjoyed a 30% marketshare, then Hjord would have \$3.6 billion in sales of all electric vehicles by 2020.

You perform a quick search for comparable royalty rates and find that an approximate royalty of 8% is typically paid for electric vehicle technology of this type. Prof. Randiz tells you these are roughly the numbers he discussed. Also, while the wheel is important, it is not the whole vehicle, of course. You decide that of the projected \$60 billion in sales that \$6 billion might seem attributable to the wheel.

Thus, an 8% royalty would amount to \$48 million. You estimate the risk of applying this technology at 35%. If you had more time, you would apply this risk on a year-by-year basis, but since you are performing these calculations quickly, you apply it to the total above, arriving at \$16.8 million. You further estimate that your damage range could spread from 50-200% of the amount you calculated, or \$8.4-\$33.6 million – with the lower end of the range being much more likely for actual damages. You assume that if you sue the professors and their institution that the settlement figure will be significantly lower – although you know that all settlements will require a public apology, which might bring Hjord or another automobile manufacturer back to the university.

Your litigators have also told you that there is the possibility that the court could assess punitive damages as well. Thus, in addition to the actual damages, the university might also be awarded punitive damages for the purpose of discouraging such behavior in the future. The litigators have told you that the punitive damages in the cases they've known about were about 30% of actual damages. You conclude from this information that if the case in chief could be proved that Prof. Randiz and NUE would be awarded damages of approximately \$10 million. The litigators tell you that there is very little chance that even if the university lost the case that attorneys' fees would be awarded. So, this is a very small downside risk.

You will provide this information along with the litigators estimated cost for taking the case to the university chancellor at the meeting tomorrow.

## CHAPTER 7

### Valuation in Non-Monetary Transactions

#### 7.1 Valuation in the Context of an In-Kind Transaction

Prof. Daniel Hling has prepared a primary school tutorial on the Crocrant language family. Interest in this formerly obscure language group has been growing over the past few years in part due to the blockbuster film *Enraged Heart*, about the late Crocrantian patriotic hero Jonquel, and due to the increasing use of Crocrantian poetry in songs produced by various rap artists worldwide. Many teachers have commented that their students take a keener interest in Crocrantian grammar than they do for the lessons of their own native languages; however, the teachers always note that learning the grammar of one language is helpful in learning the grammar of another language.

Spinoza House, an international publishing company, has proposed a small amount of cash for publishing the tutorial and is very insistent on this small payment for several reasons. Their reasoning actually seems fairly compelling to you, but if necessary you can create counter-arguments and/or decline to license the work.

You know that the publisher test markets lots of textbooks, and you wonder if you could sign a deal to test market text books of all kinds written outside of Erehwon for grades K-12 in the Butler school district. Such an arrangement would save the school system a lot of money and give the children access to the latest textbooks being used worldwide. You get permission from the Ministry of Education and the university president to make this proposal – he knows that the favors and future good will could be worth a lot to the university. The question is what is Prof. Hling's textbook really worth, and how much the test market textbooks are worth so that you'll know the ranges of what's a fair deal with the publisher Spinoza House.

You phone the Ministry of Education and ask to speak with one of the budget officers. You explain your situation to her and ask if she can give you some guidelines on how much is spent on textbooks in Erehwon in a year. She explains to you that textbooks tend to be bought in cycles that extend beyond one year, but she

gives you the number for the amount spent on an annualized basis. It occurs to you that there might be a smaller number of test textbooks available. So, you ask for the number of textbooks purchased on an annualized basis in Butler, the capital and largest city. The number amounts to 5 million EHD/year. The budget officer then volunteers that the textbooks purchased tend to be from a selection available only in developing nations. The textbooks are sometimes subsidized by international organizations, and the publishers insist on giving slightly different books than they used in the developed world out of concern for various gray market issues. Consequently, you surmise while the test textbooks might contain some typographical errors that they would be qualitatively similar, if not better, than the textbooks purchased for the Butler school children.

Your next question is how to value Prof. Hling's textbook. Kizbit's initial research indicates that language textbooks do not typically sell well unless they have been selected for use by a school. On the other hand, Kizbit has also discovered that any merchandise logically related to the *Enraged Heart* sells extremely well. Kizbit has also learned that there is a website that offers free lessons in Crocrant. She guesses, and you agree, that a free website would tend to discourage all but the most serious of language students. Based on some further research, Kizbit estimates that roughly 40,000 books might be sold in each of the next three years. Spinoza House already has a language series, and all the books sell for \$14.96 USD. Assuming that Prof. Hling's book also sold for \$15 USD and at volume of 120,000 books over a three-year period, then if one assumes a 20% royalty charge, then the total return to NUE would be \$360,000 USD.

You don't even need to convert this amount of cash into Erehwonian ducats to know that the textbook option represents by far the better deal. So, you assemble your deal points and phone your contact at Spinoza House.

## **7.2 Negotiation in the Context of an In-Kind Transaction**

Dr. Kazuhiro Rone has collected traditional songs from the heartland of Erehwon. He has also composed a few of them as well based on his recollections of growing up in the central highlands of Erehwon. Dr. Rone has only completed half of

the work. Dr. Rone is one of the country's top composers, and he has ambitions to write the quintessential Erehwonian symphony based on the work.

Dramatix Music, an international music publisher, has offered to exchange the rights to Dr. Rone's work for a fully paid up license to the company's digital music archive for NUE and the Ministry of Culture (MC), which would allow these materials to be accessed from any number of locations in Erehwon. You know that Dramatix has made similar proposals in the past to other universities. This procedure allowed those universities to build up a large collection of music at very little cost.

The agreement needs to be structured such that Dr. Rone will be fully able to continue his work. Consequently, the present work needs to be valued and deal points need to be drafted for the definitive agreement with the music company. The main deal points as you see them are:

1. Dramatix Music grants NUE & MC a fully paid up license to its digital music archive.
2. NUE assigns an exclusive license to the copyright for Dr. Rone's collection of songs from Erehwon's heartland, including songs not yet added to the collection but noted by Dr. Rone for inclusion in the work, to Dramatix Music.
3. NUE grants Dramatix Music a first right of refusal to purchase an exclusive license to the copyrights of new songs by Dr. Rone for the next two years on condition that "songs" are defined as "musical works not having immediate cultural significance for the people of Erehwon" and whereby NUE is only obligated to present new songs to Dramatix for its consideration. (This clause keeps out Dr. Rone's symphony, among other things.)

The value of a license to MC's collection of digital music is not an unknown quantity. MC sells licenses to its digital music to individuals and larger entities. In this case, the license would essentially allow the entire population of Erehwon to listen to the music, although the venues would be restricted to public libraries and similar locations. At NUE, the music could be accessed from a greater number of

locations, and students logged into NUE.net, the university's website, would also be able to access the music.

Based on the published sales figures for MC's licensing collection, you estimate that the value of this license exceeds 10 million Erehwonian Ducats (EHD) per year. While a more elaborate valuation could be performed, you decide to value this license at five years of annual licensing fees, which would make this license worth approximately 50 million EHD.

The first edition of Dr. Rone's song collection sold very well in Erehwon. The collection was available at various tourist destinations, including McMahonian International Airport where most tourists enter and leave the country. The song collection was also made available over various music websites. Sales have been growing steadily ever since the collection was released. This growth seems to have occurred largely through word of mouth rather than as the result of an explicit ad campaign.

Dr. Rone says that he will likely produce a second and third volume before the collection has been completed. Dr. Rone adds that he's not sure how long anybody will be interested in traditional music from Erehwon but he feels compelled to assemble this collection of songs from the country's cultural heritage nevertheless.

You study the sales data for Dr. Rone's existing collection of Erehwonian music. As best as you can tell, some 500,000 copies have been licensed to individuals during the first year of the collection's release. The works have been sold to the public in a variety of formats from LPs to CDs to digital music. The average price for music collection has been 40 EHD. You study various royalty rates for musical artists. Based on the nature of the works, you come to believe that a 20% royalty would be appropriate. While you could use a more complicate formula, you decide that 5 years of sales revenue is an adequate time period for evaluate the value of this first collection. Thus,  $500,000 \times 40 \text{ EHD} \times 0.2 \times 5 = 20 \text{ million EHD}$  just for the first collection.

If you assume that the planned second and third volumes will be equally as successful as the first volume, then you can triple the 20 million EHD number to



arrive at 60 million EHD. You have valued MC's music collection as being worth some 50 million EHD.

What do you do about the 10 million EHD difference? You could ask MC for a cash payment of the 10 million EHD. You could ask MC for a small royalty payment that would likely over time reach 10 million EHD if your sales figures were accurate. Finally, you could simply decide that the value of making MC's music collection available to so many of your fellow Erehwonians was worth 10 million in uncollected revenue, especially since NUE's licensing program is so new.

After some consideration, you decide to add another point to the term sheet above. The term you add is one for a 5 percent royalty for sales of the music collection above 20 million EHD. You figure that this will provide you with adequate protection in the event that your calculations have been performed too cautiously. You assume that he will be amendable to a term that only kicks in once the music collection has proved itself to be profitable.

### **7.3 Valuation of In-Kind Products for Transaction**

Prof. Aaron Finkghoan has developed a series of techniques that can be of aid to victims of trauma. He has trained most of the emergency room practitioners in Erehwon in these techniques and has discussed them at various international conferences. He has written a number of training guides, so the intellectual assets develop by Prof. Finkghoan comprise both copyright and know how.

The National Health Service (NHS) of Lorhran, a highly developed European country, has asked Prof. Finkghoan to provide training in his trauma care techniques for that country's emergency room personnel. The rate that they have proposed for Prof. Finkghoan's work seems slightly more than the rate for a personal services contract. You can see why they might not be willing to pay more in cash, but you also wonder if there might be some products or other services that could be transferred back to NUE. You will need to provide enough valuation for Prof. Finkghoan's work and for whatever proposal you plan in order to make a compelling case to the NHS of Lorhran.

You first look to see what the Lorhranian NHS might have developed or have in its inventory that could be of use in Erehwon. You note that the NHS has a wholly owned subsidiary that produces all the braces, plasters, splints, and other medical type devices used in Lorhran. You also note that the NHS has developed its own line of generic pharmaceuticals. Most of the NHS' generic drugs seem to be forms of antibiotics. As best as you can tell, these drugs have been rated as being as effective as some of the better known generic drugs from major pharmaceuticals. You also note that the surgeons of the Lorhranian NHS provide training around the world in a number of surgical techniques. The Lorhranian nursing academy is considered one of the best in the world, and nurses from all over the world travel to Lorhran for additional training.

You invite the chairman of the NUE medical school to your office for tea along with the head of the NUE university hospital. You give them your list of products/services developed by the Lorhranian NHS and ask them which of those products/services might have the greatest use in Erehwon. Without hesitation, both doctors say that Erehwon would greatly benefit from training in the surgical techniques used in Lorhran. "There are places in the developed world that haven't got a clue how the Lorhranians do what they do," says the medical school dean.

You continue your research to see if the Lorhranian surgeons have ever provided surgical training to doctors from the developing world. You find only one instance in which a team of surgeons from Ghozia, a very poor country, were brought to Lorhran and provided with surgical training for 1 year. You know that the program was considered charitable foreign aid, but you assume that the Lorhranian Ministry of State must have transferred funds to the NHS in order to pay for the program. Fortunately, Lorhran keeps many of its records on line, and you eventually find a description of the Ghozian program. The program involved three surgeons from Ghozia who traveled to Lorhran and studied at the hospital for 1 year with all of their expenses covered by the government of Lorhran. The Ministry of State transferred 4 million Lorhranian marks to the country's NHS to pay for the program. This figure translates to about 5 million EHD. You can quickly calculate transportation costs, food, and lodging for the three Ghozian surgeons and subtract this amount from the 5 million EHD figure, which leads you to conclude that the

Lorhranian NHS valued the training at roughly 4.5 million EHD. You assume that the price of this inter-governmental transfer was probably higher than market rates for similar services.

How much would you charge the Lorhranian NHS for training in Prof. Finkghoan's trauma techniques? You speak with the professor to gain an understanding about what such a program would entail. He tells you that to allow Lorhran to have permanent access to his methods, he would need to give them access to his manuals, train a number of emergency room practitioners, and provide extra training and follow-on training with whatever group was selected to become the head trainers in Lorhran. If these steps were completed, he says, then Lorhran would have an equal ability to carry out his trauma care techniques as anyone in Erehwon.

You ask the professor if his manuals are being updated routinely. He tells you that a few parts of the manuals are routinely updated but that the bulk of the manuals are very stable. He has also formed a professional association that can provide additional training and certification in the trauma techniques. "Like many professional endeavors, we have found that by bringing people together periodically to discuss the techniques we can improve how they are performed. I don't know everything. The sharing of our collective experiences is very helpful," he says.

You ask the professor who has funded his work. He tells you that the Erehwonian NHS in combination with the World Health Organization have funded the development of his trauma care techniques. You track down the budgets associated with these programs and discover that they were evaluated as being an expense of some 6 million EHD over a three-year period with another 250,000 EHD in expenses related to the professional association.

Of course, these figures are based on the average salaries of Erehwonian physicians, an amount that is about 50% lower than the average salary of a Lorhranian physician. You conclude that the program would have cost some 12 million EHD if it was performed in Lorhran, and the professional association would be roughly 400,000 EHD.

You phone the dean of the medical school and ask him if it would be helpful to have 12 Erehwonian surgeons trained in Lorhran. You tell him that the training groups could theoretically be sent to Lorhran over some number of years. He tells you that he knows the Lorhranian system fairly well, and that there was a reason that only 3 Ghozian surgeons were invited to Lorhran. You ask him if this means that the training groups should be 3 surgeons each year over a 4-year period. He responds, "I don't think the Lorhranians could do the training any other way. The problem isn't our ability to send doctors to them. The limiting factor is their ability to train new doctors. They often have their hands full just training their own doctors."

When you meet with the Lorhranian NHS, you propose the following in kind arrangement:

1. Prof. Finkghoan will provide training in his trauma care techniques to physicians from the Lorhranian NHS. Travel and living expenses to be borne by the Lorhranian NHS.
2. The Lorhranian NHS will have a non-exclusive license to the manuals for Prof. Finkghoan's program with no right to sublicense.
3. Lorhranian physicians who have completed the training program will be invited to join the network of professionals who have been trained in Prof. Finkghoan's program.
4. The Lorhranian NHS will provide surgical training for 3 Erehwonian surgeons each year for 4 years, excluding the travel and living costs for the surgeons in Lorhran.

When you explain to the Lorhranian NHS that this transaction involves no exchange of funds between the two entities and further explain that the transaction is a swap of equal value, they readily accept your terms without further negotiation. Your goal for this deal was to obtain positive outcome for each side, and you seem to have exceeded in meeting that expectation.

## CHAPTER 8

### Valuation in Collaborations

#### 8.1 Valuation in Collaborations with Other Universities

Dr. Chris Wree-Ling of the Physics Dept. has developed a pioneering theory in particle physics known as “Jurassic string theory.” The theory is so advanced that only a handful of the world’s top scientists can understand it well enough to evaluate it. Whether the theory becomes accepted or ultimately gets discarded, it has placed Dr. Wree-Ling on the list of the world’s top physicists. The university is doing everything it can to keep Dr. Wree-Ling at NUE and not take a top position in the developed world.

A consortium of the world’s top universities has asked that Dr. Wree-Ling’s papers on Jurassic string theory be included in a collaborative program they are developing. The first part of the collaboration involves a combined effort to produce materials like flash cards, tutorials and other training materials for physics students and scientists worldwide. The second part of the collaboration involves further scientific research into various advanced physics theories. You need to evaluate the proposals for collaboration to make sure that NUE’s rights are appropriately recognized and that Dr. Wree-Ling is sufficiently happy that he won’t go elsewhere. Dr. Wree-Ling’s theory was ironically inspired by the centuries’ old Erehwonian myth of the Gortha, which possibly suggests other forms of Intellectual Assets, especially if Jurassic string theory gains acceptance.

Your first objective is to make certain that nothing more than non-exclusive rights are transferred to the consortium. You don’t want to inadvertently surrender all the rights related to Dr. Wree-Ling’s theories to the consortium. The consortium has thus far not mentioned anything about remuneration or profit sharing.

You assume that the participants will share the profits equally. If so, you want to make sure that the contributions of the others are comparable to the materials contributed by Dr. Wree-Ling. You ask Dr. Wree-Ling who else is contributing in

the project and what they have indicated they would be willing to contribute. You ask Dr. Wree-Ling how these proposed contributions compare with his. You realize that Dr. Wree-Ling is likely to either be too arrogant to give you an accurate description – or too humble to give you an accurate description. However, he is an expert in this field, so you have the opportunity to gain some useful information from him. For example, he tells you that while Dr. Colbert from the Alaskan Institute for Advanced Physics is the world's greatest expert on star rope theory that his proposed contribution to the consortium materials relate only to string theory and would generally be less valuable than if he contributed something related to rope theory. On the other hand, he tells you that Dr. O'Reilly from the Flemish Physics University has developed a startling new theory regarding classical Newtonian physics and that Dr. O'Reilly is proposing to include this very theory among the materials that he provides. Dr. Wree-Ling comments that on balance the contributions are comparable to his.

As a backstop to the information provided by Dr. Wree-Ling, you decide to ask some of his colleagues in the Physics Dept. the same questions. They tell you that Dr. Wree-Ling is generally very humble but not so humble that he doesn't understand when he has developed something of global interest. They also tell you that Dr. Wree-Ling is on the editorial review committee for several physics journals and that he is exceptionally good at dispassionately critiquing and evaluating the work of his peers.

You conclude from this that if all the participants' contributions are equal, more or less, and if their share of the profits is equal, then NUE should participate. You can save the development of a formal revenue projection for a later day. So long as the university is getting an appropriate share of the revenue pie, you don't really need to calculate the size of the pie. It's fairly clear to you that participating in this consortium will be of great benefit to the university.

## 8.2 Valuation in Collaborations with Other Institutes

Prof. Gino Karmli has conducted experiments with various endothermic chemicals. He has developed some new chemical substances and exploited existing properties of other chemicals in previously unknown ways. His work has been patented but he has also developed a vast amount of know-how as well as some trade secrets. The endothermic area has been growing recently, and Prof. Karmli has been asked to join a network of other institutes researching endothermic chemicals.

This network, known as the Endotherm Coalition, has been funded by various governmental and pan-governmental organizations along with a few very large corporations. You need to understand the implications of joining this collaboration in terms of future commercial exploitation, and you also need to know roughly how much Prof. Karmli's existing work is worth in order for you to gauge the significance of any contributions that NUE makes to the collaborative effort.

You review the paperwork associated with joining the Endotherm Coalition. Among other things, you note that all the members have a right to license the contributions of the other members, and you note that the Coalition itself receives a 10% royalty from all royalties associated with inventions and innovations deriving from Coalition work. The paperwork is unclear what the Coalition does with its royalty stream. The paperwork is also unclear how royalty rates among other Coalition members will be set. The paperwork is also vague in terms of the very large multinational companies' benefits from their membership in the Coalition.

You phone an associate at the Univ. of Northeast Paris whose institution is also a member of the coalition and ask him about the IP licensing clauses. He tells you that the clauses have actually proven controversial in only a few specific instances. He also tells you that changing these clauses has proven to be a political nightmare, which is why the participants have so far generally opted for a reasonableness that does not appear in the literal words of the agreement. He further tells you that no one would blame your institute for not participating because of the IP clauses.

“Several large institutes have chosen not to participate until the IP clauses are changed,” he says.

You ask your colleague if anyone has made a conditional entry to the Coalition, e.g., qualified on the condition that no cross licensing rights apply unless the licensee terms are within 10% of market rates. He tells you that while some institutions have discussed terms like this, no one has formerly proposed such terms. He adds that he suspects they would be accepted but only after a lot of argument. “The Coalition started off with great promise,” he says, “but a number of things like these IP terms have caused our growth to rapidly slow,” he adds.

This information tells you that you are free to amend the paperwork before you submit it. This information also tells you that while the Coalition may offer many good advantages, the advantages are not so great that you will join under all circumstances. You have learned over the years to assume that the literal terms of an agreement are precisely what will happen despite anything you have been verbally told to the contrary.

You don't mind the cross licensing term, generally, but you want to make clear to the other members that sharing IP in the Coalition is not something you plan to give away for free. It doesn't matter to you that Erehwon is but the third developing country member of the Coalition – joining this coalition is not primarily being done to show that Erehwon has arrived on the world chemistry stage but is primarily being done for sound economic reasons, and if those reasons aren't present, then you are willing to explore other opportunities.

You ask Prof. Karmli about the know-how that his laboratory has developed in the endothermic area and about the related trade secrets that he seems to have developed. The professor explains that his know how is pretty much like any other lab in the coalition. He says that in the particular area in which he works there are some five other top researchers worldwide. “I'm pretty sure they know just about everything that I know,” he tells you, adding, “And whatever they don't know that I already know, I would imagine that they could figure it out in a couple of weeks.” You ask him about the other Coalition members. He explains to you that loyalties in the Coalition more or less cluster around various groups and that within each group,



there is at least one research group that could figure out his “know how” in a fairly short period of time.

“The trade secrets are sort of a different matter,” he tells you. “The trade secrets all relate to a particular class of chemicals whose combinations should logically operate in another way,” he says. “In fact, I didn’t believe these results were possible at first. I eventually came to understand why the procedure leads to a completely unexpected result, but it’s not obvious,” he says. Even a PhD with 15 years of experience would guess *a priori* that things would operate differently than reality shows, and because of this, they wouldn’t be motivated to even see if this approach could work.

You also ask the professor how these trade secrets can be applied to any commercial projects. “Not really,” he says, adding, “Well, maybe eventually. But it’s going to be a number of years.”

You further query the professor how his patents relate to the trade secrets. “They don’t relate much at all,” he says. The patents are all about taemeostablic endothermic chemicals, he says, adding, “I’m not the person who invented this particular field, but I believe my three patents add a more practical approach than the one that most people have pursued commercially.”

You ask him if any of the companies that might want to license these patents are members of the coalition. “Yes, I think there are 2-3 companies who are members of the Coalition who would like to have the rights to use those patents,” he says.

You ask Prof. Karmli if there are any technologies that are in the Coalition that he might like to have access to if the price was right. He immediately answers that NUE would benefit from at least three of the technologies are in the Coalition. He adds that gaining access to these particular technologies is why he wanted to join the Coalition in the first place.

Prof. Karmli tells you that all three of the technologies that he would like to know more about are owned by government research labs in three difference countries. He further tells you that he spoke with the principal researchers for each of the technologies at a conference in Madrid a few months ago. Each of the

principals indicated that they had developed a great deal of know-how and some trade secrets associated with their inventions. Two of the three technologies have been patented as well.

Prof. Karmli then volunteers that while he is not a valuation expert, from what he can tell, each of these three technologies probably has about the same value as his endothermic chemical innovations. You ask him if any of the three other institutions would want a license to his endothermic chemical inventions. He tells you that while none of them would be disinterested that only one of the three research institutions would actively seek his work.

You phone the technology transfer office at the research institute that would probably want expertise in Prof. Karmli's endothermic chemical inventions. You explain the area that Prof. Karmli would like to know more about and propose an in-kind exchange at no cost. The technology transfer office tells you that they cannot make any licensing arrangements outside the Coalition. You propose that as part of your admission papers that NUE declares that it will accept in kind exchanges with other Coalition members and that such exchanges will be considered value neutral but the parties will pay 10,000 euro to the Coalition as a flat processing fee. You also mention to the technology transfer officer that you plan to add as a condition for joining the Coalition that NUE will provide its technology for licensing to other members at no less than 10% of the fair market value. She tells you that her institution will support your conditions for membership, and she also tells you like your other colleagues have that the licensing terms for the Coalition are thwarting economic development rather than aiding it.

### **8.3 Valuation in Collaborations with Commercial Entities**

Prof. Geoff LeRoan has developed a business simulation software package. The relevant intellectual assets comprise software, copyright, know how, and trade secrets. There are no patents. The business simulation package can be used not only to train managers, the software can also be used to diagnose certain types of internal problems with existing businesses. An alliance of business faculties from the developing world, the Association of Business Faculties (ABF) would like to

collaborate with Prof. LeRoon in fine-tuning this software for operations with businesses in the developing world. The project is intriguing but you need to know how much Prof. LeRoon's work is worth, and you need to understand how these various diverse partners will operate, and provide a mechanism for how the resulting intellectual assets will be owned and managed.

You ask Prof. LeRoon how much additional work is contemplated in turning his business simulation software package into the product contemplated by the ABF. He explains that his program will provide the engine for a whole range of business diagnostic tools, some of which might not be made for many years. He further explains that both he and the ABF are in the process of developing a common business description language. Their talks thus far have identified 128 elements that describe any business. By reconfiguring his software to operate around descriptions using these 128 elements, it will be possible to then develop all kinds of tools that interact with businesses on the basis of these 128 elements. The software will operate almost as if these 128 elements comprise business "DNA." Apart from identifying these elements, Prof. LeRoon and the ABF are also working diligently to provide units of measure for each of the units. "We are measuring real world corporate DNA," he tells you, adding "These are the building blocks of any business." Other studies by the ABF will focus on retrospective studies of historical businesses to find common linkages between particular groupings of these elements.

You ask the professor how much of the work was performed by him before he began speaking with the ABF. He tells you that his initial software was built around a similar concept but one that ultimately operates somewhat differently. However, his software was fairly easy to modify. The ABF had been discussing "business DNA" for many years but had never taken steps towards integrating and automating their own work, let alone putting it in a business management engine, such as the one developed by Prof. LeRoon.

You ask the professor if there is much commercial potential for his original software tool. He tells you that it has some potential to solve certain niche business problems and that a moderately successful product could probably be built around

the original software package, although the one contemplated jointly by the ABF represents by far the more intriguing and commercially lucrative product.

Prof. LeRoon tells you that the software's initial target for corporate usage pertains to what's known in literature as the "Vector 12" problem. He tells you that his software solved all the known vector 12 problems for any company in a much more robust and accurate manner than any other software that he knows about.

After the professor leaves, you search the internet for solutions to the Vector 12 problem. You discover that the typical solution for the Vector 12 problem costs about 1-2 million EHD for an enterprise license for companies of all sizes. The market for Vector 12 solutions has somewhat plateaued. Nevertheless, there is a market for vector 12 software. As best as you can tell, the market for Vector 12 software amounts to some 15 million EHD per year. You ask Prof. LeRoon a few more questions about his software and come to the conclusion that Prof. LeRoon could probably capture 15-20% of the market for vector 12 software if his software was offered in a commercial format. There are presently more than 20 companies offering Vector 12 solutions.

From the information above, you conclude that any license granted to the ABF for Prof. LeRoon's software should be non-exclusive so that NUE is free to explore other commercial uses for the software.

You next try to get an appreciation from Prof. LeRoon about his contributions relative to those of the other members of the ABF. He tells you that the Univ. of Nashville, the Grand École of Bergen, and the Univ. of Shiraz have made some very exciting and novel proposals. Everyone else in the ABF has made some useful contributions but those are the standouts, he says.

You ask Prof. LeRoon how much of the overall program depends on his software. He is somewhat reluctant to answer this question, but eventually tells you that his contributions amount to more than 30 percent of the whole. You check with some of his colleagues as well as others outside the university, and they all confirm ranges consistent with a 30% contribution by Prof. LeRoon.

While you could calculate a precise valuation for Prof. LeRoon's software in the ABF, you realize that this is not necessary so long as the ABF agrees to the following terms in the collaboration:

1. All contributions are provided on a non-exclusive basis.
2. No participant will offer or assist a directly competing product to the ABF product.
3. NUE will receive 30% of the profits due to Prof. LeRoon's contributions.
4. NUE has the right to withdraw from the project if the ABF product is not offered on commercially reasonable terms and marketed within a commercially reasonable timeframe.

## **8.4 Valuation of In-Kind Compensation in Collaborations**

Prof. Yang LaGrayu has spent years researching institutional investors and he has devised a series of techniques that could probably improve the returns from their investment portfolios. Monte Carlo simulations using his techniques consistently show improved returns. The Johnson-Rache International Investment Company has proposed collaborating with Prof. LaGrayu in developing an investment product for institutional investors that will employ these techniques and in researching if the techniques could be adapted for regular investors. You need to value Prof. LaGrayu's work and develop the deal points for collaboration with a sophisticated international company.

You note that the proposed deal involves two products – a product for institutional investors and a product for retail investors. These are different products for use in different markets and should be analyzed differently.

The first product is an investment product for institutional investors that employs Monte Carlo simulations to arrive at a superior investment. You ask Prof. LaGrayu for a little more detail on the “secret sauce” in his invention. He explains how the program operates in a sufficiently detailed manner that you can now search to see if there is a similar product on the market. You look but don't find anything. You also look for products that support the institutional investor and find many products that have similar end goals but get there by completely different

approaches. You notice that these products are fairly expensive. After further inquiries, you discover (as you suspected) that the price is high because the market is fairly small and the target market is fairly price insensitive. Almost no one in this field buys one investment advice product over another one because it is cheaper. This market is incredibly results oriented, so price doesn't really matter much.

You ask Prof. LaGrayu what Johnson-Rache will need to do to the product before it can be sold to institutional investors. The answer is a somewhat startling, "nothing." You inquire further and Prof. LaGrayu explains that lots of people come up with ways for improving institutional investing. The key to the market is having credibility, and one of the best/easiest ways to have credibility is to have a firm like Johnson-Rache stand behind your product. "So, the value to this collaboration is the lending of their good name to your product?" you ask. "Absolutely. My software combined with their seal of approval," he says. You ask the professor if he knows of other investment products that are actually made by someone other than the investment company. His answer is: "most of them." This provides you with helpful information in terms of determining what sort of revenue share you should receive from Johnson-Rache. After surveying the market, you discover that NUE should be pleased with a 40% revenue share and accept nothing lower than 30% in situations like this.

When you have more time, you can calculate an estimate as to how much money this might be, but for now, you just need to remember the key deal point – a 40% revenue share combined with language that will require Johnson-Rache to sell a certain level of subscriptions/services each year for 5 years in order to keep the license from terminating early.

Your research has provided you with some insight into how much institutional investors will pay for certain services, and you provide an average of these rates as a floor term for Johnson-Rache's service offerings.

You next ask Prof. LaGrayu about the retail product, the other piece in his collaboration. He tells you that this product will require a bit of additional work by a small team of software developers in order for the product to be sufficiently

attractive for retail customers. He tells you that Johnson-Rache has a staff that could handle the job of turning the program into commercial software.

Prof. LaGrayu also provides you with information about other competing products in the retail space. You learn that these products are much more price sensitive than the institutional investment products. Prof. LaGrayu tells you about one product in particular that is fantastically good for the retail market but that has a price structure that renders it too expensive for most retail customers even though most of them would more than recoup their costs for using the product. Now you know that in addition to Johnson-Rache possibly deciding to sell the product for too low a price, they could also decide to sell the product for too high a price. You need some assurances that they will sell the product at a reasonable price.

Since Johnson-Rache will need to do some work in order to turn Prof. LaGrayu's program into a retail product, you decide that the revenue share for the retail product should be lower than the revenue share for the institutional product. You ask Prof. LaGrayu how many work months would be needed to turn the program into a retail product, and he tells you that 3 months would probably be enough. He also reminds you that some advertising and marketing efforts would be needed, and that Johnson-Rache would be the ones who paid for this work. You tentatively decide upon a 25% revenue share for the retail product with provisions in this part of the agreement with a mechanism for requiring that the product be offered at a reasonable price.

## 8.5 Valuation in Collaborations with the Public

Prof. Mikhail Llyret has written a guide to the world's great philosophies for young students, ages 11-14. The guide has received a lot of praise, but there are many such guides in the world. The operators of Philopedia, a free on-line educational resource with a huge international following, have approached Prof. Llyret with an offer to publish his guide in their resource.

As a free open source collective, their website, the Philopedia, which advertises itself as “The ‘GoTo’ Place for Great Minds,” cannot and will not pay anything – but the inclusion of Prof. Llyret’s work would mean that thousands of teachers and students worldwide would be exposed to the writings of an NUE professor. You need to value Prof. Llyret’s work just to verify that you’re not giving up too much by contributing these materials, and you need to demand certain terms from the Philopedia operators before you agree to provide the materials.

At the outset, you identify the following terms for an agreement with Philopedia:

1. Prof Llyret will be the exclusive provider of philosophical material for students ages 11-14 on Philopedia and any related websites.
2. Prof Llyret’s contributions will be acknowledged by name along with his institutional affiliation.
3. Prof Llyret will be free to sell the philosophical materials in other forms and other media but will refrain from providing the philosophical materials on another website.
4. Prof Llyret retains any merchandising and/or resale rights for the philosophical materials provided to Philopedia, although they might be branded by Philopedia.

In terms of valuation, you discuss with Prof. Llyret the size of the market for philosophical instruction materials aimed for youngsters between the ages of 11-14. He tells you that there is one commonly used textbook, and no on-line materials that he knows about. He also adds that much of the information is already available in one form or another on various websites, although the materials tend to use a vocabulary that is typically too complicated for children of those ages. The material also tends not to be organized in a manner suitable for children of those ages.

Prof. Llyret warns you that before you go too far in performing a valuation of his materials that you consider seriously how much anyone would actually pay for such materials, especially given that comparable free materials are available. “I can’t imagine anyone paying a subscription fee,” he says, “and I can’t really imagine a website supported by advertising revenue either.” Prof. Llyret points out that there is probably a textbook market for the materials, but you have already discussed



excluding the use of the materials by Philopedia so this is not really much of an issue. “I think this is just a great promotional opportunity for the university, and I would leave it at that,” he tells you. After thinking about this for a few minutes, you decide that you agree and send your four deal points above to Philopedia.

## CHAPTER 9

### Valuation, Commercialization & Litigation

#### 9.1 Simple Case Evaluation for Litigation

Dr. Philo Wro-Brok developed a series of techniques for compounding drugs. As one can imagine, the general topic of drug compounding is well known in the prior art. But the professor's techniques provide for a surprisingly improved final product. There are no patents on the professor's method, only trade secrets and related know how.

One of Dr. Wro-Brok's graduate students was recently hired by a multinational pharmaceutical Gwen-Pro International and is using Dr. Wro-Brok's methods in his new position at Gwen-Pro. The pharmaceutical has been contacted but has so far not provided a proper reply. Dr. Wro-Brok did not detail these techniques to his students. The student involved could only have found these methods by snooping through Dr. Wro-Brok's files. You suppose that Gwen-Pro might have even paid the student to find the trade secret materials as a condition for employment. The question for you to decide is whether this case involves enough money to bring a lawsuit against the pharmaceutical. To answer this question you will need to evaluate the extent to which these compounding methods really are trade secrets (no leakage, no independent development) and you will need to see if their employment is sufficiently commercial to bother with litigation if the pharmaceutical will not negotiate a settlement.

This problem provides a simple case that shows the interplay between business, intellectual property strategy, and the law. Our discussion will aim to describe what "can happen" as opposed to what "should happen" under various normative regimes. We will leave normative discussions as an exercise for the interested reader.

We will first describe the civil litigation process as it pertains to all causes of action, not just intellectual property cases. After describing civil litigation generally, we will narrow the discussion to intellectual property litigation specifically. The

pertinent intellectual property right here is theft of trade secrets. The possible damages may vary greatly from jurisdiction to jurisdiction. Additionally, whether NUE can obtain a post-litigation injunction also varies greatly from jurisdiction to jurisdiction. You will need to investigate these points with your litigation attorneys if you proceed.

You ask your attorneys to explain the litigation process to you. They explain that the world's legal systems comprise two primary forms – the civil law system and the common law system. Both systems have their origin in Europe, albeit with earlier forerunners in ancient Rome and Mesopotamia. Modern civil law systems originated in continental Europe during the early 19<sup>th</sup> Century. The common law system originated in England and spread to nearly all regions colonized by the English.

Each legal system has its advantages and disadvantages. Civil law systems generally strive for justice through consistency of repeated outcomes. To achieve this goal, civil law systems typically maintain a book of laws that proscribe the outcome for every legal dispute. Thus, the rules in the law book may not typically be changed for a given case. Common law systems strive for justice in a process that values judges over written laws. While many written laws exist, common law judges are allowed to interpret those laws to fit new fact patterns. Thus, the common law process continually strives to discover the “essence” of the law so that it may be accurately applied to new and unique fact patterns. In both civil law and common law, an old, well-known fact pattern in a case should result in the same outcome as in previous cases, all things being otherwise the same.

All litigation systems must address similar issues, such as how information gets to the trial proceeding for presentation before the court. A legal system may be rationally designed to include all extremes from limited document evidence and no witnesses at trial to essentially unlimited document evidence and testimony from pertinent witnesses. Common law systems tend to fall on the side of broad evidentiary discovery, including ready access to pertinent documents and witnesses. A huge amount of evidence tends to be gathered during a pre-trial document collection process known as “discovery.” During trial, each side presents to the

court a smaller fraction of the “best” evidence collected during discovery. In the event of the death or unavailability of a witness whose testimony was collected during discovery, the parties may often use the witnesses’ deposition at trial in place of live testimony and/or to supplement live testimony. Civil law systems tend to permit less discovery.

In some countries, witnesses’ testimony is not allowed at trials and the only documents presented to the court come from publicly available materials, e.g., the allegedly infringing product itself in a patent case. Each legal system has its advantages. Systems with robust discovery may ultimately arrive at more accurate verdicts that consider all sorts of nuances to a given problem but be expressive to operate while systems with limited discovery may provide answers to legal questions quickly and cheaply.

Table I below illustrates the stages typically found in a commercial litigation of any cause of action, not just intellectual property cases. After the filing of the lawsuit, the litigation proceeds through the stages of discovery, pre-trial motions, trial, post-trial motions, and appeal. The appeals process typically falls at the end of the court proceedings, which may possibly terminate as early as the pre-trial motions if the judge grants a motion for summary judgment on a matter that would end the case; e.g., granting a motion to find a patent invalid. While Table I shows a mostly common law arrangement, these stages are mirrored in civil law jurisdictions, although not all of the components may be present, and the stages may also have different names.

|           |  |
|-----------|--|
| <b>1.</b> | <b>Lawsuit Filed</b>   |
| <b>2.</b> | Discovery  |
|           | <ul style="list-style-type: none"> <li>• Persons</li> <li>• Documents</li> </ul> |
| <b>3.</b> | Pre-Trial Motions  |
| <b>4.</b> | Trial  |
| <b>5.</b> | Post-Trial Motions   |
| <b>6.</b> | Appeal   |

**Table I. Stages of Litigation (Common Law)**

The course of a litigation may not always be as linear as shown in Table I. For example, a judge may decide some pre-trial motions during the discovery process,

including motions related to the breadth of the discovery process itself. Not surprisingly, many parties often ask for more information in discovery than they should be allowed to see as a way of “snooping” on their competitors. Equally unsurprisingly, other competitors will often argue that an opponent’s discovery request is “overbroad” when the discovery request has asked for the information that will cause that party’s case to unravel. For this reason, judges often need to make decisions about specific discovery requests. Some cases are essentially over after the completion of discovery because the parties, or at least their attorneys, now know who will likely win the lawsuit if it goes to trial. This is one of the reasons why 76% of all patent litigations in the US settle before trial.

Judges typically decide all the pre-trial motions before trial begins. Among the pre-trial motions are often motions for dismissal of the case on various grounds. Trials consume a court’s limited resources, and if the judge believes that no reasonable judge or jury could decide a case in any other way but one, then it is simply more efficient to decide such issues outside of trial. These pretrial motions include motions for summary judgment, which we discuss later. Thus, by the time trial begins, the court may only require testimony from each side on a very narrow set of issues, all other issues having already been decided.

Similarly, a trial judge should decide all potentially pertinent post-trial motions before the parties seek an appeal of the verdict in a case. For example, the US system allows a judge to alter, on a parties’ motion, the amount of damages awarded in a case. If one party in a case is going to appeal a decision related to invalidity of a patent, then it is simply more efficient for the appeals court to decide all issues that could potentially be raised on appeal, such as issues related to the damages awarded in a case.

Once the judge has disposed of the pre-trial motions, then the trial may be held on those issues still remaining open for decision in the case. As a case progresses, the litigants or their attorneys are compelled to determine which issues they agree upon and which issues they disagree upon. This process simplifies the litigation process during trial. Litigants may disagree about what the precise law is for a given aspect of the case, and they may also disagree about particular facts pertinent to the

case. The judge will determine what the applicable law is for a case; the jury will determine those facts in dispute.

In any trial, someone must serve as the finder of law (what is the law) and someone must serve as the finder of fact (what are the facts). In many legal systems, the parties may ask for the factual questions to be decided by a jury, as opposed to a judge. In systems where a jury is present, the jury is the finder of fact for many issues. The jury is never allowed to be the finder of law; this is a role solely for judges. When no jury is present, then the judge serves as both the finder of law and the finder of fact. In some systems, either a judge can decide a case or a jury, while in still other cases, only a judge or a panel of judges may decide an issue at trial court. Once the law and the facts have been determined, then a verdict may be rendered.

If there is a jury, then the judge typically provides precise instructions to the jury in terms of what they are asked to decide for a given case. The jury may not be asked to decide all the issues pertinent to a case. As previously mentioned, the parties may have already agreed upon certain issues. Assume, for example, that the parties have agreed that a given patent is valid but disagree on infringement. The jury will only be asked to render a verdict on the infringement issue. Assume further that the parties agree that a patent is valid and infringed but disagree on the amount of damages. In that case, the entire trial will only be about the appropriate amount of damages, and this is the issue that the jury will decide. Once the jury has rendered its verdict, then the judge may apply his ruling. A trial may be conducted without a jury. In such cases, the judge will also determine the facts of the case.

Your attorneys point out that it is not uncommon for a judge to grant a motion for a summary judgment in intellectual property cases. A summary judgment essentially means that no trial should be held because all reasonable courts and judges would decide the case in the same manner. Thus, the judge has concluded that it would be a waste of resources in such cases to actually hold a trial. However, if the judge grants a summary judgment motion, then the losing party may immediately appeal the decision to a higher court. For this reason, some cases may involve multiple appeals over several years.

Appeals courts rarely decide factual issues in many jurisdictions. Appeals courts might not hear witnesses and or take new evidence. These courts typically review the record presented by the court below, hear the pertinent arguments of the parties, and determine if the law was properly applied. Assume that the appeals court overrules the trial court. This means that the case will return to the trial court where a trial will now be held. The appeals court's decision, incidentally, does not necessarily mean that the prevailing party is correct overall – it means instead that in this particular case, the judge was incorrect on a particular legal issue.

Now that the reader has some appreciation for the framework for dispute resolution provided by the court system, we can discuss the litigation of trade secret theft cases within this framework. Trade secret litigation definitely has certain special rules, but most of these rules are simply refinements upon general issues dealt with in any civil litigation.

Since trade secret litigation obviously focuses so closely on the trade secret itself, we will first explore some of the characteristics of a trade secret. A major factor in most trade secret litigations is the extent to which a purported trade secret actually satisfies the legal definition of a trade secret. The definition of a trade secret may vary from jurisdiction to jurisdiction, but generally a trade secret must satisfy three factors in order to be a legally protectable trade secret. These three factors are: 1) the information is not known to the general public, 2) the information provides some form of economic benefit to the holder where the benefit derives primarily from the information not being publicly known, and 3) reasonable efforts have been undertaken to maintain secrecy of the trade secret. A trade secret need not necessarily comprise technical information and may often include things such as customer lists and preferences. Here, of course, the information is primarily technical in nature.

Your investigation leaves you with a reasonable level of comfort that the information provides an economic benefit. Dr. Wro-Brok has from time-to-time consulted with many of the world's largest pharmaceuticals regarding his methods. In each instance, the party involved has paid huge fees to Dr. Wro-Brok and NUE

for the services. The pharmaceuticals have also agreed in writing to retain the information conveyed in confidence.

You were not initially certain about Dr. Wro-Brok's level of trade secret security until he explained his procedures to you. You were actually surprised at how cumbersome they were and realize that they must have been quite a burden to Dr. Wro-Brok in his daily activities. Thus, you are convinced that the third prong of trade secret protection will also not be a problem in the case.

You are somewhat concerned, however, that the methods might have been independently invented and then publicly disclosed by others. You consult with Dr. Wro-Brok and his colleague Dr. Ramses, and both of them provide fairly convincing reasons as to why the information has likely not been publicly disclosed by someone else. You conduct a quick search using key words that describe Dr. Wro-Brok's methods and nothing turns up. Nevertheless, you and your litigators agree that this is likely the weakest point in the litigation. Your litigators explain to you that every litigation has at least one weak point, and at least one strong point.

As you and your attorneys assess the case pre-filing (that is before filing the case in court), the conclusion is that NUE will likely be able to prove all the elements of a theft of trade secrets case. The weak elements are the extent to which the methods were known by others (and thus not proper trade secrets) and the extent to which Gwen-Pro International, the large pharmaceutical company, was aware that the graduate student had stolen the techniques from Dr. Wro-Brok. Based on the information provided by Dr. Wro-Brok, there appears to be ample grounds for believing that Gwen-Pro encouraged the student to steal the documents.

Your litigators tell you that the case will most likely need to be filed in Propalandia, a hybrid common law and civil law jurisdiction. Discovery in Propalandia is somewhat limited but not completely circumscribed. In Propalandia, the losing party to a litigation pays half of the winning party's attorney's fees, provided the judge does not declare the case to be "frivolous," in which case the losing party pays all the attorney's fees. Your attorneys assure you that such



declarations are rare and that this case, if brought, would be very unlikely to be declared frivolous based on the information presently known to NUE.

But before you can authorize your attorneys to file a litigation for theft of trade secret, you need to have some understanding about how much the case is worth. Otherwise, there is no economic justification for bringing a case. Of course, there may be other reasons for filing a case beyond seeking compensation – but you need to understand the question of compensation nevertheless.

Your litigators explain to you that the goal of compensation in all civil cases brought in Propalandia is to restore the injured party to the position that it would have enjoyed if the injury had not occurred. A secondary goal is to punish the party who caused the injury. Your litigators further explain that since Dr. Wro-Brok had not commercialized the techniques himself that obtaining a large damage award might be difficult. On the other hand, the hypothetical restoration of pre-injury rights would likely mean that Gwen-Pro would be enjoined by the court from using the trade secrets, meaning that the company would be prohibited from continuing to use the techniques.

Your litigators further suspect that the court's economic valuation of Gwen-Pro's use of the techniques prior to the court judgment would likely be determined according to a Propalandia national scale which is approximately 5% of a defendant's net sales. You and your litigators believe that at this point, Gwen-Pro has probably made no more than 1 million euro in net sales, which would bring a damage award of 50,000 euros.

Thus, you conclude that the court would at best award NUE – an injunction against Gwen-Pro, an award of 50,000 euros, and a 50% reimbursement of attorneys' fees. Your attorneys have estimated that the case would cost approximately 120,000 euros if litigated. Thus, your net reward from litigation would likely be: an injunction against Gwen-Pro minus 10,000 euros, and this is the best outcome. The worst outcome is losing the case, which would cost NUE 120,000 euros in litigation expenses plus 60,000 euros in litigation reimbursement expenses, for a total of 180,000 euros, assuming that Gwen-Pro paid its litigators a comparable amount.

At first glance, litigation does not seem like a good option. But you begin to wonder about the “value” of the injunction. You ask your litigators if parties in a dispute in Propalandia can convert an injunction into a license. Your attorneys tell you that such procedures are extremely common, and the most frequent approach for ending a litigation in Propalandia. “The courts there want litigants to settle,” says one of your attorneys.

So, you wonder what the value of the injunction would be to Gwen-Pro. You speak with Dr. Wro-Brok about the advantages of his compounding methods. He tells you that there are two advantages – the first is in simplified production. Using his techniques is simply cheaper than conventional methods. The second advantage is in shelf life. His techniques generally extend the shelf-life of drugs by 1-2 months.

You conduct some research into the costs of drug production for the classes of drugs that Dr. Wro-Brok says are amenable to his techniques. You also research how many drugs in these classes need to be discarded prior to sale due to expiration. The analysis is not terribly difficult computationally, but there are a number of calculations to make. You apply a fairly low discount rate to your equations because there is almost no uncertainty to the usefulness of the techniques themselves. You also discover from Dr. Wro-Brok that the techniques likely have a 7-8 year usefulness since that is about the time when most people in the industry believe that a new class of medicines will become available that likely won't be amenable to these techniques. Using the information that you have gathered, you concluded that a fair market net present value for the use of the techniques by Gwen-Pro ranges from 2.5-4 million euro. You suspect that Gwen-Pro may likely fight hard against the case using every apparent weakness. However, you conclude that if NUE presents a strong case that Gwen-Pro might find a settlement of roughly 1.5 million euro attractive. You further suspect that they might even pay substantially more for exclusive rights to the techniques.

From this information you conclude that NUE should probably file a lawsuit against Gwen-Pro – with the most likely downside outcome being 10,000 euro while the most likely upside outcome is around 1.5 million euro. You phone your litigators and ask them if they believe that contacting Gwen-Pro one more time with

a very specific settlement offer would be a better tactic than filing a lawsuit right now. You have now made all the strategic decisions in the case. Everything else is just a question of tactics.

## **9.2 Patent Litigation of Anti-Allergan Pharmaceuticals**

Dr. Preskat Uh-Rang developed an allergy treatment program that revolutionized the treatment of allergies worldwide. The program was sold (before your appointment) to Absalan-Khranma, the only pharmaceutical company in Erehwon. Absalan formed a partnership with Hall-Baker, a multinational pharmaceutical company when Absalan realized that it didn't have sufficient capital or expertise to market the drug internationally and obtain the necessary regulatory approvals worldwide.

The program centers around a drug invented by Dr. Uh-Rang called trazextamole that subsequently became an international blockbuster. Dr. Uh-Rang's fundamental patents are close to expiration now and generic manufacturers are lining up. Hall-Baker has filed several patent lawsuits over the years. You need to monitor these litigations and the issues in them because the university still has a hefty revenue share with Absalan over the drugs. Ironically, one of the companies lining up to be a generic manufacturer is Absalan itself. Their agreement with Hall-Baker did not contemplate this possibility and over the years Absalan has grown significantly in its ability to manufacture pharmaceuticals.

NUE receives 25% of Absalan's profits from the drug, and Absalan receives 15% of Hall-Baker's profits, and forthcoming settlements with various generic manufacturers are not explicitly included in the existing agreement. Hall-Baker has offered to pay Absalan 15 million euros to settle any dispute and locate their research center for anti-fungal research in partnership with Absalan. NUE might benefit but is not explicitly mentioned in the proposed settlement agreement with Absalan. Hall-Baker is friendly enough but pushy and wants things ended soon. They have offered 5 million euro to the university over and above what they offer to Absalan, and Hall-Baker has offered to fund two anti-fungal professorial positions at NUE for a minimum of five years. The question you need to answer is whether this

is a good enough deal for the university to accept or whether NUE should ask for more.

We will begin by examining the patent litigations related to the trazextamole drug, marketed in some countries as “Blu-Cure.” The Blu-Cure litigations illustrate the behaviors of corporations engaged in intellectual property rights (IPR) disputes against each other. The litigations involve legal, business, technical, and public policy issues. The cases revolve around the IPR development and commercial exploitation strategies of the drugs like trazextamole. The Blu-Cure litigations are pharmaceutical cases and the regulatory nature of the pharmaceutical industry renders certain aspects of pharmaceutical IP strategies different from those of other industrial sectors, such as consumer electronics; however, the litigation process is the same regardless of the ultimate IP strategy shaped by specific business and technology factors.

Dr. Uh-Rang pioneered the use of trazextamole as a treatment for a variety of allergy conditions. Allergy treatments often involve a reasonable amount trade secret information, as well. Allergists tend to treat their patients in slightly different ways from their peers. Dr. Uh-Rang also developed a number of therapies for allergy treatment that Hall-Baker has promoted. Many of these treatments are likely still trade secrets, although a few of them may have become publicly known. The subsequent patent litigations have often included trade secret-related claims as well.

The world market for allergy disorders has been estimated at nearly 30 billion Erehwonian Ducats (EHD) annually, with the so-called molecular loop stimulator (“MLS”) drugs like trazextamole controlling approximately 20% of the market. The global anti-allergen market has been steadily growing for several decades and is expected to continue its growth for the foreseeable future.

Trazextamole operates as molecular loop stimulator (“MLS”), a drug that operates to stimulate the production by the body of substances like adrenaline that may in turn lessen allergic reactions and help build immunity to various allergens. Allergic reactions occur when a person’s immune system reacts to otherwise harmless environmental substances. A substance that causes a reaction is called an allergen. Thus, an allergy is essentially a form of hypersensitivity. However, allergic

reactions are distinctive because of excessive activation of certain white blood cells called mast cells and basophils by a type of antibody called Immunoglobulin E (IgE). This reaction results in an inflammatory response which can range from uncomfortable to dangerous. The molecular loop stimulator drugs like Trazextamole act to help the body produce more adrenaline. Allergy patients that receive Trazextamole before the allergen extract is administered, thus significantly reducing the immune response to the administered allergen. This allows physicians to introduce greater amounts of allergens, thus speeding treatment. Trazextamole can also be used as a bronchodilator for asthma if necessary.

Given its climate and vegetation, Erehwon is a country filled with many allergy sufferers, especially when the Bhag trees bloom in early May. The research that eventually led to the development of trazextamole began in 1977 in Prof. Uh-Rang's lab in a study known as Project 621, although other scientists at NUE had broadly thought about developing a molecular loop stimulator as far back as the late 1960s. The drug proved extremely difficult to develop and formulate because of its various instabilities. Additionally, as a regulated drug, Absalan (Dr. Uh-Rang's partner from the beginning) needed to provide the governmental authorities worldwide with ample data regarding its efficacy and safety in human patients. Estimates of the total costs for bringing Blu-Cure to market range from 150M-250M EHD, depending on which costs are taken into account. This figure includes the work carried out by both Hall-Baker and Absalan. These high development costs are the main reason why Absalan sold the drug to Hall-Baker.

After nearly 20 years of research, a small team led by Dr. Uh-Rang succeeded in obtaining approval from the Erehwonian authorities (corresponding to the US FDA) for sale of the trazextamole drug called Blu-Cure in the Erehwonian market in 1994. Following the collaboration with Hall-Baker, worldwide sales of Blu-Cure grew steadily and by 2007, and for the next four consecutive years, Blu-Cure was the world's third highest selling drug. By the end of 2007, 720 million patients had received treatments with Blu-Cure.

In the early 1990s, two competing products shared the market for MLS medications, namely Snortek (by Simbacon) and Filloquet (by Walthers-Takeda).

Both drugs operated using an inferior mechanism to Blu-Cure. After acquiring rights from Absalan, Hall-Baker received marketing approval for Blu-cure in seven other countries in 1995 and a further 18 countries in 1996 (including large markets such as the US, Germany, France, and Spain). By 1998, Blu-Cure's annual sales volume overtook the declining sales of Filloquet and by 2000 overtook the declining sales of Snortek. Annual sales of Blu-Cure have increased steeply to \$6.3B EHD, reflecting almost 30% of Hall-Baker's total sales. In 2011, Blu-Cure was available in more than 100 countries and Hall-Baker employed more than 60,000 people, a nearly two-fold increase in comparison to the company's 30,000 employees back in 1995 when Hall-Baker acquired rights to Blu-Cure from Absalan.

During the twenty years of research to develop Blu-Cure, several patents were filed by Prof. Uh-Rang and his colleagues, essentially on the new substance-classes that were discovered. In the end, Blu-Cure was essentially protected by two patent families.

One patent family covered the active substance (trazexetamole), while the other covered the formulation, *i.e.*, the way the drug is packaged for controlled release during an allergen treatment session. While the substance patent was filed in 1992, the formulation patent was filed as late as 1996. The basic patent on trazexetamole, US Patent 5,255,431 (the "431 patent") expired on Nov. 18, 2012. The patent on the formulation, US 6,586,505 (the "505 patent") expires on April 24, 2016. Counterpart patents in other jurisdictions expire at approximately the same time.

When Blu-Cure was launched on the market Hall-Baker was still among the smaller pharmaceutical companies, although it had gained some experience on the international pharmaceutical markets through other successful product launches. As sales of Blu-Cure started to rise, competitors began attacking the drug in various ways. Simbacon tried to play down Blu-Cure by dispensing information to the public, scientific, and medical communities that described the drug as a "niche product ... only useful for those patients with the most serious allergies." When other companies realized the potential of Blu-Cure, they began launching various copycat versions of the drug. To counteract the first attack by Simbacon, Hall-Baker managed to prove that Simbacon's methods to assess Blu-Cure's performance had

been inappropriate. To counteract the Blu-Cure copycats, Hall-Baker started to defend its pioneering pharmaceutical using its worldwide portfolio of related patents.

In addition, Hall-Baker began offering training sessions in which it provided allergy practitioners with information about Prof. Uh-Rang's trade secret allergy treatments. These trade secrets involved far more than the therapeutic use of Blu-Cure but also involved other techniques, some which included more traditional allergy treatments such as increasing sensitivity. The employment of these trade secrets not only provided superior results but also helped give Hall-Baker a reputation for being "the allergy solution."

After a few patent litigation cases in the Asia in the early 2000s, Hall-Baker initiated patent litigation cases across Europe and the USA in the mid-2000s. In total Hall-Baker defended Blu-Cure throughout more than 24 litigations. Throughout these cases Hall-Baker had to invest huge resources in setting up litigation teams for different regions around the world to enforce patent protection for Blu-Cure. Hall-Baker managed to win most of the cases on favorable terms.

The role of patent protection and the related trade secrets in allowing Hall-Baker to reap the benefits from Dr. Uh-Rang's research efforts becomes obvious in light of the steep sales decline after the substance patent expired. Once a patent expires, then the invention may be freely practiced by anyone. In 2011, annual sales of Blu-Cure increased to 6.3B EHD, but sales are forecast to decline constantly after 2012 to reach just 1.95B EHD by 2020, a decline of almost 70% from the peak. Sales will decline steeply when the basic formulation patent expires in 2016. Even through the products will no longer enjoy significant patent protection, they are still protected by trademarks and the related trade secrets. As with all block-buster drugs, competitors launched cheaper generics just after patent expiration that captured market share from Blu-Cure. The magnitude of sales decline in this particular case illustrates the economic importance of patents and their enforcement prior to expiration.

For Hall-Baker, Blu-Cure would not have been successful at all without its patents. However, patents as such would not have as helpful without several complementary abilities. First, Hall-Baker had to actively enforce its patents and have

the financial and managerial wherewithal to do so, and secondly, Hall-Baker had to own high quality patents that could withstand invalidity attacks. Thirdly, the trade secrets for allergy treatments also greatly aided in the success of the drug. One could possibly conclude that the drug's success was ultimately determined by the courts, especially the US courts given the size of the US market. Thus, the growth of Hall-Baker in the past two decades very much depended on a well-functioning patent system as a prerequisite to ensure enforceability of a company's intellectual property and thereby innovation for new R&D projects.

As the owner of the essential patents for trazextamole, Hall-Baker needs to use these corporate assets strategically to protect the company's market share for as long as possible. Competitor drug companies would like to produce and sell generic copies of these popular drugs at the earliest possible date.

The world's patent laws give patent owners the right to control who makes, uses, and sells a product protected by a patent. Under ordinary circumstances, this would mean that a competitor could not produce a generic drug – even for internal testing purposes – until after the essential patents had expired. Because of the regulatory process for new drugs, even generic ones, the ability to curtail whoever “makes” a generic drug has the effect of essentially extending the patent monopoly. In other words, a generic manufacturer cannot really even begin preparations for a generic equivalent until the patents expire. Consequently, some countries have amended their patent laws such that preparation of a generic drug may be allowed under certain circumstances. One such law is the so-called Hatch-Waxman Act in the US. The Hatch-Waxman Act aims to allow generic drugs to enter the market as soon as patent protection has expired. However, the circumstances under which laws operate are sometimes unclear and may vary depending on various facts.

As mentioned above, Hall-Baker filed a number of patent infringement lawsuits worldwide to eliminate and/or reduce and delay patent infringing competition related to Blu-Cure. The company was generally successful in these lawsuits. Of course, once the patents expire, the generic manufacturers hope to succeed in wresting away the company's dominance in the production of this drug. The basic formulation patent for Blu-Cure expired in November 2012 in most of the world.



Nevertheless, Hall-Baker has been compelled to file lawsuits against potential generic competitors before patent expiration. Many of these cases have not yet ended, and the ultimate results of these litigations are somewhat unclear at present.

In October 2011, Hall-Baker received a Paragraph IV Certification notice-letter (as provided by the Hatch-Waxman Act) from Teramotile Pharmaceuticals, Inc. that Teramotile had submitted an abbreviated new drug application (“ANDA”) to the FDA for 20mg and 40mg trazextamole magnesium delayed-release capsules. The ANDA alleged invalidity and/or non-infringement with respect to the Hall-Baker US patents listed in the FDA Orange Book for Blu-Cure. The US Food and Drug Administration (FDA) publishes the “Approved Drug Products with Therapeutic Equivalence Evaluations,” known as the Orange Book, that identifies drug products that the FDA has approved on the basis of safety and effectiveness.

Hatch-Waxman requires that generic manufacturer certify that the patents listed in the Orange Book do not cover the generic drug, have expired, or are invalid or unenforceable when they seek approval to market a generic version of a drug. If the generic manufacturer certifies that the patents are invalid or not infringed, then the patent holder has 45 days in which to decide whether to sue the generic manufacturer for infringement or allow the drug to go to market. If the patent infringement lawsuit is filed within the given time period, then there is an automatic 30-month stay of approval for the ANDA. (Hatch-Waxman has been modified to prevent the brand name company from adding new patents and essentially stacking up multiple 30-month delays; the 30-month stay now ends with a first court decision or invalidity or non-infringement.)

In November 2011 (within the 45-day period), Hall-Baker filed patent infringement litigations against Teramotile in response to Teramotile’s Paragraph IV Certifications. The litigation alleged infringement of six patents. The ‘431 and ‘505 patents were included in the lawsuit, as well as four later-filed, and less important patents: US 6,714,504, US 6,877,192, US 6,875,872, and US 6,928,810.

In April 2012, Hall-Baker entered into a settlement agreement and consent judgment with Teramotile. In the settlement, Teramotile conceded that all six patents asserted by Hall-Baker in the patent litigation are valid and enforceable.

Teramotile also conceded that four of the patents would be infringed by the unlicensed sale of Teramotile's proposed generic product. The settlement agreement allows Teramotile to commence sales of a generic version of Blu-Cure under a license from Hall-Baker on Dec. 18, 2012, which is one month after the expiration date of the basic formulation patent. The settlement press release also announced that Hall-Baker and Teramotile entered into agreements under which Teramotile will formulate a portion of Hall-Baker's US supply of Blu-Cure from January 2013, including provisions for the manufacture of trazextamole magnesium, the active pharmaceutical ingredient in Blu-Cure, from February 2013. The two companies also entered into agreements designating Teramotile as the US distributor for authorized generic versions of 40mg Blu-Cure (trazextamole).

Teramotile was the first to file an ANDA having a Paragraph IV Certification notice in respect of the FDA Orange Book-listed Blu-Cure patents. The Hatch-Waxman Act allows the first generic manufacturer to file an ANDA to receive exclusive rights to market its generic drug for 180 days. It is not clear whether Teramotile will be able to enjoy this additional benefit given that it did not necessarily win the litigation with Hall-Baker. A generic company can obviously make a huge amount of money during this half-year exclusivity period since its only competitor will be the formerly proprietary drug.

In Dec. 2011, Hall-Baker received a Civil Investigative Demand from the Federal Trade Commission (FTC) seeking information regarding the Blu-Cure patent litigation settlement with Teramotile. The FTC was likely concerned that Hall-Baker and Teramotile had entered into a so-called "reverse payment settlement agreement" in which a drug owner simply pays a prospective generic manufacturer to either go away or wait a while longer before entering the market. In the end, the FTC did not make any moves to terminate the settlement agreement between Hall-Baker and Teramotile.

Hall-Baker's litigation against Teramotile was just the first litigation against prospective generic manufacturers of trazextamole. From January 2012- March 2012, Hall-Baker received Paragraph IV Certification notice letters from Broncaster, Samarkand Laboratories, Dromotone, Dourzon, and Matrix Laboratories. Hall-

Baker filed patent infringement litigations against all of these companies, except for Matrix which did not challenge the validity or infringement of Hall-Baker's Orange Book patents. Consequently, Matrix will be precluded from launching its generic drug until the patents expire. Dromotone withdrew its ANDA, and the patent infringement litigation ended.

Hall-Baker's litigations for Blu-Cure are not limited to just the US. Hall-Baker bought patent infringement litigations in Canada against Filocure, in Germany against Dourzon, and in the UK against Dourzon. Litigations are also pending in Asia as well.

In April 2012, the European Commission began an investigation that Hall-Baker had engaged in anticompetitive behavior to shield Blu-Cure from competition by blocking generic drugs from entering the market. The Court stated that a dominant undertaking "cannot use regulatory procedures in such a way as to prevent or make more difficult the entry of competitors on the market, in the absence of grounds relating to the defense of the legitimate interests of an undertaking engaged in competition on the merits or in the absence of objective justification." The Commission fined Hall-Baker 30 million Euros, which the Court reduced to 52.5 million Euros. The case is on appeal to the General Court of the European Union.

The Court also found that Hall-Baker attempted to block generics from entering the market by changing the form in which Blu-Cure was sold from capsule to tablet. Generic pharmaceutical companies may introduce drugs into the European market only if the original product is still on sale. To thwart generics, Hall-Baker asked various European countries to withdraw their approval of the capsule form in favor of a tablet form that Hall-Baker had developed. The Court found that this was another anticompetitive tactic aimed at creating a roadblock to generic manufacturers.

Hall-Baker has learned more than a bit about IP strategy in the years since it launched the blockbuster anti-allergen drug developed at NUE. Once the company learned how to communicate the value of its technical solutions, the company then had to learn how to protect its IP from competitors using its IPR portfolio. The company's success with Blu-Cure demonstrated that it had learned its lessons well.

Meanwhile, a determined group of smaller pharmaceuticals has become increasingly sophisticated in bringing generic solutions to the marketplace. The exact disposition for some of the Blu-Cure cases still remains to be determined.

You calculate an estimate value for a settlement with the generic manufacturers. Your work is purely an estimate because you do not have access to Hall-Baker's information or that of the generic manufacturers. Nevertheless, you calculate that the generics will be free to make Blue-Cure without any concerns about IP rights within a year at the most. At present, sales are 6.3B EHD for Blue-Cure as an exclusive product of Hall-Baker. You estimate that the generics will take at least 50% of the market in the first year or 3.15B EHD. Your research indicates that a license for a drug like Blue-Cure would amount to around 30% of revenue. Thus, Hall-Baker should receive about 945,000 EHD in royalties. Absalan is entitled to 15% of Hall-Baker's profits, so Absalan's share would be 141,750 EHD, and NUE's share of Absalan's royalty payment would be 35,437 EHD.

The multimillion payment that Hall-Baker proposes is clearly greater than your calculations. You are aware that Hall-Baker has made its proposal in terms of "all further rights" to the Blue-Cure inventions. In other words, neither NUE nor the Absalan would ever be able to bother Hall-Baker over back royalty payments or future royalty payments. This would give Hall-Baker all rights to the invention. You assume that Hall-Baker would not settle a 35,437 EHD claim for 5 million euro. You decide that before you contact Hall-Baker you will do your best to discover precisely why they have set their settlement figure so high.

## CHAPTER 10

### Commercialization and Litigation

#### 10.1 A Hygiene Problem in Commercialization

Prof. Scott Huly-Gritaz and the late Prof. Carlos O'Ritan collaborated on a new technique for measuring the flow of liquids in underground pools some years ago. This technology license was one of the few university licensing successes prior to your arrival. A multi-national exploration company Gorzon licensed the technology and substantially enhanced it. Prof. Huly-Gritaz conducted no further research in the technology subsequent to the exclusive license to Gorzon which improved the techniques and obtained a number of patents on its own.

Prof. Huly-Gritaz approaches you with an article from a business journal that speculates that Gorzon is about to sue another international company Morticon about infringement of the technology. You tell Prof. Huly-Gritaz that he may be asked to testify if such litigation transpires. He tells you that this is what he is worried about. "I was never exactly sure where my partner the late Prof. O'Ritan came up with his ideas or who really owned them. I think he was also doing some contract consulting work with Lambert Oil Co., and he might have assigned his rights to this invention to them." You ask Prof. Huly-Gritaz a few more questions and then ask Kizbit to bring you the file that contains the Gorzon license agreement. You know that you will need to develop the outlines of an approach to Gorzon about this "hygiene" issue, and you should do it sooner rather than later, but you first need to understand the contract.

Every jurisdiction has its own rules about who may file a lawsuit and how. You might not always agree with these rules, and in some contexts, you may have the opportunity to challenge the rules. In any event, you will likely have to follow the pertinent rules or suffer the consequences. For example, a party may not always be privileged to file a lawsuit. The ability to file a litigation in some countries is considered a form of speech, and many countries often provide enormous protections for speech. Thus, the filing of a lawsuit is considered speech.

Nevertheless, a party may not always be entitled to file a lawsuit. For example, a party may not sue patent infringers (even very guilty patent infringers) for the infringement of patents that they do not own or otherwise control. In this case, Gorzon may have to include NUE in the lawsuit since NUE still owns the patent with Gorzon having an exclusive license. If there is still another party with ownership rights, such as Lambert Oil, then they will need to be included in the lawsuit or their rights will need to be acquired.

Some litigations have gone spectacularly awry with the plaintiff ultimately held personally responsible for the attorneys' fees for the defendants. Such cases highlight the role of legal formalisms, which can sometimes become entangled with other issues. Imagine here that Prof. O'Ritan had assigned his rights to someone else like Lambert Oil. Still worse, imagine that a close analysis of the claims in the patent shows that Prof. Huly-Gritaz had no longer made a contribution to the claimed invention by the time the patent issued; this is not uncommon during patent prosecution. The upshot of this is that Gorzon would have no right to bring the patent litigation and neither would NUE. In such a scenario, only Lambert Oil could bring suit. Thus, if Gorzon brought a lawsuit in such a fact pattern, then it could be liable for the damages that resulted. Since NUE licensed the patent to Gorzon, then NUE might be liable to, or be required to reimburse Gorzon for its costs in bringing the litigation.

Similarly, patent sellers sometimes retain too many rights in the patents they sell to others, and the new owners may find their cases dismissed for lack of standing. Standing issues may occur in many jurisdictions. Imagine anyone being allowed to sue anyone else for the infringement of a third party's patents – this is the essence of what standing is all about.

The outcome of such standing disputes depend on precisely how the sale and/or exclusive licenses have been worded. Non-exclusive licensees do not typically have standing. Assume, for example, that a defendant brings a motion early in a case seeking to have the case dismissed on the grounds that the plaintiff did not obtain sufficient rights from the previous owner in order to bring the lawsuit. A "hunting

license” from the original patent owner to look for infringers would typically not confer standing.

A plaintiff often has standing to sue for patent infringement only where it holds all substantial rights in the patent. The same is typically true for other IPRs. When a plaintiff lacking sufficient rights brings suit, that plaintiff lacks standing to sue on his own, and the suit must be dismissed, or additional holders of rights under the patent must be joined as parties to the suit, e.g., as appropriate given the plaintiff’s status as either an exclusive or a nonexclusive licensee. Where a plaintiff receives IPR rights pursuant to an agreement, whether the agreement conveys standing on the transferee depends on a number of issues. Corporate formalisms may matter. Here Gorzon can likely solve its standing issues in most jurisdictions by including NUE in the lawsuit as a plaintiff, and NUE’s contract with Gorzon contemplated just such a possibility. But if an unknown party actually holds the rights, or some rights, to the patent, then Gorzon may have trouble fixing the standing issues once the patent is filed.

Only the party that owns or controls all substantial rights in a patent can typically enforce rights controlled by that patent. The transfer of the exclusive right to make, use, and sell products or services under the patent is vitally important to an assignment. Gorzon’s position will generally be better if it solves any standing problems before the lawsuit is filed.

Courts may dismiss a complaint if the court lacks subject matter jurisdiction over the plaintiff’s claim, or the plaintiff lacks standing to bring its claim. Motions brought by the defendant related to standing may present either a facial or factual challenge to the court’s subject matter jurisdiction. In reviewing a factual challenge to the court’s subject matter jurisdiction, the court is not confined to the allegations of the complaint, and no presumption of truthfulness attaches to the plaintiff’s allegations. The court may consider evidence outside the pleadings, including affidavits, depositions, and testimony, to resolve any factual issues bearing on jurisdiction.

You review the contract with Gorzon. You notice that the contract gives some “wobble room” regarding the certainty of NUE’s ownership of the invention. However, you recognize instantly that this is the sort of issue that might help you in

a court case deciding a liability issue, but making this argument would be a disaster for your technology transfer business. But this less than absolute requirement in the contract over ownership gives you should room to maneuver with Gorzon when you contact them. You realize that you have no choice but to contact Gorzon – and the sooner the better, as you know you want to talk to them before they file a lawsuit. You also note in your contract review that Gorzon must provide NUE with notice at least 4 weeks before a lawsuit is filed, and thus far, you have not heard from Gorzon. The press clippings that you've seen sound as if litigation is imminent. So, you potentially have a bit more 'wiggle room' now, too, if Gorzon plans to file in less than 4 weeks.

You also recognize that this problem is much better solved if it is fixed before Gorzon files a lawsuit. First, Gorzon has the opportunity to fix the problem and plan various contingencies against this possibility. Second, if it turns out that there is another party, such as Lambert Oil, with ownership rights who refuses deal with either NUE or Gorzon, then Gorzon can simply opt not to file the lawsuit.

You outline a plan for mitigating the risk and fixing the problem. You ask Prof. Huly-Gritaz if there are any more people to be interviewed. Once you have finished with this draft mitigation plan, then you call Gorzon. You have never spoken with anyone from Gorzon, and as best as you can tell, no one from NUE has spoken to anyone from Gorzon since shortly after the contract was signed. Once you feel comfortable that you can articulate the situation and all the possible ways of solving it, then you phone the Gorzon person designated in the contract. You learn that this person retired some 5 years ago, but the receptionist refers you to the successor of the Gorzon negotiator who represented Gorzon in its negotiations with UN. As mentioned above, you know that this problem will be much easier to fix now than later.



## **CHAPTER 11**

### **Final Thoughts**

#### **11.1 Annual Performance Review**

Your first year as dean of the Commercialization Institute has been remarkable. As you prepare for your first annual performance review with the university president and the board of directors, you make a list of all that you have accomplished in the first year. You also add up how many things have happened for the betterment of the university's mission that would not have happened but for the Commercialization Institute. If you have done anything, you have proved the critics wrong. You have done far more than just make the university a small amount of money. The Commercialization Institute has raised the university's profile both regionally and internationally. The university is now forming collaborations with other research institutes that would have been unheard of a few years ago. You complete the papers for your evaluation and head towards the meeting with the university president and the board of directors confident that the Commercialization Institute has become a permanent fixture on the university's campus.

#### **11.2 Real World Valuation Problems**

This Guide has discussed the interplay between intellectual property (IP) litigation and various IP-related business strategies. The Guide began with an overview of various Intellectual Assets and their related exploitation strategies. We followed the first operation year for the Commercialization Institute at the fictional National University of Erehwon. Along the way, we encountered a variety of real-life commercial problems having a valuation component. All the problems that we solved were adapted from real-life scenarios encountered by various technology transfer officers around the world. We explained how each of these problems could be solved in a time optimal manner. Among other things, the Guide has provided a systematic review of various valuation methodologies to offer a guideline for the rapid and systemic evaluation of new technologies. The Guide has further provided practical guidelines to assist universities and publicly-funded research organizations

(PRO) to: identify their valuable intangible assets (IA), rank IA by using different qualitative valuation approaches for variable contexts, manage those IA which were assessed as valuable towards strategic collaborations and markets, and commercialize IA with potential market value (determined by application of IP valuation quantitative methods). The Guide has shown through case studies and practical examples how valuation of IA can be used as a solid base for strategic IA management decisions. This Guide has addressed the valuation of both registered and non-registered IP, including patents, trademarks, copyrights, industrial designs, know how, and trade secrets, as well as non-registered IAs such as skilled human capital, innovative processes, management organization etc.

## Appendix A

### Glossary

**Asset** – A resource with economic value that an entity (e.g., individual, corporation, country, university) owns or controls with the expectation that it will provide the entity with future benefits.

**Balance Sheet** – A financial statement that summarizes a company's assets, liabilities and shareholders' equity at a specific point in time. Balance sheets give investors an idea as to what the company owns and owes, as well as the amount invested by the shareholders.

**Book Value** – The value at which an asset is carried on a balance sheet.

**Brand/Trade Name** – A distinguishing symbol, mark, logo, name, word, sentence or a combination of these items that companies use to distinguish their product from others in the market.

**Bridge Loan** – A short-term loan that is used until a person or company secures permanent financing or removes an existing obligation.

**Compound Annual Growth Rate** – The year-over-year growth rate of an investment over a specified period of time.

**Copyright** – Copyright is a form of protection provided to the authors of “original works of authorship” including literary, dramatic, musical, artistic, and certain other intellectual works, both published and unpublished. The legal rights granted by copyrights differ by jurisdiction.

**Equity** – A stock or any other security representing an ownership interest. On a company's balance sheet, the amount of the funds contributed by the owners (the stockholders) plus the retained earnings (or losses). Also referred to as "shareholders' equity".

**Goodwill** – An account that can be found in the assets portion of a company's balance sheet. Goodwill is an intangible asset that arises when one company is

purchased by another company. In an acquisition, the amount paid for the company in excess of its book value usually accounts for the target firm's intangible assets, and goodwill represents the value assigned to intangible assets that cannot be identified with (or is in excess of) fair value assigned to specific intangible assets (e.g., patents, trademarks, customer lists, software, etc.).

**Inflation** – The rate at which the general level of prices for goods and services is rising, and, subsequently, purchasing power is falling.

**Initial Public Offering (“IPO”)** – The first sale of stock by a private company to the public.

**Intangible Asset** – The intangible assets owned by an entity (e.g., an individual, company, or university) comprise items such as the technical knowledge (and know-how) of its staff, the competence of its sales force, the business knowledge (and experience) of its management, its goodwill and reputation (including trademarks), the value of its intellectual property (including copyrights and patents), and the commercial value of its licenses.

**Intrinsic Value** – The actual value of a company or an asset based on an underlying perception of its true value including all aspects of the business, in terms of both tangible and intangible factors. This value may or may not be the same as the current market value. Value investors use a variety of analytical techniques in order to estimate the intrinsic value of securities in hopes of finding investments where the true value of the investment exceeds its current market value.

**Know-How** – The practical knowledge of how to complete a process.

**Liability** – A company's legal debts or obligations that arise during the course of business operations. Liabilities are settled over time through the transfer of economic benefits including money, goods or services.

**Liquidity** – A measure of the ease with which an asset can be sold in the market without affecting the asset's price.

**Market Capitalization** – The complete market value of all of a company's outstanding shares expressed in an amount of currency. Market capitalization is calculated by multiplying a company's shares outstanding by the current market price of one share. The investment community uses this figure to measure a company's size, as opposed to sales or total asset figures.

**Net Present Value (NPV)** – The difference between the present value of cash inflows and the present value of cash outflows. NPV is used in capital budgeting to analyze the profitability of an investment or project. NPV analysis is sensitive to the reliability of future cash inflows that an investment or project will yield.

**Operating Margin** – A measurement of what proportion of a company's revenue is left over after paying for variable costs of production such as wages, raw materials, etc.

**Patent** – The grant of a property right to the owner of an invention. The legal rights granted by patents differ by jurisdiction but typically include the right to obtain a court order stopping someone from infringing the patent.

**Property Rights** – Rights granted to the owners of a tangible or intangible object. Examples of property rights include, but are not limited to the right to consume, sell, rent, transfer, exchange, destroy, and/or exclude. Property rights differ by jurisdiction and underlying object.

**Risk Adjusted Hurdle Rates** – Rates used to discount future project costs and benefits. Increased hurdle rates are applied to projects considered to be risky.

**Shares Outstanding** – Stock currently held by investors, including restricted shares owned by the company's officers and insiders, as well as those held by the public. Shares that have been repurchased by the company are not considered outstanding stock.

**Standard Industrial Classification (SIC) Code** – A United States government system for classifying industries.

**Tangible Asset** – An asset that has a physical form such as machinery, buildings and land.

**Trade Secret** – A formula, practice, process, design, instrument, pattern, or compilation of information which is not generally known or reasonably ascertainable, by which a business can obtain an economic advantage over competitors or customers. In certain jurisdictions trade secrets have legal protection.

**Trademark** – A trademark is a word, name, symbol or device which is used in trade with goods to indicate the source of the goods and to distinguish them from the goods of others. The legal rights granted by trademarks differ by jurisdiction.

**Working Capital** – Current assets (such as cash), net of current liabilities, required to keep an organization operational.

## **Appendix B**

### **Additional Resources**

In addition to vast resources and expertise available through various agencies at WIPO, a university or research and development organization may find assistance through the resources of the following organizations:

- The Association of University Technology Managers (AUTM), which operates in the US and Canada, maintains many helpful resources for the university commercialization official. Among other things, AUTM has compiled and published academic technology transfer data through the AUTM Licensing Activity Survey. AUTM also provides the AUTM STATT database, which contains licensing data AUTM has collected over more than 20 years.
- The Association of European Science and Technology Transfer Professionals (ASTP) also has many helpful resources. Among other things, ASTP provides a survey that includes inter-European technology transfer data.

## Appendix C

### Sample Royalty Rates

| Industry                        | Lower Quartile | Median | Upper Quartile | Number of Agreement Observations | Number of Royalty Rate Observations | Average Rates per Agreement |
|---------------------------------|----------------|--------|----------------|----------------------------------|-------------------------------------|-----------------------------|
| Advertising                     | 5.00%          | 11.11% | 25.00%         | 155                              | 640                                 | 4.13                        |
| Agribusiness                    | 2.73%          | 5.00%  | 8.33%          | 81                               | 340                                 | 4.20                        |
| Alcoholic Beverages & Tobacco   | 3.00%          | 5.75%  | 10.00%         | 34                               | 59                                  | 1.74                        |
| Alternative & Renewable Energy  | 2.00%          | 4.72%  | 8.00%          | 162                              | 483                                 | 2.98                        |
| Biotechnology                   | 2.50%          | 4.93%  | 8.00%          | 1,133                            | 4,764                               | 4.20                        |
| Broadcast & Cable               | 5.25%          | 10.00% | 24.21%         | 167                              | 683                                 | 4.09                        |
| Business Services               | 4.00%          | 10.00% | 20.00%         | 830                              | 2,626                               | 3.16                        |
| Chemicals                       | 3.00%          | 5.00%  | 8.63%          | 271                              | 851                                 | 3.14                        |
| Computers: Hardware & Software  | 5.00%          | 10.00% | 26.50%         | 989                              | 3,303                               | 3.34                        |
| Construction                    | 3.00%          | 4.48%  | 9.50%          | 114                              | 385                                 | 3.38                        |
| Consumer Durables               | 3.38%          | 7.00%  | 12.50%         | 783                              | 2,472                               | 3.16                        |
| Consumer Non-Durables           | 4.00%          | 5.00%  | 10.00%         | 797                              | 2,713                               | 3.40                        |
| Consumer Services               | 3.69%          | 10.00% | 26.00%         | 526                              | 1,573                               | 2.99                        |
| Education                       | 5.00%          | 10.00% | 25.00%         | 130                              | 401                                 | 3.08                        |
| Electric Utilities              | 3.06%          | 5.00%  | 8.00%          | 73                               | 228                                 | 3.12                        |
| Entertainment                   | 5.69%          | 11.00% | 25.00%         | 472                              | 2,299                               | 4.87                        |
| Environment & Waste             | 3.00%          | 5.00%  | 9.06%          | 162                              | 438                                 | 2.70                        |
| Financial Services              | 3.33%          | 10.00% | 19.90%         | 129                              | 386                                 | 2.99                        |
| Foods & Nonalcoholic            | 3.08%          | 5.00%  | 10.00%         | 310                              | 849                                 | 2.74                        |
| Gaming                          | 5.00%          | 11.67% | 30.75%         | 87                               | 284                                 | 3.26                        |
| Healthcare: Facilities          | 4.00%          | 7.00%  | 15.00%         | 139                              | 492                                 | 3.54                        |
| Healthcare: Insurance           | 3.31%          | 12.44% | 15.00%         | 18                               | 93                                  | 5.17                        |
| Healthcare: Pharmaceutical      | 2.75%          | 5.00%  | 8.75%          | 1,320                            | 5,474                               | 4.15                        |
| Healthcare: Products & Supplies | 3.00%          | 5.00%  | 8.00%          | 1,059                            | 5,022                               | 4.74                        |
| Industrial Equipment            | 3.50%          | 5.50%  | 10.00%         | 391                              | 1,164                               | 2.98                        |
| Internet                        | 5.27%          | 15.00% | 30.00%         | 527                              | 1,365                               | 2.59                        |
| Metals                          | 3.00%          | 7.50%  | 9.06%          | 91                               | 233                                 | 2.56                        |
| Mining                          | 2.13%          | 4.00%  | 8.75%          | 92                               | 272                                 | 2.96                        |
| Oil & Gas                       | 3.75%          | 6.25%  | 9.06%          | 167                              | 526                                 | 3.15                        |
| Paper & Forest Products         | 3.83%          | 7.50%  | 7.50%          | 53                               | 154                                 | 2.91                        |
| Public Safety                   | 3.00%          | 5.81%  | 10.00%         | 144                              | 369                                 | 2.56                        |
| Publishing                      | 8.00%          | 20.63% | 33.00%         | 209                              | 771                                 | 3.69                        |
| Restaurants                     | 2.31%          | 4.00%  | 5.00%          | 78                               | 268                                 | 3.44                        |
| Retail                          | 3.25%          | 5.13%  | 15.00%         | 230                              | 593                                 | 2.58                        |



| Industry                         | Lower Quartile | Median | Upper Quartile | Number of Agreement Observations | Number of Royalty Rate Observations | Average Rates per Agreement |
|----------------------------------|----------------|--------|----------------|----------------------------------|-------------------------------------|-----------------------------|
| Semiconductors                   | 2.00%          | 5.00%  | 7.00%          | 112                              | 409                                 | 3.65                        |
| Telecommunications               | 3.71%          | 9.50%  | 21.00%         | 274                              | 797                                 | 2.91                        |
| Transportation Equipment & Parts | 3.00%          | 5.00%  | 10.00%         | 325                              | 957                                 | 2.94                        |
| Travel & Recreation              | 3.00%          | 5.00%  | 11.67%         | 106                              | 295                                 | 2.78                        |

| Industry                 | Average | Median | Max    | Min   | Count |
|--------------------------|---------|--------|--------|-------|-------|
| Chemicals                | 4.70%   | 4.30%  | 25.00% | 0.10% | 78    |
| Internet (incl software) | 11.80%  | 8.80%  | 50.00% | 0.30% | 88    |
| Telecom (excl Media)     | 4.90%   | 4.50%  | 15.50% | 0.40% | 73    |
| Consumer Gds, Rtl & Leis | 5.50%   | 5.00%  | 28.00% | 0.10% | 98    |
| Media & Entertainment    | 9.10%   | 5.00%  | 50.00% | 2.00% | 25    |
| Food Processing          | 3.20%   | 2.80%  | 10.00% | 0.30% | 38    |
| Medical/Health Products  | 6.10%   | 5.00%  | 77.00% | 0.10% | 376   |
| Pharma & Biotech         | 7.00%   | 5.00%  | 50.00% | 0.00% | 458   |
| Energy & Environment     | 5.00%   | 5.00%  | 20.00% | 1.00% | 107   |
| Machines/Tools           | 5.20%   | 4.50%  | 25.00% | 0.50% | 90    |
| Automotive               | 4.30%   | 3.50%  | 15.00% | 0.50% | 59    |
| Electrical & Electronics | 4.20%   | 4.00%  | 15.00% | 0.50% | 139   |
| Semiconductors           | 4.30%   | 3.00%  | 30.00% | 0.00% | 75    |
| Computers & Office Equip | 5.30%   | 4.00%  | 25.00% | 0.20% | 73    |
| Software                 | 11.50%  | 6.80%  | 70.00% | 0.00% | 147   |
| Industry Summary         | 6.40%   | 4.80%  |        |       | 1,924 |

| Running Rates by Agreement Type and Industry<br>Median (Average in Parentheses) |                           |                           |                      |                      |                         |
|---|---------------------------|---------------------------|----------------------|----------------------|-------------------------|
| Agreement Type  | Industry                  |                           |                      |                      |                         |
|   | All                       | Software                  | Hardware             | Medical              | Pharma                  |
| All Types   | 5.08 (8.2%)<br>n= 2,963   | 10.0%<br>(17.3%)<br>n=515 | 5.0% (7.0%)<br>n=489 | 5.0% (5.6%)<br>n=520 | 5.0% (6.2%)<br>n=1,439  |
| Product Distribution  | 10.0%<br>(15.4%)<br>n=339 | 14.4%<br>(18.9%)<br>n=180 | 6.0% (12.8%)<br>n=58 | 5.0% (7.9%)<br>n=44  | 8.0%<br>(12.6%)<br>n=57 |
| Development   | 6.5% (9.5%)<br>n = 482    | 17.0%<br>(21.2%)<br>n=65  | 4.0% (8.1%)<br>n=71  | 6.0% (6.7%)<br>n=53  | 6.0% (7.7%)<br>n=293    |
| Acquisition   | 5.7% (9.10)<br>n=350      | 10.0%<br>(16.4%)<br>n= 90 | 5.0% (6.4%)<br>n= 78 | 5.0% (6.1%)<br>n= 56 | 5.0% (6.8%)<br>n= 126   |
| Settlement  | 5.0% (6.1%)<br>n=87       | 4.6% (7.6%)<br>n=10       | 6.0% (7.1%)<br>n=12  | 5.0% (5.5%)<br>n=12  | 4.6% (5.9%)<br>n=32     |

| Running Rates by Agreement Type and Industry<br>Median (Average in Parentheses) |                        |                            |                      |                      |                      |
|---|------------------------|----------------------------|----------------------|----------------------|----------------------|
| Patent (+)  | 4.5% (5.1%)<br>n=570   | 4.0% (4.4%)<br>n=17        | 4.4% (4.9%)<br>n=95  | 5.0% (5.4%)<br>n=109 | 4.5% (5.1%)<br>n=349 |
| Research  | 4.0% (4.4%)<br>n = 118 | 5.5% (5.5%)<br>n=2         | 3.0% (5.3%)<br>n=5   | 3.6% (4.0%)<br>n=18  | 4.0% (4.4%)<br>n=93  |
| Bare Patent   | 3.0% (3.7%)<br>n=343   | 3.0% (3.3%)<br>n=17        | 3.5% (3.9%)<br>n=56  | 3.5% (3.9%)<br>n=73  | 3.0% (3.6%)<br>n=197 |
| Other   | 5.0% (8.9%)<br>n=674   | 11.6 %<br>(18.1%)<br>n=134 | 5.0% (6.9%)<br>n=114 | 4.0% (5.6%)<br>n=134 | 5.0% (6.9%)<br>n=292 |

## Appendix D

### Various Issues Related to IPR Litigation

#### D.1 Damages for Patent Infringement

Damages calculations comprise an important consideration in a patent infringement litigation. (Any commercial litigation is ultimately about money; otherwise, there is no reason to bring such cases.) Even if the plaintiff legally proves that the defendant has infringed the plaintiff's patent, the court must still assess damages related to the infringement. This provides an opportunity for the patent holder to argue for a large amount of damages and for the defendant to argue the opposite. How patent infringement awards are assessed is fairly simple to describe at a conceptual level; however, there are several problems that complicate the transition from the conceptual to the real. One problem is comparable royalty/licensing data; the world presently lacks sufficient data in many cases for a court to readily have a handle on what level of damages is appropriate in light of the facts. Table 3 provides a high-level view of the main considerations in determining the damages awarded in a patent infringement case.

##### Damage Calculations

- Actual Damages
  - Reasonable Royalty
  - Lost Profits
- Punitive Damages
- Willfulness

##### **Table 3. Patent Damage Calculations**

In the US, a patent holder is entitled to receive at least the equivalent of a reasonable royalty from the infringer. The royalty is not supposed to be based on the amount that the two parties would have agreed to once the verdict has been rendered. The reasonable royalty is instead to be based upon a hypothetical negotiation between the parties prior to the filing of the litigation. In other words, what terms would they have agreed to if both parties had wanted to complete a license agreement instead of going to court? This hypothetical negotiation is obviously difficult to construct since the defendant in reality did not want a license.

Comparable royalty data is often not available to either the plaintiff or the defendant in patent disputes. On occasion, the patent holder has previously licensed his patent to others, and the rates from these transactions may be used to provide a baseline for determining a reasonable royalty. Of course, the plaintiff typically argues that the most lucrative of its prior licensing deals is the most pertinent to the litigation, and the defendant typically argues that the least lucrative of the prior licensing deals is the most pertinent to the litigation. Thus, courts and juries are often in the position of simply determining which party they find to be the most believable and accurate.

Depending on the specific legal system, as part of the discovery process, both parties will look for facts related to damages. Each side will typically have at least one damages expert. The damages experts are typically economists or persons with strong economic backgrounds. Each side can challenge the credibility of the other side's damages expert. Sometimes a party will have more than one damages expert as part of its trial strategy. Among other things, all testifying witnesses, including expert witnesses, can often be interviewed ahead of their testimony while non-testifying experts generally cannot be interviewed. Thus, having two damages experts allows the legal team to receive information and develop strategies that cannot be known, or known well, by their opponents for an extended period of time.

Prior to trial, each side will produce an expert damages report. The expert damages report may consider factors such as:

- Plaintiff's sales, if any
- Plaintiff's royalty rates for other licenses, if any
- Related patent's royalty rates, if any

The author of the report may typically be interviewed during the discovery process. Thus, before trial begins, each side will know the other side's damages theories and the facts that they have to support those theories. The testifying damages experts can be deposed during the discovery process and will typically appear as witnesses during the trial.

As previously mentioned, the law sets a framework for how damage calculations are performed. The law does not generally prescribe what the damages are or even set out a formula for calculating them. Thus, the facts of each case and the lawyer's ability to put on good arguments will largely determine the actual damage amounts.

As discussed, a variety of damages may be available to the patent owner once infringement has been found. The primary forms of damages in the US are known as a "reasonable royalty" and "lost profits." Lost profit damages are not allowed in all jurisdictions and may not be applicable in all cases even if they are allowed. Lost profits tend to amount to greater sums where they apply.



**FIG. 1 – Simple Damages Calculation**

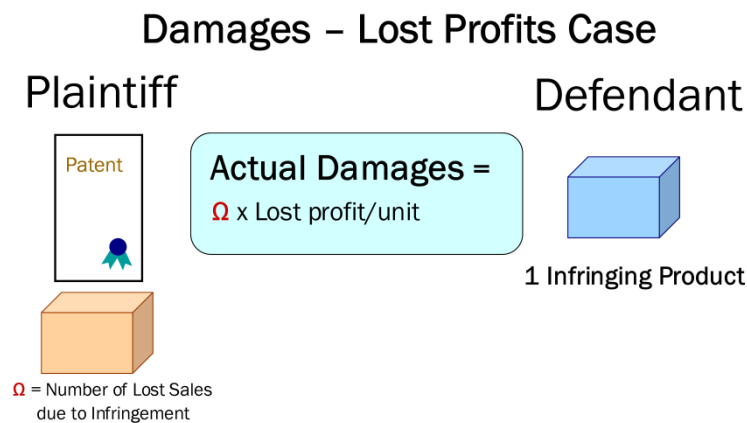
Assume, for example, that a reasonable royalty for a given defendant's infringing product would amount to 10% of its sales price whereas the patent owner's profits for its premier product is 3,000 EUR/unit. The 10% amount is a "fact" that can be accepted (or rejected) by the finder of fact during the trial based upon the expert damages report. Assume the defendant has sold 100,000 units at the time that infringement is found, and assume further that the patent owner can show that it has lost 80,000 sales of its own due to the defendant's actions. Assume further that the defendant sells its products for 10,000 EUR. Thus, lost profits would amount to 140 million EUR in greater damages – (100,000 units x 10,000EUR x 0.1 = 100 million EUR in damages) versus (80,000 units x 3,000 EUR = 240 million EUR).

In preparing its expert damages report for lost profit damages, the plaintiff must provide some fairly complicated financial data that includes not only the plaintiff's profits but also of the relevant market as well. The plaintiff's expert damages report for lost profits will include items such as:

- Demand for the patented product in the market
- Absence of an acceptable non-infringing substitute (or an explanation of the role of the non-infringing substitute in the lost profits)
- Manufacturing and marketing capability sufficient to exploit the demand
- Detailed computation of the lost profit

The plaintiff will also need to discuss various characteristics of the relevant market. For example, “Is this a growing market or a shrinking market?” As one can imagine, in many cases, the parties argue strongly about what is the relevant market. The burden of proof for the plaintiff in making the damages request is “reasonable probability,” which is the lowest of the three evidentiary standards in the US.

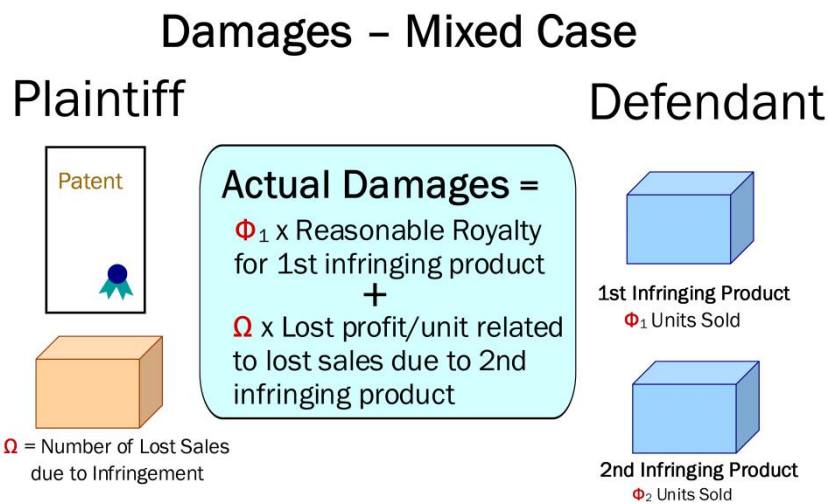
However, seeking lost profit damages makes no sense for a patent owner when the patent owner makes no products and/or sells fewer products than the accused infringer. In such cases, a reasonable royalty will yield a greater result. Also, lost profit damages tends to require a greater proof showing than a reasonable royalty, as discussed.



**FIG. 2 Damages – Lost Profits Case**

Patent holders are not typically allowed to seek both lost profit damages and a reasonable royalty for the same infringing activity unless they can show a logical separation that divides the infringement into two categories. Otherwise, the patent holder would be compensated twice for the same infringement. So, in the example above, assume further that the patent holder can show that of the 100,000 units sold

by the defendant, 80,000 of the units were sold in City A and 20,000 units were sold in City B. Assume further that the patent holder can further show that the 80,000 units of its lost sales were lost entirely in City A. Thus, the patent holder can rationally argue for lost profit damages for sales in City A and a reasonable royalty for the infringing units sold in City B since any sales in City B did not cause a lost sale for the plaintiff. Using the numbers above, this would yield a damage award of 260 million EUR, or another 20 million EUR in damages for City B.



**FIG. 3 Damages – Mixed Case**

Some countries' patent laws allow for an additional heightening of damages when the defendant has been extremely ruthless in its infringement. On occasion, a company will decide that it does not care that another party has a patent and will essentially opt to infringe the patent either in hopes that its infringement will not be caught or in hopes that the patent owner will simply not pursue its rights for whatever reason or in the belief that it can apply superior legal talent to any possible infringement case. There are also other instances where the defendant is less guilty, and deserving of a lower enhancement (or none at all). One does not even need to know about a patent in order to infringe it; knowledge is not an element of the main infringement case – only the willfulness case.

In cases where willfulness has been found, many countries' patent laws allow for the actual damages, whether by lost profits or by reasonable royalty, to be enhanced by some degree. In the US, such cases are known as "willful" infringement, and the actual damages "may" be enhanced by up to three times actual damages, e.g., a \$2

million judgment of actual damages could be enhanced up to \$6 million in the event that willfulness is found. Such willfulness damages act as a type of punitive damages to punish actors from engaging in behaviors that they know to be wrong or should know to be reckless. Bear in mind, however, that the court's limit for willfulness damages in the US is three times actual damages. In reality, courts tend to enhance damages when willfulness is found by amounts significantly less than three times the actual damages. The average enhancement in the US is only a mere 69% and enhancement is awarded in 12% of all published cases, according to some statistics.

As mentioned above, patent litigants in some countries may also seek a form of punitive damages that seeks to punish the defendant for infringing the patent. As an example, using the figures from the hypothetical above, assume that the judge decides that the defendant has been willful and sets the enhanced damages at 0.8 times the actual damages. Using the figures above, this would raise the total damage award by 208 million EUR for a combined award of 468 million EUR (260 million EUR  $\times$  1.8).

When do damages start? Do they begin the instant the party begins making an infringing product or does something else trigger the beginning of damages? In many countries, damages begin with notice to the accused infringer of the presence of the patent. There are generally two types of notice – actual and constructive. Actual notice comprises the patent holder taking some affirmative step to notify the defendant about its patents, such as by a letter or a phone call. Constructive notice occurs when a patent owner has marked its products with the relevant serial numbers of its patents. In some instances, the patent numbers are actually stamped onto the patented article. In other instances, the patent numbers are provided on a box or container associated with the product or on a splash screen associated with a patented software product.

In the US, a patent owner can seek damages for infringement for up to six years backwards in time. This includes seeking damages for infringements of a now expired patent during the time in which the patent was active. Thus, infringing activities that occurred more than six years in the past cannot be compensated, at least not under US law.



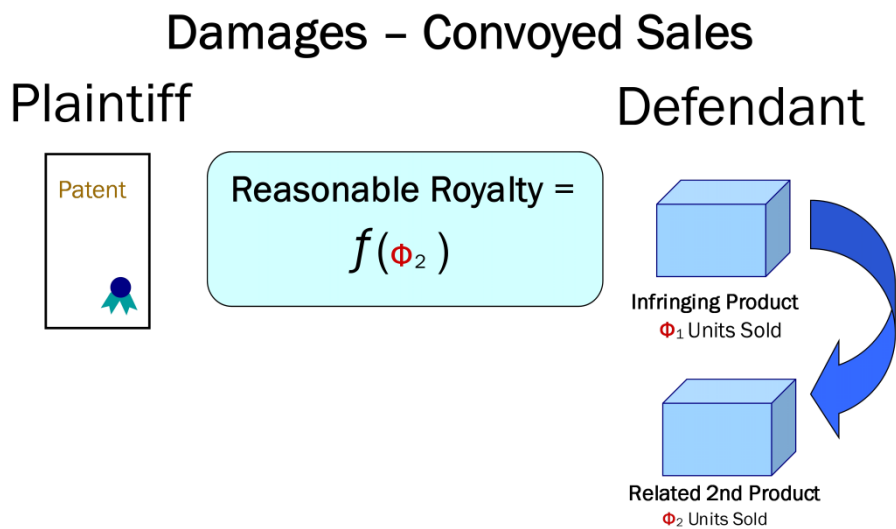
Civil litigants are often allowed to earn interest on infringement damages until they are paid. Prejudgment interest accrues from judgment. The interest continues to accrue during the appeals process. The interest accrues at federally determined rates. In other words, interest on the damages that accrue until the defendant pays them with a check fully compensating the party for its injuries. The amount of interest tends to be set by the courts, often at the highest national levels, and may have little bearing on the interest rates paid by commercial banks or other market factors. These interest rates tend to not be specialized for patent cases and apply to all civil litigants.

In some instances, these interest damages may amount to considerable sums in patent cases because the damage amounts are so large. Using the damage award above, assume that a trial court allows interest to accrue from the beginning of its finding of infringement, and assume that the appeals process, including rehearings, lasts another 5 years before the proceedings terminate. Assume further that the statutory level of interest during this period was 2.5%/year. Using the figures above, the damage award would increase from 468 million EUR to 529 million EUR.

Damage calculations may present some tricky issues. Assume for example that the accused defendant gives away the infringing device for free but that it is closely tied to another product that the defendant sells. Some jurisdictions find no damages in such cases. Other jurisdictions allow the plaintiff to present damages arguments using a conveyed sales rationale. The value of the free product needs to be compared with the product actually sold. Assume that the total value of the sold product is 100 million EUR, and assume further that after taking much testimony, the court decides that 10% of the value of the sold product comes from the product freely given away. Assume further that the court finds that a reasonable royalty for the free product is 10% of its sales revenue. Thus, the damage award for infringement under the conveyed sales rationale in this hypothetical is 1 million EUR (100 million EUR  $\times$  0.1  $\times$  0.1).

Another tricky damages issue relates to determining the value of infringing a small component inside a larger product. Assume, for example, that the manufacturer of a mobile handset is sued for using an infringing GPS locator. Of

course, the handset may not function properly without a GPS locator, which gives the plaintiff arguments to ask for a high percentage of the overall value of the product in damages. On the other hand, if the defendant can point out that it could easily switch to a non-infringing transceiver, then this may also give the defendant arguments for lowering the value of the transceiver to the product as a whole. Such cases become extremely fact specific, but the takeaway is that each side needs to prepare cogent arguments regarding the appropriateness of its valuation methodology as well as providing arguments against the opponents' arguments.



**FIG. 4 Damages Convoyed Sales**

## D.2 Special Problems in Litigation

Now that we have discussed the general outline of civil litigation and provided some insight into patent litigation, we will next explore a few advanced problems that occur from time to time in litigation. The possibilities for the occurrence of these phenomena condition the strategies and actions in particular cases.

### D.2.1 Contingency Fee Lawyers

Some countries, such as the US, allow litigants to pay their lawyers on a contingency fee basis. Such arrangements typically mean that the lawyers receive no compensation unless their client wins the litigation or the case settles favorably.

Most systems that allow contingency fee lawyers place a limit on how much of the damage award these lawyers may collect, e.g., no more than 40% of the total damages award. In other jurisdictions, contingency fee arrangements are strictly forbidden, and still other jurisdictions permit contingency fee lawyers but only within strict limits.

Contingency fee lawyers in the US have been especially helpful to persons who cannot afford attorneys for civil cases. Only a few countries provide funds for persons who cannot afford legal counsel in civil cases. While some of the legal cases brought by contingency fee lawyers in the US may have been frivolous (as is sometimes complained), others were extremely meritorious but would never have otherwise been brought to court if the plaintiffs had been forced to pay their attorneys up front. For example, many/most of the tobacco product liability cases were brought by contingency fee lawyers, as were many of the cases related to public access for the physically impaired.

For IP cases, contingency fee lawyers were historically very helpful for non-practicing entities (NPEs). Many of the prototype NPEs were very cash poor and could not otherwise afford legal counsel. Similarly, many small companies could not afford legal counsel for expensive patent cases and turned towards contingency fee lawyers.

Those legal systems in which contingency fee lawyers are not permitted tend to be systems that favor stability, as contingency fee litigation can be viewed as increasing the amount of litigation and thereby increasing instability, even if the cases are meritorious. When such systems themselves have other outlets for harmonizing society and righting wrongs in the economy, then the overall situation may produce similar results to systems that permit contingency fee lawyers.

### **D.2.2 Compensation for Attorneys' Fees**

Many countries have a general litigation rule that the loser in a litigation pays the winner's attorneys fees. So, if a patent owner sues for patent infringement and loses, then they may have to pay the other side's attorney's fees for defending themselves. Similarly, if a patentee wins an infringement case, the defendant may have to pay the

patentee's attorney's fees as well as the infringement damages awarded by the court. This rule acts to dampen the amount of litigation.

Where this rule is in force it is a general rule of civil litigation, and is not an IPR-specific rule. These fee reimbursements are not available in all jurisdictions, most notably, the United States. In the US, attorney's fees are awarded to the prevailing party only when the losing party's position was so untenable that no reasonable litigant would have made such a decision. In many of the countries where attorneys fees are possible, the prevailing party does not necessarily receive all of its attorneys fees. The courts may apply rules related to average attorneys fees or government approved amounts, such that if the party hired top flight lawyers as opposed to average ones, its expenses may be significantly above what the court is willing to award.

**Example.** Acme Co. sues Bluto, Inc. for patent infringement in a country called Erehwon. The court eventually finds that Bluto infringes the patent and awards 10M EUR in damages. Since Bluto lost the case, the court awards Acme its attorneys fees as well. Acme hired the finest legal team in Europe to present its case, spending 2M EUR. In Erehwon, attorneys fees are awarded according to a government-mandated table of average attorney fees, which has not been updated in the past 15 years. According to the chart, litigants in civil cases (such as patent ones) are allowed the smaller of 50,000 EUR or the amount of attorney fees actually paid. Thus, in addition to the 10M EUR in damages, the court awards another 50,000 EUR for attorneys fees.

### **D.2.3 Forum Shopping**

Litigants are not allowed to find a friendly court to hear their dispute, a process known as "forum shopping." However, the stakes involved in many litigations are so high that parties inevitably try to use every advantage at their disposal. The rules for determining where a litigation can be filed typically specify either where the defendant is domiciled and/or where the injury occurred. Thus, when someone wants to sue a company that does business worldwide, there may potentially be a huge number of places where the alleged injury occurred, especially in patent infringement cases. Defendants may argue that a particular forum (court) is inconvenient for them, but the court may decide otherwise. So, for example, assume in a patent litigation that the lawyers for the patent owner know that statistics show that City A is a very friendly jurisdiction for plaintiffs in patent cases.

Assume that the accused defendant sells products all over the US and assume that the defendant maintains a regional headquarters in City A. Thus, the patent owner may sue the defendant in a federal court in City A, and there may be little that the defendant can do to move the case to another jurisdiction that will be less friendly to the patent owner. Forum shopping typically applies to plaintiffs; however, the main rules for where cases should be tried have inherent advantages for defendants. Thus, forum shopping in a sense may occur on both sides. Only on rare occasions will a civil trial be moved to a court that can be determined to be strictly neutral to each side.

#### **D.2.4 Discovery Protective Orders**

Your attorneys point out that while litigants may be required to disclose pertinent information in a case, this does not mean that all of the information produced will necessarily be available to the executives or employees of the other side – or to the general public. Litigants may ask for various discovery protective orders. Motions and documents may also be filed with the court under seal when they contain sensitive information. Thus, at the highest level of secrecy, only the judge in the case sees certain highly sensitive information pertinent to the litigation. The judge may later decide that the information does not require such a high level of secrecy. The next highest level of secrecy is known as “attorneys’ eyes only.” This stamp on documents produced during discovery means that only the attorneys in the case may see the documents. Thus, in many instances, the attorneys in a case may be privy to significantly more information than their clients. On occasion, the attorneys may need to make various motions to the court regarding the information that they know about in order for their client to be sufficiently informed of their rights. Attorneys who violate discovery protective orders are subject to severe penalties and such violations are very rare.

#### **D.2.5 Anticompetitive Issues in Patent Cases**

Anticompetitive behavior comprises a litigation scenario that should always give rise to patent owner liability where it can be shown. In terms of the patent holder’s liability under the antitrust cause of action, it matters little whether the patent holder’s case against the defendant is frivolous or has exceptional merit.

A patentee may exploit his patent but may not use it to acquire a monopoly not embraced in the patent grant.<sup>1</sup> The line dividing lawful patent conduct and antitrust violations and patent misuse has varied over the years with changes in statutes, judicial opinions, and concepts of what is equitably proper.<sup>2</sup> Much of recent patent and antitrust jurisprudence relates to patent misuse as well.<sup>3,4</sup>

In the US, if a patent owner initiates litigation seeking to enforce a patent that is known by the patentee to be invalid, such action can be an unlawful attempt to monopolize under Sec. Two of the Sherman Act.<sup>5</sup> Along similar lines, there is an exception to the general antitrust immunity conferred by the *Noerr-Pennington*<sup>2</sup> doctrine that relates to sham litigation activities.<sup>6</sup> Under this sham exception activities “ostensibly directed toward influencing governmental action” do not qualify for *Noerr* immunity where they are “a mere sham to cover . . . an attempt to interfere directly with the business relationships of a competitor.”<sup>7</sup> The Supreme Court added that a litigation cannot be deprived of immunity as a sham unless it is “objectively baseless.”<sup>8</sup>

Defendants in patent cases may seek to find a cause of action analogous to that of Article 101 of the European Commission which finds potential anticompetitive effects in:

[A]ll agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the common market....<sup>9</sup>

This chapter will not explore the extent to which a given patent litigation constitutes a sufficient competitive “distortion” under Art. 101, but one suspects that it would depend upon (1) how fully the Commission understood the patent holder’s patent exploitation plan and (2) how extensive the effect of such plan was, especially when viewed from a consumer point of view. Under such an analysis, the factual situations for some patent assertion scenarios would still likely elude sanction although many of them would likely be proscribed.

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<sup>2</sup> The cases are: *Eastern Railroad Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U.S. 127 (1961); *United Mine Workers v. Pennington*, 381 U.S. 657 (1965).

In the US, Sec. 1 of the Sherman Act is worded somewhat similarly to Article 101, stating:

Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine....<sup>10</sup>

But one difference between the Sherman Act and Article 101 is that the Sherman Act implies that a party's "illegal" actions have provoked an anticompetitive result whereas Article 101 seems less concerned, on its face, about whether the underlying act was legal or illegal.

In the US, the *Kobe*<sup>11</sup> line of cases provides a small group of antitrust cases that may be helpful to some patent litigation defendants and come somewhat closer to Article 101. In *Kobe*'s patent infringement case, the plaintiff had purchased some 70+ key patents in the hydraulic oil pump technology.<sup>12</sup> The court found that one could not possibly make a competitive product without infringing one of the patents, and the defendant had been found to infringe several of the patents.<sup>13</sup> Thus, the patent litigation was in no way a sham. The court stated that while there was nothing inherently wrong with purchasing a patent and enforcing it against an infringer, the intent and underlying purpose of accumulating such a large number of patents amounted to a violation of antitrust laws and patent misuse.<sup>14</sup>

While providing a narrow exception to the *Noerr-Pennington* litigation immunity, the *Kobe* cases could benefit some patent litigation defendants. These cases could possibly be most easily applied to the outsourced licensing scenarios – although in those scenarios, the patent holder has not typically acquired a group of patents for the purpose of being anticompetitive; rather the patents already exist and the patent holder wants to exploit them against a specific competitive target. An interesting question would be how readily the *Kobe* line of cases could be applied to a patent mass aggregator company that set out to amass one of the largest patent portfolios in the world and then collect revenue from licensing the portfolio. Whether *Kobe* would apply beyond the outsourced licensing form of privateering remains somewhat

doubtful, but could possibly be applied by a court that found that the sponsor's activities were objectionable and should be sanctioned.

[End of document]

## End Notes

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<sup>1</sup> *Transparent-Wrap Mach. Corp. v. Stokes & Smith Co.*, 329 U.S. 637, 643 (1947).

<sup>2</sup> See e.g., *Illinois Tool Works v. Independent Ink, Inc.*, 126 S. Ct. 1281 (2006).

<sup>3</sup> *Id.* at 1289-90. ("Although the patent misuse doctrine and our antitrust jurisprudence became intertwined in *International Salt*, subsequent events initiated their entwining.").

<sup>4</sup> *U.S. Philips Corp. v. Princo Corp.*, 173 Fed. Appx. 832 (Fed. Cir. 2006) (reversing grant of summary judgment to patentee of no patent misuse on the grounds that the district court erred in treating 35 U.S.C. § 271(d)(5) as a definition of patent misuse that precludes a finding of patent misuse unless the tied patents involved multiple products).

<sup>5</sup> 15 U.S.C. Chapter 1, Sec 2;

[http://www.law.cornell.edu/uscode/215/usc\\_sec\\_15\\_00000002----000-.html](http://www.law.cornell.edu/uscode/215/usc_sec_15_00000002----000-.html).

<sup>6</sup> *Eastern R. Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U.S. 127 (1961).

<sup>7</sup> See, *Professional Real Estate Investors*, *supra* note 300 at 49.

<sup>8</sup> *Id.*

<sup>9</sup> Treaty establishing the European Community (Nice consolidated version) - Part Three: Community policies - Title VI: Common rules on competition, taxation and approximation of laws - Chapter I: Rules on competition - Section I: Rules applying to undertakings - Article 101, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:12002E081:EN:HTML>.

<sup>10</sup> 15 USC, *supra* note 396.

<sup>11</sup> *Kobe, Inc. v. Dempsey Pump Co.*, 198 F.2d 416, 423-425, 426-427 (10th Cir.), cert. denied 344 U.S. 837 (1952).

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*