École des Hautes Études Commerciales de Montréal

Protection, évaluation et financement de la création des innovations

LA PROPRIÉTÉ INTELLECTUELLE EN TANT QU'ACTIF : CRITÈRES ET PROCESSUS D'ÉVALUATION

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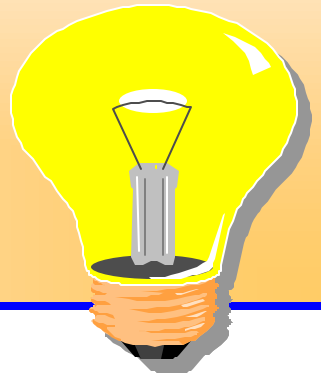

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1. INTRODUCTION

Intellectual property has made a major contribution in establishing and building competitive advantage of businesses, as industries in the western world have shifted to technology-intensive industries and towards the creation of added value through product differentiation. Not only has the market recognized the importance of intellectual property such as trade marks, patents and proprietary technology as determinants of corporate worth but lenders are increasingly accepting intellectual property as collateral to secured financing.

Combined with labour and capital, intellectual property can build markets, dominate industries, preserve customer loyalty and generate super profits for the owner.

The valuation of intellectual property is often for purposes of related-party transfer pricing; arm's length, open-market transactions; financing when such property is given as collateral to a lender; insolvency and bankruptcy proceedings; licensing; or in the context of litigation.

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2. VALUATION

Valuations are technically ***notional-market valuations*** because they are usually performed in the absence of *open-market* negotiations. For example, the appraisal of a home provides an indication of fair market value in the *notional market*; but the actual price at which that home transacts, following arm's length negotiations, is the market value of the home in the *open market*. "Fair market value" is determined in the context of the *notional market*.

Valuations of intellectual property are usually required in the following circumstances:

- Where property is transferred in a non-arm's length transaction ("transfer pricing"). For income tax purposes, the transfer is deemed to occur at fair market value.[1]
- In determining whether the licensing or royalty terms of an agreement properly reflect fair market price, for income tax, corporate law and/or securities regulation purposes.
- In corporate reorganizations.
- Family law settlements or litigation.[2]
- Transactions of business ownership interests, shareholder buy-sell agreements, etc.
- Allocation of the total transaction price of a business among its various tangible and intangible assets.[3]

(1) Section 69 of the *Income Tax Act*.

(2) For example, for determining net family property pursuant to section 4 of the Ontario *Family Law Act, 1986* or a compensatory payment for Quebec Family law purposes.

(3) Section 68 of the *Income Tax Act*.

- Independent fairness and/or valuation opinions pursuant to provincial Securities Acts and/or Securities Commission Policies.[4]
- Negotiation of financing with banks and other lenders[5].
- Insolvency.

2.1 Fair Market Value — General

The value standard most frequently applied in *notional-market* valuations is "fair market value". The accepted definition of this valuation term by Canadian courts and the income tax authorities is:

> "The highest price available in an open and unrestricted market between informed and prudent parties acting at arm's length and under no compulsion to act, expressed in terms of cash."[6]

"Fair market value" in the *notional market* contemplates that, among other things:

(4) For example, *Policy Q-27* of the Quebec Securities Commission and *Policy Statement 9.1* of the Ontario Securities Commission, as amended.

(5) Lenders are increasingly accepting intellectual property as collateral to financing provided (a) the assets are capable of legal enforcement, (b) have a material value in the event of liquidation, (c) can be separated from the business and (d) can be adequately secured, e.g., well-known trade marks which can be sold or transferred and have a proven market.

(6) See, for example, *Minister of Finance* v. *Mann Estate* (1972) 5 WWR 23 at 27; aff'd (1973) CTC 561 (CA); aff'd (1974) CTC 22 (SCC) and *Re Domglas Inc.* (1980), 13 BLR 135; 1980 CS 925 (Que. S.C.), aff'd (1982) 138 DLR (3d) 521 (QCA).

- The market is open and unrestricted; no potential purchasers are to be excluded from participation in the market;
- Both parties are informed, prudent and exercise care when assessing their respective sale and purchase decisions;
- The parties are acting at arm's length, i.e., the negotiation is between parties having opposing economic interests; and
- Neither party is under any compulsion to transact (e.g., distress sales are excluded).

2.2 Value vs. Price

"Fair market value" in the notional context (which assumes "ideal" market conditions) may not equate to the *price* which could be fetched for the asset on the open market (i.e., in the real world) because, typically, prices in the *open market* (as opposed to the *notional market*) are negotiated between parties having differing knowledge, differing negotiating skills and differing financial strengths. One party may not be acting prudently, may not be apprised of all relevant information concerning the intellectual property or other factors which may influence price, or may be forced or under compulsion to transact, thereby resulting in a distress-pricing situation. In addition, the price negotiated may not be expressed in terms of cash or cash equivalent but in the form of non-interest bearing notes or earn-out agreements.

Because value "is in the eye of the beholder (purchaser)", there can be as many prices for an asset as there are purchasers; each purchaser would likely pay a price which is unique to it because of the purchaser's ability to utilize the assets in a manner peculiar to it.

Certain purchasers may be able to benefit from synergies, economies of scale, increased market share, assured source of supply or customers, or other strategic advantages from the ownership of a business or interest therein, and would therefore be willing to pay a higher price than intrinsic ("stand-alone") value to obtain possession thereof. For example, to acquire a control-

ling interest in a business enterprise, significant control premiums are paid over the prevailing stock market prices of public companies.[7]

Because the purchaser is better positioned to recognize or identify the particular uses of the subject property and to quantify them than the vendor, and since the property would generally not have been exposed for sale in the *open market* proximate to the valuation date, in *notional* valuations it is seldom possible for business valuators to attach any specific or finite value to possible synergistic or strategic benefits, if any.

Consequently, notional valuations seldom include the recognition of "special purchaser" premiums, if such were to be applicable[8]. Such premiums would be maximized were there to be competitive bidding between two or more special purchasers.

The standard (or definition) of value means the type of value being estimated. The alternative standards of value generally address "value to whom?" The selection of the appropriate standard of value will be directly influenced by the purpose or intended use of the valuation and will have a direct impact on the value estimate. Moreover, the selection of the appropriate valuation premise will be dictated by the highest and best use of the property being valued.

2.3 Basic Valuation Principles

While the following principles apply to *notional-market* valuations in general, the examples herein relate to intellectual property in particular:

(7) In this connection, "fair market value" is contrasted with "transaction value", the latter including a premium for synergistic and strategic benefits.

(8) In this connection, "fair market value" is contrasted with "transaction value", the latter including premiums for synergistic and strategic benefits.

- ***Value is determined at a specific point in time.***

  Internal and external changes which affect the prospects of the particular intellectual property typically lead to changes in its underlying value. For example, an exclusive licensee of a well-known, highly-profitable, consumer product has been informed by the licensor that the licence will not be renewed. All other things being equal, the value of the licence to the licensee will diminish throughout the balance of the licence term. Another example pertains to patents on innovator pharmaceutical drugs which have recently expired. Although previously of significant value, those coming off patent this year will suffer a huge loss in value because of the entry of competitive generic products on the market.

- ***Value is prospective; it is a function of the future benefits anticipated to accrue from ownership.***

  In an open-market context, hypothetical purchasers are typically interested in commercially exploiting intellectual property because of the future earning capabilities measured by way of cost savings, super profits, exclusively to a market or product, royalty and licensing potential amongst others, as opposed to historical earnings. The use of historical results is limited to providing a benchmark or establishing future trends in the manner in which the property can be exploited, and may have no relationship to future potential.

- ***Value may have two distinct components, commercial (or transferable) value and non-commercial value (or value-to-owner).***

  Value in a notional-market context does not encompass non-commercial "personal" value. Before intellectual property can be valued on a "stand-alone" basis, it must be determined whether it can be separately identifiable from other assets with which it has been commercially exploited. To be separately identifiable, the intellectual property must:

(a) be capable of legal enforcement and legal transfer of ownership;

(b) be capable of having its income stream accruing from the asset identifiable and isolated from the contribution of other assets employed in the business; and

(c) be capable of being disposed of without selling to the same purchaser the other business assets.

- ***The market dictates the required rate of return.***

  Market forces guide the required level of rates of return a notional purchaser requires on his or her investment in intellectual property. These rates of return are affected by general economic conditions and other relevant factors impacting risk and reward.

  Royalty and licensing terms which are entered into in exchange for the ability of another party to exploit the intellectual property are established to provide the owner of the asset with a fair rate of return on investment. The rate of return must also be acceptable to the potential licensee and must consider the rates of return available on alternative forms of investment which compare, in terms of risk, the value of the intellectual property, the amount of complementary assets required to commercialize such property and the relative investment risk such as the threat of obsolescence, competing technology, industry changes, government regulations and other factors.

- ***The value of an asset is based on what it can earn, unless liquidation results in a higher value.***

  If the business holding the intellectual property is not earning an adequate return on capital employed or when it is not viable as a going concern, the underlying business assets (including intellectual property) may be worth no more than the price they could fetch on the open market if the business were to be liquidated.

Intellectual property which is transferable and is versatile to numerous applications can have a greater liquidation value than the value-in-use to a business which has suffered a market or financial downturn, i.e., the purchaser could use the property in a more profitable manner.

- ***If there is only one special purchaser wishing to acquire the intellectual property, that purchaser will pay only a nominal amount more than other (ordinary) purchasers.***

  As noted above, two or more special purchasers may bid competitively, causing the price/value to increase above the property's "stand-alone" value.

2.4 Critical Elements of Intellectual Property Valuation

As intellectual property is worth what it can earn, what would someone be prepared to pay to-day, in terms of money or money's worth, for expected future economic benefits to be derived from the commercial exploitation of the property?

Generally, the key components of an intellectual property's underlying value are:

- *Transferability* — The asset must be capable of being transferred to a purchaser other than one who will also buy the other business assets. For example, if the license is not transferable and does not carry the right to sub-license, it will not have a transferable or commercial value, but value only to the owner.

- *Separability* — The asset must be capable of legal enforcement and legal transfer of ownership. It must be possible to isolate the benefits it generates from those derived from other intangible business assets such as reputation, workforce, distribution net-works, banking and/or supplier relationships, i.e., "goodwill" (which is a "catch-all" term).

- *Economic Life* — The economic life of the asset may be totally different from its legal or contractual life because of outside forces such as legislation, end-product industry, economy, government regulations, etc.

- *Extent of Novelty* — The less the intellectual property has a proven, established track record, the more difficult the valuation is because of lack of historical track record, proven market acceptance and information on industry required rates of return.

The valuation must be based on professional judgment in measuring the impact of the foregoing factors. This would include:

- selection of an appropriate valuation approach;

- determination of economic benefits a notional purchaser would derive from the intellectual property; and

- determination an appropriate rate, or fair, rate of return, given the relative risks in commercially exploiting the property.

As a result, the valuation of intellectual property is far from being a mechanical exercise. The valuator must gather sufficient data as well as evidence by means of enquiry and verification of all significant components which may affect the property's underlying value. He or she must consult counsel as to the legal rights and protection attached to the property and discuss with management assumptions relating to the property's future exploitation. Moreover, an independent review must be performed as to the returns on sales and assets achieved by competitors as well as the prospects of the industry as a whole.

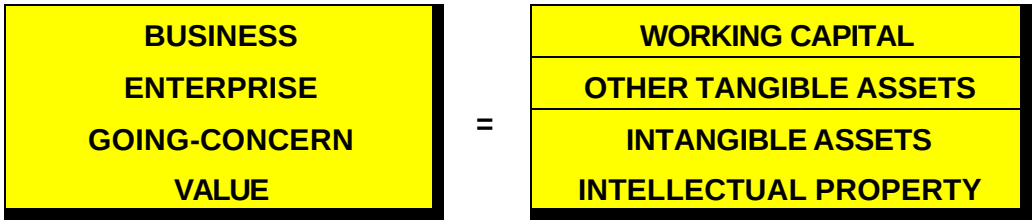
3. CONTRIBUTORY VALUE OF INTELLECTUAL PROPERTY TO THE BUSINESS

The assets of a business enterprise typically comprise (a) working capital, (b) other tangible operating assets and, often, (c) intangible assets, including intellectual property. Each asset may contribute to the earnings and operating cash flows of the business in its own particular way.

Figure 1 summarizes the elements, or components, of the business enterprise which operates as a going-concern. It most cases, intangible assets and intellectual property are not reflected on the balance sheet (and, if they are reflected, the carrying value bears little relationship to their going-concern, contributory value to the business).

Figure 1

ELEMENTS OF BUSINESS ENTERPRISE VALUE



Where:

- *Working Capital* is the excess of an enterprise's current assets (cash, marketable securities, accounts receivable, inventories, prepaid expenses, etc.) over its current liabilities (trade accounts payable, short-term liabilities, current portion of long-term debt, income taxes, withholding taxes, accrued liabilities, etc.).
- *Other Tangible Assets comprise plant, machinery and equipment, land and* buildings, office furniture and equipment, vehicles, etc.
- *Intangible Assets include goodwill such as customer loyalty, assembled work* force, favourable contracts, etc.
- *Intellectual Property includes patents, copyrights, trade marks, trade secrets,* proprietary technology, etc.

Intangible assets, including intellectual property, have their highest and best use within the business enterprise. Intangible assets other than intellectual property are directly employed by the business because they are generally an integral part thereof and inseparable from it (e.g., an assembled and trained work force, customer relationships, employee relationships, banking and supplier relations, etc.) — often referred to as "goodwill"[9]. Intellectual property owned by a business may be separately identified and the benefits from its commercial exploitation can be measured.

4. VALUATION METHODOLOGIES

Intellectual property is valued by adopting (a) the Cost Approach, (b) the Income Approach or (c) the Market Approach. In some circumstances a combination of these approaches may be appropriate.

4.1 Cost Approach

4.1.1 General

The Cost Approach[10] is a general way of measuring the future benefits of ownership by quantifying the amount of money that would be required to replace the future service capability of the subject property. This approach contemplates that the cost to purchase or develop a similar

(9) In *Manitoba Fisheries Limited* v. *The Queen*, (1979) 1 SCR 101 (SCC), Mr. Ritchie of the Supreme Court of Canada commented (at 108):

> "In my opinion, viewed in this light, goodwill, although intangible in character, is a part of the property of a business just as much as the premises, machinery and equipment employed in the production of the product whose quality engenders that goodwill".

(10) Referred to in business valuation as the Asset-Based Approach.

new property is commensurate with the economic value of the service that the property can provide during its life. It assumes that economic benefits exist and are of sufficient amount and duration to justify the expenditures. Under this approach, the current costs of obtaining an unused replica of the subject property or the costs of obtaining a property of equivalent utility are determined. Physical depreciation is deducted from the costs to reflect elements of functional obsolescence.

This is a useful approach for certain intellectual property when (a) the income stream or other economic benefits associated with the property being valued cannot be reasonably and/or accurately quantified, (b) the intellectual property forms part of a larger group of assets and (c) when other valuation approaches are not appropriate.

The Cost Approach is often the only appropriate valuation methodology for newly-developed intellectual property, as the future end-product market share which the intellectual property may allow the user to capture, may be entirely speculative. In such cases, it would be inappropriate to label the asset as "valueless" — e.g., computer software in beta testing, proprietary technology or trade secrets which present significant advancements toward a cure for AIDS. The key elements to consider in applying this approach are transferability, reasonableness and commercial potential.

In adopting the Cost Approach, there are various methods (or techniques), including the Reproduction Cost Method and the Replacement Cost Method. The fundamental differences between those two cost categories are that the Reproduction Cost Method estimates the cost to replicate the subject property whereas the Replacement Cost Method establishes the cost to replace the subject with another property having similar function and utility. Consequently, the latter method considers the development of a new asset which would achieve the same functions as, but not necessarily be identical to, the subject property. Both methods, however, consider the cost of equipment and supplies together with the cost of labour necessary to fully develop the property.

The cost to recreate intellectual property includes labour and other direct expenditures such as consulting fees, research and development, prototype costs and other direct out-of-pocket expenses. For example, applying the Cost Approach to value trade marks would entail aggre-

gating historical advertising and promotional expenditures used to develop the brand's recognition, whereas actual legal costs incurred would be relevant in valuing a patent application.

Once the cost to reproduce the subject asset is determined, economic depreciation must be estimated considering the asset's life cycle. As will be addressed later in this paper, the depreciation adjustment amortizes the cost of the property over its useful economic life, which is a function of obsolescence.

Once the cost of reproduction new is established, the three types of depreciation/ obsolescence (physical depreciation, functional obsolescence and economic obsolescence) must be deducted.

Accordingly, under the Cost Approach, the value of the intellectual property would be calculated as follows:

REPRODUCTION COST NEW or REPLACEMENT COST*

minus

PHYSICAL DEPRECIATION

and minus

FUNCTIONAL OBSOLESCENCE

equals

DEPRECIATED REPLACEMENT COST

minus

ECONOMIC OBSOLESCENCE

equals

FAIR MARKET VALUE

* If a less costly substitute for Reproduction Cost New.

4.1.2 Limitation in Use

In the event that there is strong evidence of technological and commercial potential, the Cost Approach may not provide an indication of the highest price obtainable in the open market. This is because potential purchasers, in light of the subject's commercial potential, may be willing to pay a premium over the cost they would otherwise incur in attempting to replicate the property in order to own a novel product in a timely fashion. This premium may be measured by profits or royalties foregone throughout the development process, or for an indefinite time for novel property which would assure virtual exclusivity through potential infringement protection.

Adopting the Cost Approach to value intellectual property has many weaknesses: costs are not necessarily commensurate with the future economic benefits a notional purchaser would consider in pricing an intellectual property. In many, if not most, cases the value of trade marks or patents bears little relationship to historical costs incurred in developing them. For example, significant investments may have been made for developing a particular patented manufacturing process only to learn that the source of material supply is so limited that it renders the entire process non-viable. On the other hand, there are numerous examples where the value of intellectual property is significantly higher than the aggregate historical costs incurred in developing it, such as in the pharmaceutical industry where successful patented drugs have captured such significant market share that their value, measured in terms of future earnings or benefits, is significantly higher than the historical costs incurred to develop them.

Hence, the Cost Approach is often limited *to notional-market* valuations prepared in order to apportion the price of a business over its underlying group of assets, often for income tax (or financial-presentation) purposes.

4.2 Market Approach

4.2.1 General

The Market Approach is a general way of determining a value indication of an asset using one or more methods that compare the subject asset to similar assets that have been sold. Market transactions can provide objective, empirical data for developing value measures.

The Market Approach is based on the principle of substitution which dictates that a potential hypothetical purchaser would not pay more for a business asset including intellectual property or access thereto, than for equally desirable opportunities of similar characteristics. To the extent that empirical data on similar assets are available, this method can provide an excellent indication of value, as it is based on sellers' and purchasers' behaviour in the market.

4.2.2 Limitation in Use

The principal weakness of this approach is that it is often difficult, if not impossible, to obtain information on actual transactions or sales offers which can reasonably compare to the intellectual property being valued. Since most intellectual property is highly specialized, finding appropriate market-comparable assets is difficult, particularly because details of licensing transactions, such as the level of risk assumed by each party, are rarely disclosed and the only comparable is often found within the company.

This approach is mainly used in conjunction with the Income Approach (discussed below), when comparable royalty rates are used in valuing intellectual property.

4.3 Income Approach

4.3.1 General

The Income Approach is a general way of determining a value indication of an asset using one or more methods wherein a value is determined by converting future anticipated benefits. These anticipated benefits are expressed in monetary terms.

Depending on the nature of the intellectual property, anticipated benefits may be represented by such items as direct cash flows, premium profits, cost savings, royalties, licensing fees and various forms of earnings. Often intellectual property can derive benefits from various sources, such as licensing, in addition to direct sales. The anticipated benefits are estimated considering items such as:

- The nature of the intellectual property and the manner in which it is exploited (i.e., trade marks, trade secrets, franchise, know-how, copyrights, patents, etc.);
- The economic and legal life;
- Historical financial benefits derived from commercial exploitation;
- Anticipated benefits which can be derived by alternative uses, such as the potential to sub-license;
- Industry trends impacting on the exploitation of the intellectual property and/or the commercial potential of end-products;
- Economic factors; and
- Level of protection and confidentially acting as a barrier to competitive entry (i.e., exclusivity vs. non-exclusivity).

Applying the Income Approach, benefits anticipated from the commercial exploitation of intellectual property are converted to value by separately identifying the income associated by virtue of such exploitation. If the particular income generated by the asset is not capable of being separated from the earnings generated by other business assets, then this valuation method may not be appropriate.

Future cash flows or profitability directly attributable to intellectual property can be estimated by one or more of the following methods:

(a) Isolating the profits accruing to the owner of the property which are above the "normal" profits generated by similar businesses ("*premium profits*");

(b) Calculating the "*residual value*", i.e., the excess of the global value of the business owning the intellectual property over the value of the business if it did not own such property; and/or

(c) Using the Relief-From-Royalties Method or Royalties Foregone Method which, as explained below, involves estimating (I) the notional royalty income which may be earned by licensing the intellectual property, or (ii) the royalty the owner is exempt from paying by virtue of his or her own ownership of the property.

The appropriateness of the method selected depends largely on the quality and relevance of the information available as to the earning capacity of the intellectual property.

Once the income associated with the intellectual property has been isolated, the more common methods or techniques applied under the Income Approach are:

- Capitalization of direct and/or premium profits; and
- Discounting the future stream of benefits, applying either the Discounted Cash Flow ("DCF") Method or the Discounted Future Earnings ("DFE") Method.

4.3.2 Capitalization of Profits

4.3.2.1 General

This method involves (a) estimating the level of future direct profits anticipated result from the intellectual property's future exploitation and (b) capitalizing them at an appropriate rate or multiple which reflects the future earnings growth and the risks associated with such growth. For example, licensing income accrues as soon as a sale is made. It is therefore less risky for the licensor than if derived from the net earnings or cash flows of the licensee. Consequently, the licensor will require a lower rate of return on his/her asset and a lower discount rate will therefore be appropriate.

The drawback to this method is that in many cases it is difficult to isolate the income associated with intellectual property. In these cases, direct analytical approaches, such as the Premium Profits Method or Relief-From-Royalties Method, may be appropriate.

4.3.3 Premium Profits Method

A valuation technique applied in valuing intellectual property is the Premium Profits Method (outlined below) which involves estimating the future cash flows anticipated from the product in excess of the cash flow that might otherwise be expected to be generated by the business enterprise if it were not an owner of the specific intellectual property, i.e., "super profits" or "premium profits". Care is exercised in distinguishing between profits attributable to the individual product itself and profits identified with the trade mark or brand, as the latter profits represent the super profits (or premium cash flows), i.e., the excess cash flow over the normal cash flow. In capitalizing these premium profits, or discounting them back to the effective quantification date, the discount rate (rate of return) considers the enterprise's "weighted cost of capital" (discussed below) and the various risk factors and earnings growth relating to the business environment in which the subject intellectual property is being valued. Again, it is always essential to distinguish between profits generated in the normal course of business by the enterprise and

profits which can be identified from the commercial exploitation of the trade mark yielding the super profits.

More specifically, applying the Premium Profits Method, the first step is to project the total cash flows of the business enterprise which owns the intellectual property. An appropriate return on the net *tangible* assets[11] is subtracted therefrom, yielding the "excess earnings" or "super profits" attributable to the business' *intangible* assets. More specifically, as the risk attached to the *tangible* assets of a business is typically lower than that with respect to the *intangible* assets, the required rate of return on the former is lower. The after-tax return on the net tangible capital employed in the business is deducted from the enterprise's total cash flow after tax, yielding the "excess earnings" or "super profits" as noted above. The income generated by each intangible asset (or asset category) must be separately identified. Other (unrelated) intangibles are then valued and an appropriate return on these is deducted from the super profits in order to value the intellectual property which is the subject of the valuation.

This method may not be appropriate, or may be difficult, if the business benefits from more than one intangible asset contributing to excess earnings. Often, the difficulty in applying this method is in isolating the income and super profits directly associated with the intellectual property.

4.3.4 Discounted Cash Flow Method

In situations where future capital investments in complementary assets are required, the specific timing of the cash in-flows and cash out-flows can be reasonably identified (e.g., newly-developed intellectual property, initial market penetration with a new product, implementation of a new manufacturing process, etc.) and future expected results are either known or reasonably predictable, the Discounted Cash Flow ("DCF") Method is generally appropriate.

(11) Net working capital (cash, accounts receivable, inventories, prepaid expenses, etc. minus trade accounts payable and short-term payables) and other intangible operating assets (plant, machinery, equipment, land, buildings, etc.).

Applying such method, projected cash flows are discounted to the present by a rate of return which considers the time-value of money and the investment risks relating to the commercial exploitation of the subject intellectual property, as well as the opportunity costs of acquiring the assets.

In addition, the present value of the residual, or "terminal", value of the assets is included in the calculation, because there is an assumption that assets purchased will ultimately be disposed of (converted to cash). To the extent that sales proceeds for such assets would form all or part of the return of the initial purchase price, such proceeds would be considered in the same manner as other cash in-flows received during the period and would be discounted to also reflect the limited legal and economic life of the intellectual property.

4.3.5 Relief-From-Royalties Method

This method is applied mainly when economic benefits are a function of *royalties*. It is premised on the fact that if the intellectual property (e.g., a patent being valued were not owned by its user, the user would normally have to pay the patentee a royalty for the right to use it). The royalty is generally a function of the rights being granted (e.g., exclusive vs. non-exclusive) and other relevant factors, such as:

- the industry;
- the nature of the intellectual property;
- the rights in the property;
- the level of incremental profits or cost savings through the use of the asset;
- the strength of protection;

- exclusivity;
- the ability to sub-license; and
- arm's length royalty rates for comparable intangible assets.

Applying this method, forecasts of future avoided royalties are projected and discounted back to the valuation date on an after-tax basis. The choice of a discount rate reflects the time-value of money and earnings growth including the risks of achieving the projected cash flow generated by the intellectual property. As a royalty rate normally considers only part of the risks associated with the commercial exploitation of the property, and is generally a function of gross revenues (as opposed to net profits or cash flows), a relatively low discount rate is used.

The difficulty with this method lies in establishing a hypothetical royalty rate when the asset is not already subject to a licensing agreement. In such a case, the valuator must research publicly-available information on agreements covering the exploitation of similar intellectual property. If such information is unavailable, the valuator will determine an appropriate return, given the rates of return available on alternative investments, having regard to the risks in achieving the projected future economic benefits.

Table 1 on the following page provides an example of this method for a company whose products are sold in the retail market through chain stores directly and through distributors and wholesalers.

TABLE 1

RELIEF-FROM-ROYALTIES CALCULATION

($000s)

		1997	1998	1999	2000	2001	Terminal
Net Revenues		454,000	495,295	541,808	593,510	653,932	686,629
Retail/Consumer Branded Sales	10.0%	45,400	49,530	54,181	59,351	65,393	68,663
Royalty Saved	3.0%	1,362	1,486	1,625	1,781	1,962	2,060
Provision for Taxes	36.0%	490	535	585	641	706	742
Net Royalty Saved		872	951	1,040	1,140	1,256	1,318
Discount Factor	17.2%	0.85317	0.72790	0.62102	0.52984	0.45204	0.45204
Present Value		744	692	646	604	568	596
Present Value 1997-2001							3,253
Perpetuity Value 2002							4,881
Indicated Value of Retail/Consumer Brands						**(A)**	8,134
Wholesale Branded and Other Sales	65.0%	295,100	321,942	352,175	385,782	425,056	446,309
Royalty Saved	1.0%	2,951	3,219	3,522	3,858	4,251	4,463
Provision for Taxes	36.0%	1,062	1,159	1,268	1,389	1,530	1,607
Net Royalty Saved		1,889	2,060	2,254	2,469	2,721	2,856
Discount Factor	17.2%	0.85317	0.72790	0.62102	0.52984	0.45204	0.45204
Present Value		1,611	1,500	1,400	1,308	1,230	1,291
Present Value 1997-2001							7,049
Perpetuity Value 2002							10,574
Indicated Value of Branded and Other Sales						**(B)**	17,623
TOTAL PRESENT VALUE OF ROYALTIES SAVED						**(A + B)**	25,757

5. ROYALTY ECONOMICS

Royalty payments are normally expressed in a manner so as to provide a fair rate of return on the investment made by the owner in the intellectual property being transferred.

As intellectual property will normally generate future economic benefits when combined with a portfolio of other business assets, a royalty rate is normally established by isolating the required rate of return directly attributable to the intellectual property component of the business. This royalty, or rate of return, is selected after consideration of the particular risks each licensing party must bear; the party bearing the higher risk should receive the higher rate of return. Factors affecting the royalty rate, all of which are determinants of future profitability, include:

- investment requirements in complementary assets;
- competition;
- protection strength of the asset;
- risk of technological obsolescence;
- government regulations; and
- prevailing economic conditions.

When valuing intellectual property based on (a) the royalties foregone, or (b) the cash flow anticipated from royalties, and when the intellectual property is not already licensed, a notional royalty rate (expressed as a percentage of revenue) might be estimated by attempting to obtain licensing agreements covering similar intangibles. However, publicly-available information as to royalty rates is often limited and, even if available, underlying factors affecting the level of royalties must be isolated to allow a meaningful comparison.

When a non-arm's length transaction is contemplated, income tax and/or corporate law[12] may require a determination as to determine whether the royalty rate charged in exchange for the use of the intellectual property is fair, i.e., whether it compares to commercial market rates. Absent publicly-available information on royalty rates for similar intellectual property, the valuator will estimate an appropriate rate of return on the investment for the owner of the property.

As intellectual property rarely generates economic benefits on a stand-alone basis, but together with complementary assets (such as working capital, tangible operating assets and other intangible assets), the first step is to determine the overall economic return on the global assets of the business which owns the intellectual property. Once the aggregate return is determined (at least for purposes of estimating the enterprise's overall "weighted average cost of capital"), it is allocated among the assets based on (a) the relative importance of each asset in a particular business and (b) an appropriate rate of return associated with each asset-category's risk. For example, the rate of return allocated to monetary assets would be lower than the weighted average cost of capital because of the former's underlying liquidity.[13]

Intellectual property is considered to be the riskiest asset component of a business enterprise; it is generally not as liquid or as versatile for redeployment elsewhere. Consequently, it would dictate a higher rate of return.

Once the overall return on the business is established and reasonable returns for the net working capital and other tangible operating assets have been estimated, the business valuator is in a position to derive an appropriate rate of return to be earned on the intangible assets and intellectual property. The rate on the intellectual property and complementary assets is then converted to a royalty rate.

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(12) For example, Section 69 of the *Income Tax Act* or Section 241 of the *Canada Business Corporations Act*.

(13) While tangible assets which are not part of working capital may nonetheless be marketable, they allow a partial return on investment in the event the business would fail. However, the versatility of the tangible assets will dictate the required rate of return, e.g., highly-specialized assets cannot be redeployed and, consequently, are not as liquid.

5.1 Excess Earnings Method

Applying the Excess Earnings Method, the total future cash flow of the business enterprise which owns the intangible asset are projected. An appropriate return on the net tangible assets is subtracted therefrom, yielding the excess earnings ("super profits") attributable to the business' *intangible* assets. As the risks attached to the tangible assets is comparatively lower, a normal return on the tangible assets is typically low. The return on the net tangible assets is deducted from the total cash flow on an after-tax basis. The benefits attached to each intangible asset must be separately identified; the other (unrelated) intangibles are valued and an appropriate return on these is deducted from the excess earnings in order to value the subject intellectual property.

This method may not be appropriate, or may be difficult, if the business benefits from more than one intangible asset which contributes to excess earnings.

6. ECONOMIC LIFE OF INTELLECTUAL PROPERTY

6.1 General

Intellectual property (such as patents, copyrights, trade marks, leases, distribution contracts, licensing and franchising agreements, amongst others) has a recognized legal or contractual life. However, the *economic* life of an intellectual property is often shorter than its *legal* life, as it ceases either when the intellectual property is no longer profitable or when it is more profitable to use an alternative asset. For example, the effectiveness of a patent on a pharmaceutical drug may end before the patent expiry if a newly-patented innovator drug enters the market of equal or improved therapeutic merit. Alternatively, the economic life of a franchise may be longer than its legal (contractual) life if the franchisor has a history of automatic renewal.

In essence, the legal or contractual life does not dictate the economic life of intellectual property, as the latter depends on factors external to its historical exploitation. For example, manufacturing in chemical processes have been adversely affected by environmental regulations.

The valuator must exercise judgment in analyzing the past and present life characteristics of the intellectual property and how they will be influenced by future conditions. Although many methods have evolved for determining the average life of intellectual property, they focus on the duration and life patterns of several groups of property units which are comparable to the intellectual property being valued. The existence of comparable intellectual property in the market and the quality of public information relative thereto may impact the choice of the technique applied in estimating the economic life of the property.

6.2 History of Additions and Retirements

For historical information to be relevant there must exist: (a) complete and accurate data on additions and retirements of similar intellectual property, (b) a sufficiently large quantity of similar assets, (c) a relationship between historical transactions and expected future transactions and (d) considerable information on the complete product life cycle.

Valuation problems arise when a business does not keep records with respect to property acquired and retired over their lifetime.

6.3 End-Product or Service

To determine the economic life of intellectual property and hence its value, consideration is given to the product and/or service with which it is associated. The economic life of the end-product can provide an indication of the maximum potential life of the property. Other factors (not specifically related to the end-product) such as legislation, dependence on materials, environmental concerns, transferability, confidentially, etc. will also bear on its economic life.

6.4 Progression

Depending on the industry, it may be possible to determine the economic life of an intellectual property by reference to the progression of typical products, i.e., "generations" marketed within the industry. Examples include computer hardware, communication equipment and medical diagnostic equipment, all of which products have changed by generations over the last twenty years. These "generation" changes provide insight as to the pace of technological advances in the particular intellectual property's industry.

6.5 Examples of Factors Affecting Economic Life

6.5.1 Patents

There are three general types of patents:

1. Product patents, which relate to inventions which are incorporated in actual products sold;

2. Process patents, which relate to inventions which are improvements in a manufacturing method or production process and provide savings when compared to methods available before the invention; and

3. Design rights, which relate to the shape or form of a product and are more similar to trade marks or logos, but they apply to 3-dimensional objects.

A patent's economic life will depend on the likelihood of industry obsolescence, industry regulation, competitors designing around the patents and the likelihood that superior innovator processes or products can be developed.

Product patents may have rates as low as 1% or 2% for minor improvements over the state-of-the-art for simple mechanical products, slightly increasing for more complex or sophisticated items, and yet higher for sophisticated electronic products or systems, pharmaceutical products (particularly radio-pharmaceutical products) and similar types of items.

The royalty rate on process patents depends on the level of improvement compared with the former process and the consequential savings. Consideration is also given to how long the invention is expected to generate benefits from a technological point of view before it becomes obsolete as a result of new research and development. The rule is that the shorter the life expectancy, the higher the royalty rate, particularly if the invention is the result of expensive research and development.

Design rights have the lowest royalty rates, which — as with the other two types of patents, are market driven.

6.5.2 Trade Secrets and Trade Marks

Factors such as transferability, the extent of the protection of confidentiality, and versatility in the advent of market changes would bear on the economic life of trade secrets. As for a trade mark, its economic life may very well depend on the level of investments committed in the form of advertising to promote the underlying end-product. For example, should such investments cease, the trade mark would likely enjoy a very short-term life cycle. The value of a trade mark diminishes with time as it is replaced by new investments.

6.5.3 Copyrights

Contrasted with the foregoing, copyrights have a long legal life dictated by statute. However, the benefits likely to accrue therefrom normally fall short of their legal life, as they depend on the manner in which they can be exploited. The maturity of the product is a rather critical factor as, based on past experience, copyrights normally generate a higher level of return early on in their

lives and subsequently decline. As with other intellectual property, breadth of exploitation, versatility and timelessness are also important factors in determining the economic life of copyrights.

6.5.4 Proprietary Technology

Examples of factors which may affect the economic life of a particular computer software or proprietary technology include the range and breadth of its application, dependence on other products, competition, life cycle of generations, changes in the businesses of end-users and their environment. The more there is functional obsolescence, the shorter the economic life of such assets.

6.5.5 Right of Publicity

For other intellectual property such as rights of publicity, it is difficult to measure and quantify the asset's underlying economic life and, consequently, its fair market value. Without economic substance to the right, there is little value. The expected longevity of the personality must be considered, his or her lifestyle and notoriety may all be factors recognized in establishing the economic life of such property.

7. NEWLY-DEVELOPED INTELLECTUAL PROPERTY

Newly-developed intellectual property presents a particular valuation challenge. Although newly-patented products or processes may have proven their scientific validity, their commercial viability and success have yet to be proven.

As newly-developed intellectual property often encompasses emerging technologies, in the absence of historical track record, the value must be based upon the prospect for future eco-

nomic benefits over both the near-term and the long-term. Although such technology may hold great promise for generating substantial economic gains, the risks of failure are also substantial.

The absence of similar assets limits the use of applying market comparable royalty or licensing rates in order to derive value for newly-developed intellectual property.

Although the economic life of the subject intellectual property may be determinable by virtue of the end-product, each stage of its development and commercialization will result in significant fluctuations of economic returns. Typically, the launch of a newly-developed intellectual property will involve significant use of funds in the early years and will likely yield an initial deficit, whereas in later years positive cash flows will be generated from its successful commercialization. Although an Income Approach, applying the DCF Method, may be appropriate in providing an indication as to the value of newly-developed intellectual property, it requires significant degree of judgment on the part of the business valuator, because it involves the forecast of future benefits not proven in the past.

When the future economic benefits cannot be reasonably estimated or when projections are purely speculative, the Cost Approach may be the only appropriate valuation methodology.

8. CONCLUSION

As valuation is an art and not an exact science, there is necessarily a high degree of subjectivity — indeed judgment — required in the valuation process. The higher the quality of the data gathering and professional standards applied, the more reliable and meaningful the value indication arrived at.

Intellectual property is often the most difficult property to value. Because of these difficulties and certainly because of the potential difficulty for a lender to realize on the value of intellectual property if there is a loan in default, banks and other lenders are often reluctant to accept intellectual property alone as collateral for financing.

In more and more situations, banks may give consideration to all of a company's assets, both tangible and intangible, as security for a loan. Therefore, in such situations intellectual property, which enhances the value of the company as an ongoing business operation, indirectly but effectively becomes a form of collateral.