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Assessing the Economic Impact of Copyright Reform

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Assessing the Economic Impact of Copyright Reform on Authors, Makers, Photographers and Publishers in Canada in Reference to Two New Copyright-Related Treaties: WIPO Copyright Treaty (WCT), WIPO Performances and Phonograms Treaty (WPPT)

Marcel Boyer[*]

Résumé / *Abstract*

En 1997, le gouvernement canadien a signé deux nouveaux traités internationaux relatifs au droit d'auteur, adoptés en décembre 1996 par l'Organisation Mondiale de la Propriété Intellectuelle (OMPI, ONU) : le Traité de l'OMPI sur le droit d'auteur (WCT) et le Traité de l'OMPI sur les interprétations et exécutions et les phonogrammes (WPPT). Ce rapport a pour objectif de caractériser l'impact économique des droits suivants nouveaux ou révisés (sur diverses parties prenantes) : l'extension de la protection des œuvres photographiques de « 50 ans » à « la vie de l'auteur plus 50 ans » (sur les éditeurs), l'introduction d'un droit exclusif d'autoriser la mise à la disposition du public de l'original et d'exemplaires de leurs œuvres (sur les auteurs de programmes d'ordinateur), l'introduction d'une protection juridique appropriée contre la neutralisation des mesures techniques tel le chiffrement (sur les éditeurs, les auteurs de programmes d'ordinateur, les producteurs d'œuvres audio-visuelles, multimedia et cinématographiques), l'introduction d'une protection juridique pour toute information relative au régime des droits permettant d'identifier l'œuvre et diverses conditions (sur les auteurs, compositeurs et interprètes, les auteurs de programmes d'ordinateur, les producteurs d'œuvres audiovisuelles, multimedia et cinématographiques, les éditeurs).

Mots clés : Droit d'auteur, OMPI, impact économique.

In 1997, the Canadian government signed two new copyright-related international treaties adopted by the UN's World Intellectual Protection Organization (WIPO) in December 1996: the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT). The objective of this paper is to assess the economic impact of the following new or revised rights (on different groups of stakeholders): extending the term of protection of photographs from "50 years" to "the life of the author plus 50 years" (on publishers), introducing an explicit distribution right (on software makers), introducing legal protection for technological protection measures such as encryption (on publishers; software makers; audio-visual producers, multimedia and movie makers), introducing legal protection for rights management information used to identify works and other subject matters (on authors, composers and artists; software makers; audio-visual producers, multimedia and movie makers; publishers).

Keywords*: Copyrights, WIPO, Economic impact.*

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EXECUTIVE SUMMARY

In 1997, the Canadian government signed two new copyright-related international treaties adopted by the Geneva diplomatic conference on the UN's World Intellectual Protection Organization (WIPO) in December 1996, the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT). These were the first intellectual property treaties to address the digital network environment. They set out provisions to create a new exclusive right in favour of copyright owners, including sound recording producers and performers, to make their works available on-line to the public and to prohibit the circumvention of copyright protection and prohibit tampering with rights management information.

The objective of this paper is to assess the economic impact of the following new or revised rights (on different groups of stakeholders): extending the term of protection of photographs from "50 years" to "the life of the author plus 50 years" (on publishers), introducing an explicit distribution right (on software makers), introducing legal protection for technological protection measures such as encryption (on publishers; software makers; audio-visual producers, multimedia and movie makers), introducing legal protection for rights management information used to identify works and other subject matters (on authors, composers and artists; software makers; audio-visual producers, multimedia and movie makers; publishers).

Assessing the economic impact of those new or revised copyrights is a difficult task given the relative scarcity of reliable data. Our attempt to obtain reliable hard information from most if not all stakeholders' associations and/or collectives turned out to be very disappointing, mainly because such reliable hard information is simply not available. At this time, one must rely on lessons from the economic theory of efficient markets under conditions of imperfect and incomplete information (that is the main route followed in this report), supplemented by a relatively thorough and critical review of the relevant literature as well as exchanges, when possible, with stakeholders' representatives.

How to achieve a proper balance between the interests of creators and the public at large, between sellers and buyers, now and in the future? On the one hand, unless the creator can appropriate the value of his/her creation, the latter will support all or most of the cost of his/her work without reaping any, all or most of the benefits such work is generating. Inevitably, a sub-optimal level of production of creations as information goods is going to emerge. On the other hand, once completed, accomplished, performed, and available on some form of support, the typical work of authors, composers, interprets or other creators can be reproduced, made available and distributed to the public at large at a relatively small, sometimes very small, cost.

The social value of such work would be maximized if it entered in the public domain for everyone to use and enjoy. The role of copyright laws and procedures is to define and implement a delicate balance between these two conflicting objectives: make sure that creators have strong enough incentives to exploit and develop in the best possible way their

creative ability, and make sure that the public at large benefit as much as possible from those creators' works. In other words, the role of copyright laws and procedures is to favour the emergence of well functioning institutions, such as markets, collectives, clearing houses, and others, for the production, distribution and dissemination of those very particular "goods."

As a general conclusion, it seems that many arguments against extending and reinforcing the copyright laws are similar to the arguments against instituting stronger and more transparent property laws in times when or in regions where the protection of property is deficient. The importance of a strong legal property framework in fostering economic development and social welfare enhancement is well known and well documented. One should expect that a strong and transparent copyright framework would likewise foster cultural development and diversity as well as contributing to the social well being of all. It is also important to remember that a strong and transparent copyright framework remains a second-best alternative. Unfortunately, the first best alternative is not feasible even though one may hope, thanks to the strong and transparent copyright framework in emergence, that improved alternatives may be feasible in a not so distant future given the amazing and still barely exploited capabilities of new information and communication technologies, both those of the present and those yet to be created. Copyright protection is an evolving scenario, which will be with us for many years to come, as information and communication technologies keep challenging the creation industries.

Clearly, producers of copyrighted material, whatever the form of the material, are in overwhelming majority in favour of well defined and well enforced laws and regulations, including in particular the ratification and implementation of the new WIPO treaties, the WCT and WPPT treaties, as concluded in 1996 and signed by Canada in 1997. Their support for well defined and well enforced laws and regulations regarding copyrights is balanced with their support also for simple, efficient and user-friendly access to copyrighted works through properly designed institutions and mechanisms.

Many observers fear that the current proposals for copyright reform will make access to a significant number of some works very difficult. But the contrary may be closer to the truth. Insofar as the copyright owners are parties interested in making their works accessible to a large public in order to derive revenues from them, one may expect that different arrangements will emerge so that as many users as possible and profitable can have access to a larger number of high quality copies of copyrighted works than it is the case now. A few explicit exceptions should be introduced. Among the most important ones, it should be clear that if someone owns a copy of a copyrighted work, then that person should have the right to make it available freely to family and friends on a network (digital or otherwise) accessible to family and friends but not to the general public. This is simply an extension of one's personal library, and follows from the very basic and traditional social concepts of kinship and friendship. Hence, the right to share one's copy of a copyrighted work as fixed in a book, on a pre-recorded CD or DVD (or on any other support) among family members and friends should be reaffirmed and protected, whether that copyrighted work is on physical support (book, CD or DVD) or available on a closed and restricted "family" computer network.

Introducing an explicit distribution right, introducing legal protection for technological protection measures such as encryption, and introducing legal protection for rights management information used to identify works and other subject matters should have a very strong effect on software makers insofar as their products will be better protected from imitation and/or copying. One may expect lower final product prices as competition for customers become more intense, the better protection of copyright favouring the entry of competitors. A more transparent market will as usual serve everybody, at least the better, more innovative, and more reliable software makers. It is preferable to create a full distribution right in all copies but it should be stated that if the purchaser has lawful exclusive possession, he (or she) would be deemed to be the owner.

Efficient technological protection measures (TPM) and *proper* rights management information (RMI) are essential to the efficient functioning of markets (some yet to emerge) because they allow the protection of copyrights and make sure that the proper information is directly available at low cost to prospective buyers. Introducing legal protection for RMI used to identify works and other subject matters should have very positive effects on authors, composers and artists in Canada, on the industry which is responsible for the marketing of their works, and on the general public as consumers who will have access to a larger and higher quality set of choices. Introducing legal protection for TPM such as encryption and introducing legal protection for RMI used to identify works and other subject matters will similarly be beneficial to audio-visual producers, multimedia and movie makers in Canada. The TPM and the RMI should allow a significant reduction in piracy which represents a major drain on the resources which the general public (both the law-abiding consumers and the pirates) seems willing to transfer, in the forms of payment and investment, to Canadian audio-visual producers, multimedia and movie makers.

In addition to institutions, rules and procedures surrounding *efficient* TPM and *proper* RMI, we need market makers who will ensure that transactions can be done at the lowest possible cost. These are the main ingredients of a digital rights management (DRM) system necessary for the creation and development of efficient markets in copyrighted works. Unless the property rights are well defined and enforced, efficient markets are unlikely to emerge, whether we are dealing with physical goods or information goods. Defining and asserting the property rights on copyrighted works is as important for social efficiency in the new economic environment, which has emerged and is still emerging from digitization and convergence as well as from the globalization of trade and cultures, as the definition and assertion of property rights on land, labour and capital has been for the emergence of the modern advanced industrial societies.

Tampering or altering *proper* RMI for the purpose of furthering or concealing infringement should be prohibited. The prohibition would apply to tampering with RMI, such as the information that identifies the work, the owner of any right in the work or information about the terms and conditions of use of the work and any numbers or codes that represent such information. In order to protect privacy in lawful use, copyright protection should not extend to what is often referred to as the integrity of a rights management system, such as subsystems that allow rights holders to track the (individual) use of copyright material. Moreover, copyright protection should allow for an exception from liability that would apply

in respect of bona fide activities that affect RMI, carried out for the purposes of ensuring inter-operability, reverse engineering and security testing. It is therefore desirable to amend the Canadian Copyright Act to prohibit the act of circumvention of TPM done for the purpose of infringing copyright, and the act of circumvention for the purpose of (illegal) private copying. There should be an obligation however to make the works or means to access or use the works available to users who benefit from specific exceptions or where the work is in the public domain. All these conditions and exceptions should aim at and contribute to fostering the economic efficiency in trades between willing buyers and willing sellers in copyrighted works.

Extending the term of protection of photographs from "50 years" to "the life of the author plus 50 years", introducing legal protection for technological protection measures such as encryption, and introducing legal protection for rights management information used to identify works and other subject matters can only benefit overall the publishers in Canada. It will increase the availability of the works of creators because they will be better protected against unreasonable exploitation. It will favour the expansion of existing markets and the emergence of new markets by allowing better market segmentation. Finally, it will mean increased publishing activity given that more financial resources are likely to flow into the industry. A better protection can only make more transparent the transactions between creators and users, between the artists and the public.

It is extremely difficult to assess empirically the so-called economic impact that the ratification of the new treaties and the implementation of new laws and regulations are likely to have on the different groups of stakeholders because of the relative scarcity of reliable consistent data. Indeed, the available data are at best fragmentary, partial and most of the time very incomplete and unreliable. Given the increasing importance of copyright dependent economic activity and trade, developing a proper framework for identifying and collecting reliable and comprehensive data should be high on the priority of copyright policy authorities not only in Canada but around the world. It is therefore important and somewhat urgent that the Canadian Government (Heritage Canada, Industry Canada and Statistics Canada) embark on a significant endeavour of building, hopefully with the collaboration of other countries that represent a measurable pool of creators, a concerted and integrated database on all aspects of Intellectual Property, Patents and Copyrights: people, contracts, payments levels over time, distribution, sharing, related production and distribution industries, etc. It would be desirable to explicitly and thoroughly assess the current state of the available data and concurrently to move toward the design of an integrated database using all relevant reporting methodologies. The effort is significant and will require important resources. Clearly, the effort must rely on the collaborative involvement of many different people (statisticians, economists, experimentalists, pooling/survey specialists, psychologists, and others), aiming collectively at better understanding the intricate determinants not only of creation and entrepreneurship but also of pirating and (illegal) copying, and at better measuring those determinants as well as the end results themselves.

1. INTRODUCTION

The *Copyright Act* provides protection to creators and other rights holders in the form of exclusive rights over the communication, reproduction, and other uses of their works. The Government is committed to ensuring that copyright law promotes both the creation and dissemination of works and to ensure appropriate access for all Canadians to works that enhance the cultural experience and enrich the Canadian social fabric.

In 1997, the Canadian government signed two new copyright-related international treaties adopted by the Geneva diplomatic conference on the UN's World Intellectual Protection Organization (WIPO) in December 1996, the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT).[1] These were the first intellectual property treaties to address the digital network environment, by setting out provisions to:

- ☞Create a new exclusive right in favour of copyright owners, including sound recording producers and performers, to make their works available on-line to the public;
- ☞Prohibit the circumvention of copyright protection; and, prohibit tampering with rights management information.

According to the World Intellectual Property Organisation, the objective of the WCT treaty is to protect authors, composers and other creators of literature, art, music, films, software, and other such creative works, while the objective of the WPPT treaty is to protect the producers of 'phonograms' including music CDs, cassettes and other recordings produced by entities

[1] The World Intellectual Property Organization (WIPO) is an international organization dedicated to promoting the use and protection of works of the human spirit. These works – intellectual property – are expanding the bounds of science and technology and enriching the world of the arts. Through its work, WIPO plays an important role in enhancing the quality and enjoyment of life, as well as creating real wealth for nations. With headquarters in Geneva, Switzerland, WIPO is one of the 16 specialized agencies of the United Nations system of organizations. It administers 23 international treaties dealing with different aspects of intellectual property protection.

such as the members of International Federation of the Phonographic Industry (IFPI), as well as performers, such as singers and musicians. According to WIPO, the two new treaties reflect the international consensus as to how copyright needs to adapt in the new millennium. The treaties provide incentives and protection for creative individuals and companies in every country, both to reward and promote national culture and creativity, and to pave the way for electronic commerce in copyrighted works and products.

2. THE SOCIO-ECONOMIC IMPORTANCE OF THE INDUSTRY

It is difficult to get a complete and transparent picture of the copyright-based industries as a whole. But in today's knowledge-based economy, it is known to be huge and growing at a fast pace. The best sources we could find regarding the size and growth of the copyright-based industries as a whole is a of studies conducted by Economists Incorporated in part for the International Intellectual Property Alliance (IIPA), and a study by Industry Canada. IIPA is a private sector coalition representing the U.S. copyright-based industries in bilateral and multilateral efforts to improve international protection of copyrighted materials. Most of the data presented later in this section are taken from "Copyright Industries in the U.S. Economy – The 2002 Report" written by Stephen E. Siwek of Economists Incorporated for the IIPA, and from "The Importance of the Intellectual Property Industries in the Canadian Economy'' produced in 2001 by Sandra Charles, Gilles Mcdougall and Julie Tran of Industry Canada.

In the new codes system of NAICS, the North American Industrial Classification System, the relevant industry would fall mainly within Industry Sector 51: Information and Cultural Industries.

The North American Industry Classification System (NAICS) is an industry classification system developed by the statistical agencies of Canada, Mexico and the United States. Created against the background of the North American Free Trade Agreement, it is designed to provide common definitions of the industrial structure of the three countries and a common statistical framework to facilitate the analysis of the three economies. Like the Standard Industrial Classification (SIC)**,** which it replaced in 1987, NAICS is a system for arranging producing units into industries. The classification has been developed as a method of grouping businesses that produce the same or similar product and/or services and uses a hierarchical structure, getting more specific at lower levels. More precisely, the NAICS is a system for arranging producing units at the establishment level into industries. When all the relevant data relating to the production sectors of the economy are added together with complete coverage and no duplication, a fully integrated system of economic statistics exists. This is the primary aim of industrial classification systems. The industry sector we need to conduct study on is the new Industry Sector 51 described below.

INDUSTRY SECTOR 51: INFORMATION AND CULTURAL INDUSTRIES

511 Publishing Industries (except Internet)

5111 Newspaper, Periodical, Book and Database Publishers

51111 Newspaper Publishers
51112 Periodical Publishers
51113 Book Publishers
51114 Directory and Mailing List Publishers
51119 Other Publishers

5112 Software Publishers

51121 Software Publishers

512 Motion Picture and Sound Recording Industries

5121 Motion Picture and Video Industries

51211 Motion Picture and Video Production
51212 Motion Picture and Video Distribution
51213 Motion Picture and Video Exhibition
51219 Post-Production and Other Motion Picture and Video Industries

5122 Sound Recording Industries

51221 Record Production
51222 Integrated Record Production/Distribution
51223 Music Publishers
51224 Sound Recording Studios
51229 Other Sound Recording Industries

515 Broadcasting (except Internet)

5151 Radio and Television Broadcasting

51511 Radio Broadcasting
51512 Television Broadcasting

*5152 * Pay and Specialty Television*

516 Internet Publishing and Broadcasting

5161 Internet Publishing and Broadcasting

517 Telecommunications

5171 Wired Telecommunications Carriers
5172 Wireless Telecommunications Carriers (except Satellite)
5173 Telecommunications Resellers
5174 Satellite Telecommunications
5175 Cable and Other Program Distribution
5179 Other Telecommunications

518 Internet Service Providers, Web Search Portals, and Data Processing Services

5181 Internet Service Providers, Web Search Portals
5182 Data Processing, Hosting, and Related Services

519 Other Information Services

5191 Other Information Services

51911 News Syndicates
51912 Libraries and Archives
51919 All Other Information Services

Statistics Canada, the Economic Classification Policy Committee (ECPC) of the United States, and Mexico's Instituto Nacional de Estadística, Geografía e Informática (INEGI) have agreed upon the limited industry revisions for NAICS 2002. This revision of the 1997 industry classification system recognizes the important changes in the Information sector (Industry Sector 51), which have occurred since the introduction of NAICS.[2] Although new in 1997, the Information sector lacked categories related to important new and emerging industries, prompting the three countries to re-evaluate and restructure this sector. The date for the implementation of NAICS 2002 was January 2002.[3]

The data for the U.S. as collected and published in April 2002 by Siwek (2002) of Economists Incorporated for the International Intellectual Property Alliance suggest the following for the "core" copyright industries. The "core" copyright industries, as defined in that study, encompass those industries that create copyrighted materials as their primary product and includes the motion picture industry (television, theatrical, and home video), the recording industry (records, tapes and CDs), the music publishing industry, the book, journal and newspaper publishing industry, the computer software industry (including data processing, business applications, and interactive entertainment software on all platforms), legitimate theatre, advertising, and the radio, television and cable broadcasting industries.[4]

[2] The use of NAICS remains problematic in our case since No international trade is assigned to any NAICS codes beyond those starting with 33, because service industries don't produce goods. Even if a wholesaler manufactured a product as a secondary activity, the trade for that product would be assigned with the primary manufacturers in the manufacturing sector (31-33). Disentangling the data would require more time and resources than available within this project.

[3] The 2002 NAICS Canada Manual is announced for May 2003.

[4] Those "core" industries exclude portions of many other industries which either create, distribute or depend upon copyrighted materials (such as retail trade sales of video, audio, software, and books) the doll and toy industry and computer manufacturing.

Those U.S. core copyright industries

- Accounted in 2001 for 5.24% of U.S. GDP or $5,535.1 billion;
- Saw their share of GDP grew, over the period 1977-2001, more than twice as fast as the remainder of the economy (7.0% vs. 3.0% for the entire period; 7.0% vs. 3.2% for the period 1987-2001; and 9.4% vs. 3.0% for the more recent period 1997-2001);
- Have more than doubled, between 1977 and 2001, their employment to 4.7 million workers, which now represents 3.7% of total U.S. employment, for a growth rate of 5.0% vs. 1.5% for the rest of the economy;
- Achieved in 2001 foreign sales and exports of $88.97 billion, leading all major industry sectors (including chemical and allied products; motor vehicles; equipment and parts; aircraft and aircraft parts; and the agricultural sector).

The following tables from Siwek (2002) provide more details.

A Comparison of the Employment of the Copyright Industries and Manufacturing Industries In the U.S. Economy 2000, 2001
(in thousands)

Copyright Industries	2000	2001
Core	4,629	4,711
Partial	1,038	1,056
Distribution	1,799	1,825
Related	399	379
Total	**7,865**	**7,972**
Non-Copyright Manufacturing Industries		
Food and Kindred Products	1,684	1,685
Industrial Machinery and Equipment	1,775	2,014
Electronic and Other Electric Equipment	1,639	1,612
Fabricated Metal Products	1,537	1,479
Chemicals and Allied Products	1,038	1,033
Rubber and Miscellaneous Plastics Products	1,011	954
Apparel and Other Textile Products	630	566
Instruments and Related Products	852	859
Lumber and Wood Products	832	795
Primary Metal Industries	698	651
Paper and Allied Products	654	635
Textile Mill Products	527	473
Stone, Clay, and Glass Products	579	571
Furniture and Fixtures	558	527
Aircraft and Aircraft Parts	465	463
Petroleum and Coal Products	127	127
Leather and Leather Products	71	64
Tobacco Products	34	33

SOURCE: Siwek (2002), Table 8.

Foreign Sales/Exports for
Selected U.S. Industries 2000 and 2001
(in billions of dollars)

INDUSTRY	FOREIGN SALES/EXPORTS	
	2000	2001
Core Copyright Industries	85.46	88.97
Chemicals and Allied Products	74.43	74.68
Motor Vehicles, Equipment, and Parts	59.81	56.52
Aircraft and Aircraft Parts	51.52	55.31
Agricultural Sector	50.90	53.00
Electronic Components & Accessories	63.34	48.26
Computer & Peripherals	44.19	36.99

SOURCE: Siwek (2002), Chart 6.

TABLE: 1991-2001 Estimated Revenues Generated by Foreign Sales/Exports
of Selected U.S. Core Copyright Industries
(in billions of dollars)

Industry	1991 Estimate	1992 Estimate	1993 Estimate	1994 Estimate	1995 Estimate	1996 Estimate	1997 Estimate	1998 Estimate	Revised 1999 Estimate	2000 Estimate	2001 Estimate
Pre-Recorded Records, Tapes, Etc.	$6.15	$6.58	$7.44	$8.74	$9.76	$9.83	$10.01	$9.90	$10.27	$9.76	$9.51
Motion Pictures, TV, Video	$7.02	$7.05	$8.36	$9.34	$10.24	$11.58	$12.34	$12.93	$13.70	$14.50	$14.69
Computer Software	$19.65	$21.94	$24.32	$26.44	$29.14	$34.81	$40.28	$41.87	$50.65	$56.88	$60.74
Newspapers, Books, Periodicals	$3.36	$3.62	$3.67	$3.79	$3.97	$3.96	$4.22	$4.51	$4.79	$4.33	$4.03
Total for Selected Industries	**$36.19**	**$39.19**	**$43.78**	**$48.33**	**$53.11**	**$60.18**	**$66.85**	**$69.21**	**$79.41**	**$85.46**	**$88.97**

SOURCE: Siwek (2002), Table 9.

It is difficult to assess the size of the Canadian "core" copyright industries as defined in Siwek (2002) for the U.S. It would comprise most but not all industries in industry sector 51 presented above plus possibly some other industries from other industry sectors. A rule-of-thumb reasonable estimate would put it at 10% of the comparable U.S. industries. The following indicator suggests that the U.S. and Canadian copyright industries may be following a similar development path.

- The U.S. copyright industries value added share of GDP (as defined by Siwek, 2002) increased from 3.92% in 1995 to 5.24% in 2001, an increase of 132 basis points or 33.7%.
- The Canadian Information and Cultural Industries (Industry Sector 51)'s share of GDP increased from 3.1% in 1995 to 4.6% in 2001 (Statistics Canada), an increase of 150 basis points or 48.4%.

Although the definition of the two groups of industries may not be the same, it is comforting to observe, from the limited evidence above, that they may follow a similar path.

All the industries in Industry Sector 51 rely in a significant way on well defined and well enforced laws and regulations regarding intellectual property rights in general and copyrights in particular.

In Canada, the study by Charles, Mcdougall and Tran (2001) is the most reliable source of empirical data on the copyright sector. The following six tables are taken from that study. They indicate very clearly that the copyright sector is a very significant source of growth,

employment and trade. It is likely to keep on growing at a faster pace than the rest of the economy.

Table (Charles, Mcdougall and Tran 2001, Table 2.1)
List of works and activities protected by the *Copyright Act*

Type of work or activity	Description
Literary	Books, newspapers, tables, computer programs, brochures, poems and compilations of literary works
Artistic	Paintings, drawings, sculptures, architectural works, engravings or photographs, works of artistic craftsmanship, drawings, maps, charts, plans and compilations of artistic works
Musical	Any work of music or musical composition, with or without words, and any compilation thereof
Dramatic	Any piece for recitation, choreographic work or mime, the scenic arrangement or acting form of which is fixed in writing or otherwise, cinematographic works and compilations of dramatic works
Sound recordings	Recording, fixed in any material form, consisting of sounds, whether or not a performance of a work
Performer's performance	Performance of an artistic work, dramatic work or musical work; recitation or reading of a literary work, and an improvisation of a dramatic work, musical work or literary work, whether or not it is based on a pre-existing work
Communication signal	Activities associated with the use of radio waves transmitted through space without any artificial guide, for reception by the public

Source: *Canadian Legislation on Intellectual Property 2001*, Ejan Mackaay & Ysolde Gendreau, 2001, Thompson Canada

Table (Charles, Mcdougall and Tran 2001, Table 2.2)
List of copyright and neighbouring rights conferred by the *Copyright Act*

Owners	Type of rights		Description
Authors and creators	Copyright	$	Right to reproduce, record and fix
		$	Right to perform in public
		$	Right to publish
		$	Right to translate
		$	Right to communicate
		$	Right to retransmit
		$	Right to communicate to the public
		$	Right to rent out
		$	Right to remuneration for reproduction of sound recordings for private use
Exclusive distributors	Copyright	$	Exclusive right to import, for books
Broadcasters	Neighbouring rights	$	Right to record
		$	Right to reproduce authorized recordings
		$	Right to rebroadcast
		$	Right to remuneration for pay TV performances
Sound recording makers	Neighbouring rights	$	Right to publish
		$	Right to reproduce
		$	Right to rent out
		$	Right to remuneration for performance in public and communication to the public
		$	Right to remuneration for reproduction of sound recordings for private use
Performers	Neighbouring rights	$	Right to communicate, for unfixed works
		$	Right to fix
		$	Right to reproduce
		$	Right to rent out
		$	Right to remuneration for reproduction of sound recordings for private use
		$	Right to remuneration for performance in public and communication to the public of published sound recordings
		$	Right residuals, for actors

Source: *Canadian Legislation on Intellectual Property 2001*, Ejan Mackaay & Ysolde Gendreau, 2001, Thompson Canada

Table (Charles, Mcdougall and Tran 2001, Table 2.5)
Gross domestic product by selected sectoral group

Selected sectoral group	GDP 2000 ($billions)	Average annual rate of real growth 1992-2000 (%)	GDP of sector relative to Canadian GDP 2000 (%)	Contribution to growth in Canada 1992-2000 (%)
Manufacturing industries	151.7	5.5	17.1	28.0
Financial intermediaries and insurance industries	142.5	3.3	16.1	15.8
Copyright industries	65.9	6.6	7.4	14.6
Retail trade industries	53.8	4.5	6.1	8.1
Wholesale trade industries	56.1	6.3	6.3	11.8
Health and social services industries	52.3	-0.2	5.9	-0.3

Table (Charles, Mcdougall and Tran 2001, Table 2.6)
GDP of copyright sector

Copyright sector	GDP 2000 ($billion)	Average annual rate of real growth 1992-2000 (%)	As a percentage of GDP of copyright sector 2000 (%)
Principal industries	**42.77**	**8.0**	**64.9**
Creation	2.69	6.6	4.1
Publishing industry and Combined printing and publishing industries	4.43	0.7	6.7
Sound recording production	0.18	6.6	0.3
Production and distribution of motion pictures and audiovisual materials	1.95	9.7	3.0
Telecommunication broadcasting industry	3.0	2.4	4.6
Artistic production	1.37	6.6	2.1
Business services			
Computer services and related services	14.94	18.4	22.7
Architecture and engineering services and other scientific and technical services	11.73	5.8	17.8
Advertising services	2.48	4.3	3.8
Peripheral industries	**23.17**	**4.9**	**35.1**
Reproduction activities	5.17	(0.1)	7.8
Retail sales activity	3.94	6.2	6.0
Wholesale sales activity	0.72	6.6	1.1
Telecommunication/dissemination activity	13.34	6.0	20.2
Total	**65.94**	**6.6**	**100.0**

Table (Charles, Mcdougall and Tran 2001, Table 2.7)
Work force, copyright sector

	Industrial jobs 1999	Self-employed	Total work force 1999
Level of employment	663,172	260,200	923,372
As a percentage of total employment in Canada (%)	5.7	10.6	6.5
Average annual rate of growth (1992-1999) (%)	4.3	8.5	4.5
Contribution to employment growth Canada (%) (1992-1999)	15.2	24.8	20.9

Table (Charles, Mcdougall and Tran 2001, Table 2.10)
Foreign trade, copyright sector

	Exports 1999 ($billion)	Imports 1999 ($billion)	Balance of trade 1999
Trade			
Goods	2.395	5.366	(2.970)
Services	6.552	4.343	2.209
Total	8.948	9.709	(0.761)
As a percentage of GDP in copyright sector – 1999	15.0%	16.4%	
Average annual rate of growth (1992-1999)			
Goods	20.7%	12.6%	n.a
Services	14.6%	11.4%	n.a
Total	16.0%	12.1%	n.a

It is clear that the producers of copyrighted materials, whatever the form of the materials, are in overwhelming majority in favour of well defined and well enforced laws and regulations, including in particular the ratification and implementation of the new WIPO treaties, the WCT and WPPT treaties, as concluded in 1996 and ratified by Canada in 1997.

The position of the Periodical Writers Association of Canada (PWAC) as stated in PWAC (2001) is very clear to that effect and quite representative of the positions of other groups producers of copyrighted materials. However, their support for well defined and well enforced laws and regulations regarding copyrights, including in particular the ratification and implementation of the new WIPO treaties, the WCT and WPPT treaties, is balanced with their support also for simple, efficient and user friendly access to copyrighted works, as stated by PWAC: "Our members make an important contribution to Canada's periodical industry. They add diversity to the voices in Canadian newspapers and play a central role in telling Canadian stories to Canadians and to the world. Our ability to assert our copyright is essential to enable us to earn our living. Since all PWAC members frequently refer to copyright material and the public domain to create their stories, however, our concern for protecting copyright is balanced by an equal concern for protecting access for researchers."

3. OBJECTIVES AND MEASURES CONSIDERED

Objectives

The main objectives of this paper is to assess the economic impact of a certain number of specific changes as specified in the WIPO treaties (WCT and WPPT) that can be made to the *Copyright Act*.

The project covers a review of the literature and other relevant sources as well as discussions with Industry Canada policy analysts. Careful attention has been to explaining the proposed measures, developing and explaining a methodology for assessing the economic impact of the proposed measures making use of the criteria referred to in the previous section, identifying and bringing forward pertinent factual and statistical information both in the context of international experience, when applicable, and the Canadian situation. We made reasonable effort to fill gaps in data. This involved contacting stakeholders or stakeholder organizations.

Measures Considered

In particular, the objective of the paper is to assess the economic impact, obtained by comparing the status quo with the relevant changes, on different groups of stakeholders of different relevant changes in the following list of four changes:

1. Extending the term of protection of photographs from “50 years” to “the life of the author plus 50 years”,

2. Introducing an explicit distribution right,
3. Introducing legal protection for technological protection measures such as encryption,
4. Introducing legal protection for rights management information used to identify works and other subject matters,

that is, more precisely and specifically, to assess the economic impact

- On authors, composers and artists in Canada, of change #4 in the list above,
- On software makers in Canada, of changes #2, #3 and #4 in the list,
- On audio-visual producers, multimedia and movie makers in Canada, of changes #3 and #4 in the list,
- On publishers in Canada, of changes #1, #3 and #4 in the list.

More specifically, the different measures to be considered can be described as follows. The economic analysis pertinent to each measure considered is provided after the description of the measure.

A) Distribution right

Issue: *Should the Act be amended to introduce an explicit distribution right in order to comply with the WIPO treaties?*

The 1996 WIPO treaties provide for a "right of distribution" which includes the right of authorizing the making available to the public of tangible copies of copyright material

through sale or other transfer of ownership. In Canada, this right may be covered to a large extent by the publication right.

For the distribution right issue (related to the WCT), the policy options are as follows:

a) the status quo;

b) to create a full distribution right in all copies;

c) a third policy option is to create a full distribution right in all copies but to state that if the purchaser has lawful exclusive possession, he (or she) will be deemed to be the owner.

B) Rights management information

Issue: *Should the Act be amended to prohibit tampering with rights management information that is normally used to identify works and other subject matter?*

Rights management information generally refers to information that identifies a work or sound recording, such as the title, the author or first owner, the performer and an identifying code. It can also refer to terms and conditions related to the use of copyright material. The ability of rights holders to embed rights management information in their material helps them assert their interest in the material and monitor its use, especially in the network context. It can also facilitate on-line licensing. The information is only useful if its integrity is maintained, however. The WCT and WPPT both require member states to provide legal protection against tampering with rights management information that may be embedded in a work or sound recording. The *Copyright Act* currently contains no such provisions.

For the rights management information issue (RMI), the policy options are as follows:

a) Tampering or altering RMI for the purpose of furthering or concealing infringement would be prohibited. The prohibition would apply to passive infringement only (this refers to tampering with RMI, such as the information that identifies the work, the owner of any right in the work or information about the terms and conditions of use of the work and any numbers or codes that represent such information). Terms and conditions would not be protected and protection would not extend to false or misleading RMI.

b) As with (a), but the prohibition would extend to terms and conditions.

c) Protection would extend to the integrity of a rights management system, such as systems that allow rights holders to track the use of copyright material.

d) Regardless of the approach above, provide an exception from liability that would apply in respect of bona fide activities that affect RMI, carried out for the purposes of ensuring inter-operability, reverse engineering and security testing.

e) Remedy Options. Possible remedies include:

    i. civil remedy

    ii. criminal remedy

    iii. civil sanctions with the possibility of criminal sanctions if large-scale infringement or infringement done for commercial purposes.

C) Technological protection measures

Issue: *Should the Act be amended to provide sanctions against persons who use circumvention technologies to infringe copyright by defeating protective technologies such as encryption?*

New technologies have made it relatively easy to make "perfect" copies of digitized material with no loss in quality from the original. When combined with networks such as the Internet, which transmit digitized content, these technologies mean that copyrighted material becomes easily available to a worldwide audience.

Some rights holders are naturally concerned that once their works, performances or sound recordings are available over the Internet, preventing unauthorized dissemination becomes nearly impossible. They have indicated that the adoption of protective or "counter" technologies — encryption, for example — is the means by which they plan to disseminate their material in the networked environment and protect it from copyright infringement.

At the same time, such measures could significantly affect lawful access, for example, by fair dealing, various exceptions, and access to material in the public domain. The WCT (for authors) and the WPPT (for sound recording makers and performers), both have provisions dealing with the legal protection of such technological measures.

The *Copyright Act* would have to be amended to implement these WCT and WPPT provisions and permit ratification. The various possible approaches to implementation are

controversial. U.S. and EU copyright law both have provisions that prohibit not only the act of circumventing protective technological measures, but also the manufacture and trade in devices that may be used to circumvent. Australian law targets only the devices and not the act of circumvention itself.

For the technological protection measures (TPM) issue, the policy options are as follows:

a) Amend the Canadian Copyright Act to prohibit the act of circumvention of TPM done for the purpose of infringing copyright. This prohibition would not apply to circumvention done pursuant to an exception or with respect to material in the public domain.

b) As in option (a), but do not allow circumvention for the purposes of private copying under *s.80* of the Copyright Act.[5]

c) Prohibit not only the circumvention of TPM, but also the manufacture and trade of devices that may be used to circumvent.

d) As in option (c) but include an obligation to make the works or means to access or use the works available to users who benefit from specific exceptions or where the work is in the public domain.

[5] *s.80.(1)* Subject to subsection (2), the act of reproducing all or any substantial part of (a) a musical work embodied in a sound recording (b) a performer's performance of a musical work embodied in a sound recording, or (c) a sound recording in which a musical work, or a performer's performance of a musical work, is embodied onto an audio recording medium for the private use of the person who makes the copy does not constitute an infringement of the copyright in the musical work, the performer's performance or the sound recording.
s.80.(2) Subsection (1) does not apply if the act described in that subsection is done for the purpose of doing any of the things referred to in paragraphs 1(a) to (c): (a) selling or renting out, or by way of trade exposing or offering for sale or rental; (b) distributing, whether or not for the purpose of trade; (c) communicating to the public by telecommunication; or (d) performing, or causing to be performed, in public.

e) Regardless of the approach above, provide an exception from liability that would apply in respect of bona fide activities that affect TPM, which are carried out for the purposes of ensuring inter-operability, reverse engineering and security testing.

f) Remedy Options. Possible remedies include:

   iv. civil remedy

   v. criminal remedy

   vi. civil sanctions with the possibility of criminal sanctions if large-scale infringement or infringement done for commercial purposes.

D) Term of protection of photographs

Issue: *Should section 10 of the Act be deleted so as to allow the term of protection of photographs to follow the general rule applicable to other categories of works, currently the life of the author plus 50 years?*

The term of protection for photographs prior to Bill C-32 was 50 years from when the initial negative was made, but Bill C-32 changed it to the life of the author plus 50 years if the author is an individual or a corporation owned and controlled by the photographer. If the author is a corporation *not* owned and controlled by the photographer, then the term is 50 years from the time the initial negative or photograph (if there is no negative) was made. Many photographers believe that the existing rules are confusing and impractical given that corporate authorship can yield different results. The term of protection under the WCT is the life of the author plus 50 years for all photographs.

4. THE KEY STAKEHOLDERS

The key stakeholders in the Copyright debate are the creators (composers, writers, artists, interprets, makers, etc.), the producers and distributors of copyrighted works and finally the public both as consumers and as the prime advocates of efficiency based arguments and rules for a proper copyright system.

The key stakeholders (the creators collectives and the producers and distributors) contacted are listed in the *Appendix: Contacts with Stakeholders*. Most of them did not answer our e-mail message. We did receive useful information or documents from PACC/CFTPA and The Writers' Guild of Canada, who both sent us the Sandra Macdonald & Associates (2002) study, from The Periodical Writers Association of Canada (PWAC), and from The Canadian Authors Association. Reasons offered by respondents for not sending any material included the data incompleteness and the fact that current discussions were under way. Additional reasons one may suspect, in particular for non-respondents would include the fact that the data they may have are often partial and incomplete and in general one-sided. It is common knowledge that many stakeholders are demanding a more transparent, informative, and, most importantly, user-friendly copyright system.

5. CRITICAL LITERATURE

The general literature on copyright is rather voluminous but the specific literature trying to measure the economic impact on the copyright regime on producers and consumers, in the international context as well as in the Canadian environment, is rather sparse. Moreover, those studies make use of very fragmentary and sometimes dubious data. The recent studies of Rappaport (1998) and Rushton (2002) use very scant data and are simply providing some weak and unsupported indications as to the real impact the proposed changes in the Copyright Law could have.

In preparing this report, the following sources of information were consulted and sometimes used together with the other sources found in the references.

- Studies that the different associations or collectives of stakeholders may have done in the past on such or similar issues. Each association or representative of stakeholders was contacted and the results of this consultation appears in the Appendix.
- Decisions by the *Copyright Board of Canada* relative to such or similar issues, for example in the case of the private copy of musical works, in the case of the neighbouring rights, in the pay audio rights paid by DTH broadcasters, etc.
- Studies that have been made out of Canada on such or similar issues,
- Data that the different associations or collectives of stakeholders may have collected and organized in a usable form regarding the levies collected and the process by which the levies are in fact collected.

- The *Copyright Policy Branch, Department of Canadian Heritage* website:

  http://www.pch.gc.ca/

- The International Intellectual Property Alliance (IIPA) website:[6]

  http://www.iipa.com

- The Intellectual Property Institute of Canada website:[7]

  http://www.ipic.ca

- The International Federation of the Phonographic Industry (IFPI) website:[8]

  http://www.ifpi.org.

- The World Intellectual Property Organization website

  http://www.wipo.org

  and in particular the following five briefs:

  - "The WIPO Treaties: Bringing Copyright into the New Millennium" (December 2001)

[6] The International Intellectual Property Alliance (IIPA) is a private sector coalition formed in 1984 to represent the U.S. copyright-based industries in bilateral and multilateral efforts to improve international protection of copyrighted materials. IIPA is comprised of six trade associations, each representing a significant segment of the U.S. copyright community. These member associations represent over 1,100 U.S. companies producing and distributing materials protected by copyright laws throughout the world – all types of computer software including business applications software and entertainment software (such as videogame CDs and cartridges, personal computer CD-ROMs and multimedia products); theatrical films, television programs, home videos and digital representations of audiovisual works; music, records, CDs, and audiocassettes; and textbooks, tradebooks, reference and professional publications and journals (in both electronic and print media).

[7] Founded in 1926, the Intellectual Property Institute of Canada (IPIC) is Canada's pre-eminent association of professionals who specialize in intellectual property: patents for inventions, trade-marks, copyright, and industrial designs. IPIC is committed to the protection and promotion of intellectual property in the Canadian economy. IPIC is the only intellectual property association in Canada to which nearly all patent agents, trade-mark agents and lawyers specializing in intellectual property belong. IPIC members work all sectors of the Canadian economy including major Canadian law firms, private practice and corporations. IPIC members can be found in all areas of the Canadian "knowledge economy" such as biotechnology, e-commerce and information technology. They include professionals with expertise in scientific and engineering disciplines together with thorough knowledge of the legal aspects of intellectual property. There are over 1,300 IPIC members including members from other countries who practise in the field of intellectual property in their own countries.

[8] IFPI is the organisation representing the international recording industry. It comprises a membership of 1500 record producers and distributors in 76 countries. It also has national groups in 46 countries. IFPI's international Secretariat is based in London and is linked to regional offices in Brussels, Hong Kong, Miami and Moscow.

- "The WIPO Treaties: 'Making Available' Right" (December 2001)
- "The WIPO Treaties: Reproduction Right" (December 2001)
- "The WIPO Treaties: Protection of Rights Management Information" (October 2002)
- "The WIPO Treaties: Technological Measures" (October 2002)

6. THE ECONOMIC ANALYSIS: METHODOLOGY, DATA (NUMBERS AND PROCESSES).

It is extremely difficult to assess the so-called economic impact of the different changes listed above on the different relevant groups of stakeholders given the relative scarcity of reliable consistent data.[9]

The data dilemma.

After a reasonable but significant effort at finding reliable consistent data that might have helped to answer the questions raised, it appears that the data are at best fragmentary, partial and most of the time very incomplete and unreliable. Notwithstanding the existence of data at the industry or macro levels (Charles, Mcdougall and Tran, 2001), the microeconomic data necessary to answer the complex questions raised by the ratification of the new treaties and the amendments of the Copyright Act are for all practical purposes inexistent. Certain authors (Liebowitz, Rappaport, Rushton, and Siwek for instance) have produced some "accounting" data from which they have tried to make some extrapolations. But in spite of significant efforts by those authors and others, the end result is little more than a collection of numbers, some quite scant and unreliable, cleverly arranged in some reasonable order to appear as saying something useful. Most if not all of the time, one's demand for adequate data is left unanswered.

[9] For one particularly illuminating glimpse at the complexity of these issues, see the history of copyright reform in the European Community from Commission of the European Community (2003), European Union (2001) and the earlier critique of the process by Hugenholtz (2000).

It is therefore important and somewhat urgent that the Canadian Government (Heritage Canada, Industry Canada and Statistics Canada) embark on a significant endeavour, hopefully with the collaboration of other countries that represent a measurable pool of creators (as we will see, this may mean all countries), of building a concerted and integrated database on all aspects of Intellectual Property, Patents and Copyrights: people, contracts, payments levels over time, distribution, sharing, related production and distribution industries, etc. It is necessary to start with the current state of the available data and then move on to the design of an integrated database using all relevant reporting methodologies. The effort is significant and will require important resources that are way beyond the role and power of one single researcher/consultant. Clearly, the effort must rely on the collaborative involvement of many different people (statisticians, economists, experimentalists, pooling/survey specialists, and psychologists), aiming collectively at better understanding the intricate determinants not only of creation and entrepreneurship but also of pirating and (illegal) copying, and at better measuring those determinants as well as the end results themselves.

Rather than keeping 'beating up a dead horse', it seems more useful to look for another kind of data, namely what we will call the data on processes. That is the processes by which, on the one hand, creators and inventors are encouraged to use efficiently their capacities and, on the other hand, the public is adequately served in such a way that, conditional on the level of incentives being adequate to encourage a proper level of creativity, the creations so produced are distributed as much as possible and as efficiently as possible. Hence, rather than trying in vain to "compute" the impacts of the different relevant changes on different relevant

stakeholders both as identified above, it appears more useful to ascertain if the changes in question allow, or at least favour in a probabilistic sense, a betterment of the processes that govern the production and dissemination of copyrighted works. If the answer were yes, then the changes would be deemed to be warranted. If not, then the changes should be reconsidered or simply dropped. This is the approach we will use in the following sections.

The distribution of creative and entrepreneurship abilities.

The distribution of creative and entrepreneurship abilities over individuals is of course very difficult if not impossible to characterize. It seems that our efforts would be better spent if instead of trying to characterize this distribution, we were to assume and use as a postulate that the distribution of creative and entrepreneurship abilities over individuals is uniform over all population groups (countries) and all periods. It is how these individuals are induced to develop and use their innate abilities to become full-fledged creators and entrepreneurs that differs or may differ between groups and countries, now, in the past and in the future. Baumol (1990) argues for such an approach for understanding the emergence of entrepreneurs in society.

Creators and entrepreneurs exist everywhere. Sometimes, creators' talents and entrepreneurs' skills are used for the betterment of society at large and sometimes they are used to enslave society in organizations or systems based on criminal or dictator activities. Even when creators' talents and entrepreneurs' skills are used for the betterment of society at large, the level at which they are so used may differ based on the system or systems of incentives at work.

Those incentives must aim at properly encouraging the creators and entrepreneurs without giving them an unduly control of the "public goods" that they may have created. Hence, the notion of "proper encouragement" must rest on a "proper balance" between the interests of creators and the interests of the public at large. To achieve such a balance is both a compulsory condition of social efficiency and a moral obligation to respect the reputation and integrity of creators and their creations.

The efficiency requirement and conditions.

How to determine if the level of production and/or consumption of a good are adequate? Although the goods under consideration in the Copyright Law corresponds to non-rival goods, that is goods which, once created or produced, can be consumed in total by everyone without additional production costs (but possibly not without additional distribution costs), it may be useful to consider under what conditions the production and/or consumption of ordinary rival goods can be considered to be adequate. For illustration purposes, let us consider the case of tomatoes, a clear case of rival good given that once a tomato has been consumed by someone, the same tomato cannot be consumed by someone else: consumption completely destroys the good.

One way to proceed is first to evaluate the technologies used in growing and distributing tomatoes to obtain some estimate of the cost function and of the marginal or incremental cost function, and second to evaluate the consumers' willingness to pay for tomatoes and their marginal willingness to pay. The total cost function and of the marginal or incremental cost

function will depend on all the production activities being undertaken in the economy insofar as the prices of all factors of production and distribution in the tomato industry are influenced by, and must compete with, all the alternative uses to which these factors can be put to. Similarly, the consumers' willingness to pay and their marginal willingness to pay for tomatoes will depend on all the goods and services on which consumers can spend their capacity to pay insofar as those consumers will choose among those different goods and services on the basis of their own preferences and the relative prices they are facing. In that sense, the characterization of the amount of tomatoes as being adequate of not requires the solution of a general equilibrium problem, where everything depends on everything.

To maximize the total value or surplus (producers' surplus + consumers' surplus) generated by the exchange of tomatoes between growers and consumers, one must then find the level of production, consumption and exchange (all being equal) where two conditions are met: first, the marginal cost must be equal to the marginal willingness to pay and second, the total cost must be lower than the total willingness to pay. This is clearly a titanic task, a quasi-impossible one.

An alternate way to proceed is to analyse how transactions are made on the market of tomatoes between growers and consumers. If tomatoes, as well as all other goods, are exchanged freely between willing buyers and willing sellers and if the market is reasonably transparent and competitive, one can infer that the level of transactions is most likely efficient in the sense that all possible valuable trades are most probably executed, all gains from trade are fully realized, and total surplus is maximized.

This is the framework one should apply in the case of creation and copyrighted works and more generally for information goods. Except for one very important aspect: the marginal cost of reproducing an information good (a musical work, a sculpture, a computer program, etc.), which is already created and therefore available for consumption, is zero or very close to zero. However, the marginal cost of creating such information good remains significantly above zero. Which marginal cost to use?

The cost of creation appears to be quite similar to an investment cost or a fixed cost. Information goods have a relatively high fixed cost and a relatively low variable (reproduction) cost, the latter being in some cases very close to zero. The first-best social efficiency rule calls for selling the good at its marginal cost and for covering the deficit through a government or publicly funded subsidy financed by non-distortionary taxation. In so doing, creation is properly financed, creators are properly remunerated, and their works can be made available to all at the low reproduction cost. In the limit, all creators should be publicly funded, that is in some way a social or government employee!

This is likely to be less efficient than suggested because of the social cost of public funds (from distortionary taxation)[10] and because of the possibilities for collusion and corruption, leading to too many creators and too much creative activity, in the sense that some creators should be rather induced to enter the ordinary labour force and produce rival goods and that the remaining creators be induced to avoid overproduction of works or the production of

[10] Jones, Tandon and Voglesang (1990) estimate that this cost is of the order of 30% of the funds collected through taxation in developed countries: each dollar collected generates 0.30$ in deadweight loss to the economy. See also Boyer and Laffont (1999).

works of insufficient quality. Again, determining the proper number of creators and their proper level of production is a resource allocation problem requiring the determination of a general equilibrium as the solution to a general resource allocation problem, clearly a titanic and impossible task.

It may then be useful to relax the impossible first-best efficiency objective in favour of a more reasonable second-best one. One way to go is to consider the Ramsey-Boiteux resource allocation or pricing rule: to allow prices to differ from marginal cost in order to satisfy a budget balance condition in the 'creation sector' of the economy or society. If, as one may assume, the marginal cost of consuming (producing or reproducing) already created works is zero, the second-best efficiency objective would be met if prices are set above the marginal cost (zero) in such a way that the distortions, from the first best consumption levels, that such prices will necessarily generate be as small as possible. Hence, the second-best consumption levels will be as close as possible to the first-best ones.

To achieve such a task, the Ramsey-Boiteux pricing rule requires that the margin between price and marginal cost as a percentage of the price be inversely proportional to the elasticity of demand for the different goods. Hence, information goods (created works) that are in relatively price-inelastic demand should be charged a higher price compared with goods whose demand is rather elastic at prices equal to their respective marginal costs of reproduction.

The difficult question is then: Is that what the pricing of copyrighted information goods is likely to achieve, at least from a global industry-wide viewpoint, in well functioning markets for copyrights, once those markets become effective, that is once copyrights are clearly defined, affirmed and enforced? At first glance, the answer to that question is a resounding YES. It is potentially and most likely one of the most important theoretical justifications of the recent WIPO treaties, both the WCT treaty and the WPPT treaty. Hence, the importance that Canada ratify those treaties by modifying the Copyright Law in the intended ways.

The Copyright balancing act.

How to achieve a proper balance between the interests of creators and the public at large, between sellers and buyers, now and in the future. The fundamental dilemma one must address as far as efficiency of copyright rules are concerned is the balance between static efficiency and dynamic efficiency. Static efficiency calls for the maximization of the use of copyrighted material whose reproduction can be done a zero marginal cost. Dynamic efficiency calls for ensuring the optimal production of new works that is the production level that equalizes marginal cost to marginal social value. Unless the creator can appropriate the value of the creation, the latter supports all or most of the cost but cannot reap any or all or most of the benefits. Therefore, a sub-optimal level of production of information goods is likely to emerge.

7. THE SPECIFIC ECONOMIC ANALYSIS OF THE DIFFERENT MEASURES ON THE DIFFERENT STAKEHOLDERS.

In order to assess, in the context of the present mandate,

1. The impact on publishers in Canada of extending the term of protection of photographs from “50 years” to “the life of the author plus 50 years”, introducing legal protection measures for technological protection such as encryption, and introducing legal protection measures for rights management information used to identify works and other subject maters;
2. The impact on audio-visual producers, multimedia and movie makers in Canada of introducing legal protection measures for technological protection such as encryption, and introducing legal protection measures for rights management information used to identify works and other subject maters;
3. The impact on software makers in Canada of introducing an explicit distribution right, introducing legal protection measures for technological protection such as encryption, and introducing legal protection measures for rights management information used to identify works and other subject maters;
4. The impact on authors, composers and artists in Canada of introducing legal protection measures for rights management information used to identify works and other subject maters;

one must consider three aspects: the impact on the creator and copyright holder, the value of the copyrighted work for the user public, and the harmonization with international rules.

Regarding the impact on the creator and copyright holder, there are two relevant aspects to consider, one being the incentive for the creator (photographer, audio-visual producer, multimedia and movie maker, software producer, author, composer, artist) to create and produce innovative high quality works, the other being the incentive to maintain the availability of the created works and to protect them from decaying. This is the expressed objective behind the Sono Bono Copyright Term Extension Act of 1998 in the U.S.

Let us consider the different measures in the following sequence. In the next sub-section, we will discuss measure #1 for publishers. In the following sub-section, we will address measures #3 and #4 for the four groups of stakeholders since they concern, in the current project, all groups (except for one measure for one group). Finally, we will analyse measure #2 for software makers in a third section.

The Copyright Term for Photographs.

We consider in this sub-section the impact on publishers in Canada of extending the term of protection of photographs from "50 years" to "the life of the author plus 50 years". On the one hand, there is clearly not much to gain from extending the term of copyright in terms of incentive for creation and production. As rightly stressed by Akerlof et alii (2002), the net present value of the creative work at the time of creation is very little affected by the royalties which may be paid after the term of 50 years. The mathematics of discounting gives very little weight and value to the payments to be received after 50 years. However, an increase in the lifespan of the copyright may be justified by the fact that life expectancy has

increased significantly. If it was reasonable to have a 50-year term in the past, it may be justifiable for the same implicit reasons to have a longer term now and in the future.

On the other hand, the incentives to maintain the availability of the valuable photographs and to protect them from decaying is a dynamic incentive which may be considered relatively constant over time and little affected by discounting. Hence, extending the term of protection may be a significant incentive for those copyright holding individuals or organizations to maintain over time the availability and quality of the photographs taken in the distant past. One may also claim not without reasons that the proliferation of publications of all kinds and sorts has made the maintenance of the availability of the valuable photographs even more important than before and certainly a more important reason for extending the term of copyright from "50 years" to "the life of the author plus 50 years".

Finally, there is value in simplifying the copyright rules by treating similarly all types of photographs and by harmonizing the Canadian rules with the international rules under the new WIPO treaties and this for two reasons. First, it makes the application of the copyright law easier without creating countervailing difficulties for the users. Second, it makes sure that Canadian copyright holders will benefit from the use of their copyrighted photographs in a way similar to how other national copyright holders will be able to do under the new rules.

Hence, the extension of the term of protection of photographs from "50 years" to "the life of the author plus 50 years" seems on balance to be beneficial to society at large: relatively small benefits for the creators themselves but significant benefits in terms of maintaining the

stock of old photographs over time. Although these may represent additional costs (payments for copyrights) for publishers, archivists, and the general public, it seems that on balance, they themselves may benefit from a better stock of available photographs.

The recent decision (January 2003) of the Supreme Court of the U.S. in the related case "E. Eldred et al. vs. Ashcroft" goes in the above direction in spite of a strong Brief in favour of the petitioners by a highly regarded group of economists, acting as *amici curiae*. The Court affirmed a lower Courts decision that the extension by Congress, under the Copyright Term Extension Act of 1998, of the copyright from "the life of the author plus 50 years" to "the life of the author plus 70 years" was, not only constitutional (that is compatible with the constitutional provision that copyright granting control and monopoly are given for a limited time), but also in the best interest of the promotion of science and useful arts.

The discussion here deals very clearly with the fine balance between copyright (and all the virtues coming with it) and free expression (and all the virtues coming with it). Almost every participant in this debate recognizes the benefits of copyright laws in terms of inducing creation, in terms of allowing the maintenance of copyrighted works, and more generally in terms of favouring the advancement of arts and culture as well as science. And many examples can be given to support every aspect of this view. On the other hand, almost every participant in this debate recognizes the impediments that 'extended' or arbitrarily long term copyright may create for artistic and cultural development as well as scientific discoveries. Again, many examples can be given to support every aspect of this alternative view.

In fact, it seems that the main battleground is that of the 'optimal' term of copyright. In the U.S., the copyright term was originally set at 14 years (plus a possibility of extension for another 14 years) in 1790, then it went successively to 28 years (plus a possibility of extension for another 14 years) in 1831, to 28 years (plus a possibility of extension for another 28 years) in 1909, to "life of the author plus 50 years" for individuals and their estates and to the minimum between "75 years from publication" and "100 years from creation" for corporations which holds the copyrights on works created by their employees, to "life of the author plus 70 years" for individuals and their estates and to 95 years for corporations (See Heins 2002). As long as some copyrights remain commercially attractive after such terms, one may expect that Congress is going to be under pressure to extend copyright terms again.

For many observers, the term extensions are untenable because they add little if any incentive for creation and, although they may favour maintenance by copyright owners (some individuals, but mainly organizations and corporations), such maintenance could be better achieved at lower costs (especially the cost of identifying and finding the copyright owner or owners in many cases) by letting the works in question fall into the public domain and letting artistic and cultural associations as well as public library archivists take care of them. For the opponents to extending copyright term protection, the beneficiaries of such extensions are not the artists or creators themselves but rather corporations who by the time the copyright term expires are in fact the copyright owners on most of the works which would otherwise have fallen in the public domain.

Therefore, the two main issues being raised seem to be first the proper compensation for creators and second the efficient way to ensure the maintenance of artistic and cultural works over long periods of time. Clearly, a copyright term somewhere between 25 years and 50 years would appear acceptable by most of the objectors/petitioners in the Eldred vs. Ashcroft supreme court case, in terms of ensuring proper compensation for artistic and cultural works. Similarly, a legally enforced requirement that some Public Arts and Cultural Maintenance and Enhancement Office be responsible for maintaining and enhancing works whose copyright term has expired would probably convince most of the general public that the copyright owners should be forced to let their works fall in the public domain possibly under the assurance that the integrity of the original works will be preserved. But as long as a satisfactory solution to these two issues, proper compensation for creation and maintenance, is lacking, debate will remain active.

Alternatively, a procedure could be defined in such a way that works whose copyright have not been explicitly maintained and properly filed with some Copyright Clearance Authority every 15 years from the time of creation, thereby indicating a loss in perceived commercial value, would be considered to have fallen irreversibly in the public domain. This would reduce significantly the cost of identifying the copyrights owner or owners. Similarly, copyright payments for works created more than 50 years ago could be shared between the copyright owners and the general public in a way that preserves the commercial value of the copyrighted works. For instance, an individual or corporation receiving copyright payments could be asked to give away to public institutions (libraries, schools, amateur orchestras for instance) an equivalent value in free use of the copyrighted works.

Legal Protection for TPM and for RMI.

If there is some discussion regarding the value of extending the copyright term, the discussion is shorter regarding the following two changes, namely the introduction of legal protection measures for technological protection such as encryption, and the introduction of legal protection measures for rights management information used to identify works and other subject maters. We consider both measures together for the four groups of stakeholders because the serve to fill the same function although in a slightly different way. However, TPM and DRM are different and serve different but related goals although in many cases, DRM rely on and include some form of TPM.[11]

Here the rather clear-cut argument is that if rights are not well defined and well enforced, there can be no viable or at least reasonably efficient markets on which they can be transacted. The role of copyrights is not only to protect the creators but also to allow the emergence of markets on which willing sellers (creators) can interact with willing buyers. The emergence of those markets is an important factor in making the works of creators available to the general public. In the absence of well functioning markets, there is no guarantee that creations of all sorts and forms will be made available to the public except in a rather chaotic way. Even if the price may be very close to zero in the latter case, there is no reason to expect that this would make the interested public more adequately served. Indeed, the efficient functioning of markets requires adequate resources in order to make the transaction costs as small as possible. Unless the property rights are well defined and

[11] See Kerr, Maurushat and Tacit (2002) for an excellent discussion of DRM and TPM as well as circumvention technologies.

enforced, efficient market most likely not going to emerge, whether we are dealing with physical goods or information goods.

The role of TPM and RMI are essential to the efficient functioning of markets (some yet to emerge) because they allow the proper protection of copyrights and second they make sure that the proper information is available at a low cost to prospective buyers. In addition to institutions, rules and procedures surrounding TPM and RMI, we need market makers who will ensure that transactions can be done at low costs These are the main ingredients necessary for the creation and development of efficient markets in copyrights. Who may play the role of those market makers? One example is ***Access Copyright***, the Canadian Copyright Licensing Agency, which is a not-for-profit agency established in 1988 by publishers and creators to license public access to copyright works. The agency now represents a vast international repertoire along with more than 5,300 Canadian writers, photographers, and illustrators as well as 490 newspaper, book and magazine publishers. This stated objective of this agency is to make the transactions on copyrights as easy as possible and to make dealings with copyright owners as user friendly as possible. Other institutions could play such a role also, such as CIPO and WIPO, but there is clearly an advantage to specialize in a way to capture economies of scale and scope in copyright management.

A similar position is adopted by the Writer Guild of Canada and the TRACE coalition[12] supporting the goal of the Electronic Copyright Fund and calling for support from the Fund

[12] The TRACE coalition comprises The Alliance of Canadian Cinema, Television & Radio Artists (ACTRA), the American Federation of Musicians (AFofM), l'Association des producteurs de film et de télévision du Québec (APFTQ), l'Association des réalisateurs et réalisatrices du Québec (ARRQ), the Canadian Association of Broadcasters (CAB), the Canadian Broadcasters Rights Agency (CBRA), the Canadian Broadcasting Corporation

in favour of a Canadian registry for the International Standard Audio-Visual Number (ISAN), as stated in Sandra Macdonald & Associates (2002): "The stated goal of the Fund is to develop tools which will permit prospective users of Canadian cultural works to obtain the necessary permissions from copyright owners is a user-friendly way; preferably through on-line interaction with a single information source, or at least, a single source for the genre in question. There is a desire to support initiatives which can deliver results in the relatively short term, and there is a premium placed on the interoperability of the system, both the ensure compatibility with the government's other "on-line" initiatives and with international standards."

i) the specific options considered with regard to RMI

As mentioned above, the specific options considered regarding RMI are as follows: Option (a): Tampering or altering RMI for the purpose of furthering or concealing infringement would be prohibited. The prohibition would apply to passive infringement only (this refers to tampering with RMI, such as the information that identifies the work, the owner of any right in the work or information about the terms and conditions of use of the work and any numbers or codes that represent such information). Terms and conditions would not be protected and protection would not extend to false or misleading RMI. Option (b): As with (a), but the prohibition would extend to terms and conditions. Option (c): Protection would extend to the integrity of a rights management system, such as systems that allow rights

(CBC), the Canadian Film & Television Production Association (CFTPA), the Canadian Screenwriters Collection Society (CSCS), the Directors Guild of Canada (DGC), the Directors Rights Collective of Canada (DRCC), the National Archives of Canada (NAC), the National Film Board (NFB), the National Library of Canada (NLC), la Société des auteurs et compositeurs dramatiques (SACD), la Société des auteurs de radio, télévision et cinéma (CARTeC), the Society of Composers, Authors and Music Publishers of Canada (SOCAN), la Société Radio-Canada (SRC), the Writers Guild of Canada (WGC), l'Union des artistes (UdesA).

holders to track the use of copyright material. Option (d): Regardless of the approach above, provide an exception from liability that would apply in respect of bona fide activities that affect RMI, carried out for the purposes of ensuring inter-operability, reverse engineering and security testing.

The main arguments for better defined and designed copyright laws and procedures (through the new WIPO treaties) stem from three different considerations and objectives: first, to ensure a proper incentive compatible system to promote creation and innovation; second, to protect the works so created from decaying if possible; third, to favour the emergence of efficient competitive markets on which all surplus generating trades can be realized, including trades on the copyrights themselves.

It is difficult to see how these objectives can be achieved unless tampering or altering RMI for the purpose of furthering or concealing infringement are prohibited. The case is much less clear when we consider the possibility of extending the prohibition to terms and conditions. Doing so would make the trades on copyrighted works more difficult and could prevent the emergence of efficient markets. The stakeholders, and the creators in particular, would not be served by such an extension. Insofar as the information that identifies the work, the owner of any right in the work or information about the terms and conditions of use of the work and any numbers or codes that represent such information is protected, it is in the best interest of creators that their works be available without further complications, and similarly for the extension to the integrity of a rights management system. One can express fears here that the useful consumption (understood in the most general way) of copyrighted works would be

significantly diminished if rights holders were allowed to track unduly the use of their copyright material. Insofar as RMI is appropriately protected against tampering or altering, there is no benefit in terms of incentives, protection against decay and/or emergence of efficient markets, in making the legal and appropriate use of the copyrighted material tractable by the rights holders. However, within the above protections, it is important to allow for an exception from liability that would apply in respect of bona fide activities carried out for the purposes of ensuring inter-operability, reverse engineering and security testing. Again, this would potentially generate important benefits for stakeholders and rights holders in particular by making the markets more efficient and serving the consumers in a better and more efficient way.

Regarding remedy options, it seems that civil sanctions with the possibility of criminal sanctions if large-scale infringement or infringement done for commercial purposes would serve the purpose of properly enforcing distribution rights. Indeed, large-scale infringement or infringement done for commercial purposes should be more severely punished than less serious individual and occasional infringement which may be done without intention to bypass copyrights. Moreover, large-scale infringement or infringement done for commercial purposes is equivalent to large-scale theft by organized crime groups. Hence the criminal sanctions for such offences. Both the option to remedy copyright infringements through civil sanctions only or the option to remedy copyright infringements through criminal sanctions only seem exaggerated, the former on the light side, the latter on the serious side. In the first case, civil remedy only would favour large scale tampering and altering of RMI by those groups organized to benefit from these activities. In the second case, there will likely be too

much hesitation on the part of law abiding citizens to consume copyrighted works because of the fear of the serious consequences that copyright infringement may bring, thereby reducing the development and growth of the markets in copyrighted works to the detriment of creators and the consumers alike. For those reasons, the preferred remedy option appears to be civil sanctions with the possibility of criminal sanctions for large-scale infringement or infringement done for commercial purposes.

ii) the specific options considered with regard to TPM

As mentioned above, the specific options considered regarding TPM are as follows: Option (a): Amend the Canadian Copyright Act to prohibit the act of circumvention of TPM done for the purpose of infringing copyright. This prohibition would not apply to circumvention done pursuant to an exception or with respect to material in the public domain. Option (b): As in option (a), but do not allow circumvention for the purposes of private copying under *s.80* of the Copyright Act. Option (c): Prohibit not only the circumvention of TPM, but also the manufacture and trade of devices that may be used to circumvent. Option (d): As in option (c) but include an obligation to make the works or means to access or use the works available to users who benefit from specific exceptions or where the work is in the public domain. Option (e): Regardless of the approach above, provide an exception from liability that would apply in respect of bona fide activities that affect TPM, which are carried out for the purposes of ensuring inter-operability, reverse engineering and security testing.

Again, let us recall that the main arguments behind the new WIPO treaties is to contribute to the development of copyright industries by allowing the emergence of institutions which

would make possible the open and legal trading of copyrighted works in an efficient way. In so doing, those institutions would contribute to the well being of all Canadians. Efficient trading of copyrighted works implies proper incentives for creation and dissemination and proper maintenance of created works. Technologies and activities, which allow a larger diffusion and consumption of copyrighted works, should be encouraged as long as copyright owners are adequately protected. It is clear that the Canadian Copyright Act should be amended to prohibit the act of circumvention of TPM done for the purpose of infringing copyright. Otherwise no efficient market could emerge.

However, given that the markets for copyright works can be made viable and sustainable through TPM, it is desirable first to make sure that TPM are adequate safeguards against piracy and illegal copying and second, to make sure that the markets be made as efficient as possible through reductions in transaction costs. In that respect, it seems preferable to allow private copying in the spirit of the legal reform of 1996/7. The private copying under s.80 of the Copyright Act was enacted to make the best of a difficult situation: the level of private copying was increasing at an alarming rate and to protect the rights of creators, the Government allowed (properly limited) private copying in exchange for a levy on blank media to be determined by the Copyright Board. At this time, the authors/composers interprets and makers of pre-recorded music works can get compensation through different collectives as allowed by the Copyright Board. This system, which is just beginning to function in a somewhat efficient manner, should be kept in place. Therefore circumvention for the purposes of private copying should not be prevented.

The new technological devices by which copies can be made should not be made illegal because they can be very important in the development of new markets for copyrighted works and therefore in the development of proper incentives for creators. The important point here is that those new technologies, if they can be properly used and regulated, could be a significant source of value for copyrighted works and therefore a significant source of revenues for creators. Rather than making the new technologies illegal, it seems much better to design a proper set of laws and regulations to make sure that they do contribute to the development of markets rather than prevent that development. What is at stake here is not the protection of past technologies but the protection of copyright owners. Technologies will keep on competing with each other for the betterment of all Canadians. Let the best technologies win. It is quite possible that these new technologies will allow new forms of market trading by which consumers deal directly with copyright owners one way or another. This should be encouraged but properly "regulated" to make sure that they are indeed factor of growth through new forms of production and distribution rather than factors of stagnation through the prevention of innovations.

As argued before in the case of RMI, TPM should be such that the works or means to access or use the works should be made available to users who benefit from specific exceptions or where the work is in the public domain. Moreover, an exception from liability should apply in respect of bona fide activities that affect TPM, which are carried out for the purposes of ensuring inter-operability, reverse engineering and security testing.

Regarding remedy options, it seems, for the same reasons as in the case of RMI, that civil sanctions with the possibility of criminal sanctions if large-scale infringement or infringement done for commercial purposes would serve the purpose of properly preventing the circumvention of TPM. Indeed, large-scale infringement or infringement done for commercial purposes should be more severely punished than less serious individual and occasional infringement which may be done without intention to bypass or circumvent TPM. Both the option to remedy TPM circumvention to infringe copyright through civil sanctions only and the option to remedy TPM circumvention to infringe copyright through criminal sanctions only seem exaggerated. The former would favour large scale circumvention of protective technologies such as encryption while the latter may be conducive to lower market efficiency through much hesitation on the part of law abiding citizens to consume copyrighted works because of the fear of the serious consequences that TPM circumvention may bring, thereby reducing the development and growth of the markets in copyrighted works to the detriment of creators and the consumers alike. For those reasons, the preferred remedy option appears to be civil sanctions with the possibility of criminal sanctions for large-scale infringement or infringement done for commercial purposes.

The Explicit Distribution Right for Software Makers.

Again in this case of an explicit distribution right, it is difficult to see how a reasonably efficient market for copyrights can develop and survive of the creator does not control the distribution of his or her works. Insofar as the publication right can in Canada cover this right, the amendment to the Copyright Act should be rather minor. However, one may

wonder what economic thinking can be raised that would help to differentiate between the two options considered.

One option (option (b) above) is to create a full distribution right in all copies while the second option (option (c) above) is to create a full distribution right in all copies but to state that if the purchaser has lawful exclusive possession, he (or she) will be deemed to be the owner.

Indeed, from a transaction cost point of view, it may be more efficient to go with the second option, option (c), insofar as the possibility to allow family and/or friends to have access to one's copy of copyrighted material is unlikely to prevent the creators from capturing the economic value of their works and could even allow the typical buyer of copyrighted software to pay a (higher) price which would include such a right. On the other hand, a creator could always prevent such a lawful exclusive possession right by expressly stating so in a formal contract. This could apply to the cases where the buyer is a commercial operator but is unlikely to be of interest to the creator when the buyer is an individual.

8. OTHER REQUIREMENTS FOR EFFICIENT COPYRIGHT MARKETS

One additional requirement for the emergence of efficient markets in copyrights is the competitive nature of the markets. Although the goal of the two new WIPO treaties, the WCT and WPPT treaties, is to better protect the rights of copyright holders, namely creators (composers, writers, artists, interprets, makers, etc.), producers and distributors of copyrighted works, one must recognize that in the industry sector 51, composed of information and cultural industries, the level of competition is rather high. Not only there are in each field an intense competition between national and international creators (composers, writers, artists, interprets, makers, etc.), producers and distributors of copyright works, but there is also a level of free entry and exit, which is also quite significant. Hence, one expects that well-defined and enforced copyrights will contribute to an even higher level of competition and therefore proper competitive prices for the use of copyrighted works. One can expect that entry in the relevant industries will be characterized by aggressive pricing of copyright works use, with new creations being distributed freely (given the highly price-elastic demand for new works), in order to develop the new creators' reputation. Once the creators become well known and more popular (leading to a relatively price-inelastic demand), one expects that copyright use will be priced much higher, thereby implementing a desired Ramsey-Boiteux pricing structure in the industry. As a matter of illustration, let us consider the specific case of blank media levies in lieu of copyright payments for private copying of pre-recorded music works.

9. OTHER CONSIDERATIONS

The Copyright Board Analysis in the CPCC Case.

Let us consider the process by which the levies on blank media used for private copying are determined in order to provide an idea of what such a process may look like. The Copyright Law (1997) allows private copying by individuals, that is copies of pre-recorded CDs made for private use and not for sale and not even for giving away to friends or family members, in exchange for levies on blank media used for private copying to be determined by the Copyright Board.

The Copyright Board approach has been to look for ways to mimic the likely outcome of the missing direct commercial relations/negotiations between willing buyers and willing sellers (composers, interpret and makers) of copyrighted pre-recorded musical works. This approach was a significant result of the first hearings on private copy (1998-99 and 2000-02). It is again the approach followed by the Board in the undergoing hearings for 2003-04. The Copyright Board approach has been to search for one or many proper/adequate proxies of such missing direct commercial relations/negotiations between willing buyers and willing sellers. The proxy used by the Board in its past decisions regarding levies on blank media used for private copying, after having heard the arguments from all interested parties, is the observed remuneration of those copyrights holders in the 'regular' market for pre-recorded CDs. We know from industry data that the relevant payment amounts to about $3.00 per new CD sold. To determine a proper proxy, this amount is reduced by different factors, including

eligibility, through a formula or model, which has been fine-tuned by the Board following the different previous hearings (see Rushton 2002).[13]

In the latest round of hearings, the CPCC (Canadian Private Copy Collective representing composers, artists-interpreters and makers of musical works) has asked the Copyright Board for new levy rates on blank media, old and new, used in private copying to be applied for 2003 and 2004. The CPCC initially used as the base amount in its calculation the same figure for the amount paid on average to eligible rights holders when a pre-recorded CD is sold.

The proposed or demanded levies for 2003-04 on blank media, to be paid by producers and importers of blank media in Canada, are as follows:

Audiocassettes of 40 minutes duration and more	$0.51
CD-R and other similar recordable or rewritable compact disk of 100 megabytes or more of storage capacity	$0.59
CD-R Audio, CD-RW Audio	$1.15
Minidiscs	$1.15
Recordable DVD	$0.65
Removable Electronic Memory Card, Removable Flash Memory Storage, and Removable Micro-Hard Discs	$0.0057 per MB (up to 1 GB) $5.70 per GB (on 1st GB) $4.53 per GB (on 2-5 GB) $3.78 per GB (on 6-10 GB) $3.02 per GB (on 11-20 GB) $2.27 per GB (on 21+ GB)
Non-Removable Electronic Memory Incorporated into MP3 Players or Similar Devices Intended for Use Primarily to Record and Play Music	$0.0111 per MB (up to 1 GB) $11.10 per GB (on 1st GB) $7.98 per GB (on 2-5 GB) $5.98 per GB (on 6-10 GB) $3.99 per GB (on 11-20 GB) $1.99 per GB (on 21+ GB)

[13] For an international perspective on levies, see Hugenholtz, Guibault and van Giffen (2003).

10. RESULTS

☞*Should the Act be amended to introduce an explicit distribution right in order to comply with the WIPO treaties?* YES. And it is preferable to create a full distribution right in all copies but to state that if the purchaser has lawful exclusive possession, he (or she) will be deemed to be the owner.

The rationale here is that a well functioning market for copyrights requires that those copyrights be clearly defined, affirmed and enforced. It is difficult to imagine a well functioning market for copyrights if the explicit distribution right is not affirmed. However, for reasons related to transaction costs, it is not necessary to introduce a general explicit distribution right for all copies if the (individual) purchaser has lawful exclusive possession of the copy.

☞*Should the Act be amended to prohibit tampering with rights management information that is normally used to identify works and other subject matter?* YES. And tampering or altering RMI for the purpose of furthering or concealing infringement should be prohibited. The prohibition would apply to passive infringement only (this refers to tampering with RMI, such as the information that identifies the work, the owner of any right in the work or information about the terms and conditions of use of the work and any numbers or codes that represent such information). Terms and conditions need not be protected and protection need not extend to false or misleading RMI. Protection should not extend to the integrity of a rights management system, such as systems that

allow rights holders to track the use of copyright material. However, protection should allow for an exception from liability that would apply in respect of bona fide activities that affect RMI, carried out for the purposes of ensuring inter-operability, reverse engineering and security testing.

The rationale here is again that a well functioning market for copyrights requires that those copyrights be clearly defined, affirmed and enforced. It is difficult to imagine a well functioning market for copyrights if tampering or altering RMI for the purpose of furthering or concealing infringement is not prohibited. However, insofar as a well functioning market is created through strong enforcement of the prevention of tampering or altering RMI for the purpose of furthering or concealing infringement should be prohibited, it becomes desirable to let the markets so created take care of the level of trading activity.

☞*Should the Act be amended to provide sanctions against persons who use circumvention technologies to infringe copyright by defeating protective technologies such as encryption*? YES. It is therefore desirable to amend the Canadian Copyright Act to prohibit the act of circumvention of TPM done for the purpose of infringing copyright. However, this need not be the case for the purposes of private copying. There should be an obligation to make the works or means to access or use the works available to users who benefit from specific exceptions or where the work is in the public domain and there should be an exception from liability in respect of bona fide

activities that affect TPM, which are carried out for the purposes of ensuring inter-operability, reverse engineering and security testing.

☞The rationale here is again that a well functioning market for copyrights requires that those copyrights be clearly defined, affirmed and enforced. It is difficult to imagine a well functioning market for copyrights if the act of circumvention of TPM done for the purpose of infringing copyright is not prohibited. But given that such a prohibition is properly enforced, they every effort should be made to allow the emergence of sophisticated efficient markets. This efficiency objective would be better served if private copying keeps being allowed as under the current laws and if works or means to access or use the works are made available to users who benefit from specific exceptions or where the work is in the public domain. Clearly, there should be an exception from liability in respect of bona fide activities that affect TPM, which are carried out for the purposes of ensuring inter-operability, reverse engineering and security testing because these activities can potentially be important factors in reaching a proper and efficient level of competition in the markets for copyrighted works.

☞*Should section 10 of the Act be deleted so as to allow the term of protection of photographs to follow the general rule applicable to other categories of works, currently the life of the author plus 50 years?* YES.

In order to assess the impact on publishers in Canada of extending the term of protection of photographs from "50 years" to "the life of the author plus 50 years", one

must consider three aspects: the impact on the creator and copyright holder, the value of the photographs for the user public, the harmonization with international rules. On all three counts, our analysis supports the extension of the term of protection of photographs to “the life of the author plus 50 years”.

11. SUMMARY AND CONCLUSIONS

It is therefore important and somewhat urgent that the Canadian Government (Heritage Canada, Industry Canada and Statistics Canada) embark on a significant endeavour, hopefully with the collaboration of other countries that represent a measurable pool of creators (this may mean all countries), of building a concerted and integrated microeconomic database on all aspects of Intellectual Property, Patents and Copyrights: people, contracts, payments levels over time, distribution, sharing, related production and distribution industries, etc.

It is necessary to start with the current state of the available data and then move on to the design of an integrated database using all relevant reporting methodologies. The effort is significant and will require important resources that are way beyond the role and power of one single researcher/consultant.

Clearly, the effort must rely on the collaborative involvement of many different people (statisticians, economists, experimentalists, pooling/survey specialists, and psychologists), aiming collectively at better understanding the intricate determinants of creation and entrepreneurship and at better measuring those determinants as well as the end results themselves.

The answers to the questions posed are all in the affirmative.

☞*Should the Act be amended to introduce an explicit distribution right in order to comply with the WIPO treaties?* YES. And it is preferable to create a full distribution right in all copies but to state that if the purchaser has lawful exclusive possession, he (or she) will be deemed to be the owner.

☞*Should the Act be amended to prohibit tampering with rights management information that is normally used to identify works and other subject matter?* YES. And tampering or altering RMI for the purpose of furthering or concealing infringement should be prohibited. The prohibition would apply to passive infringement only (this refers to tampering with RMI, such as the information that identifies the work, the owner of any right in the work or information about the terms and conditions of use of the work and any numbers or codes that represent such information). However, terms and conditions need not be protected and protection should not extend to false or misleading RMI. Protection needs not extend also to the integrity of a rights management system, such as systems that allow rights holders to track the use of copyright material. However, protection should allow for an exception from liability that would apply in respect of bona fide activities that affect RMI, carried out for the purposes of ensuring inter-operability, reverse engineering and security testing. All for the reasons of economic efficiency in trades.

☞*Should the Act be amended to provide sanctions against persons who use circumvention technologies to infringe copyright by defeating protective technologies such as encryption*? YES. It is therefore desirable to amend the Canadian Copyright

Act to prohibit the act of circumvention of TPM done for the purpose of infringing copyright, and the act of circumvention for the purposes of private copying. There should be an obligation to make the works or means to access or use the works available to users who benefit from specific exceptions or where the work is in the public domain and there should be an exception from liability in respect of bona fide activities that affect TPM, which are carried out for the purposes of ensuring inter-operability, reverse engineering and security testing. Again for reasons of economic efficiency.

☞*Should section 10 of the Act be deleted so as to allow the term of protection of photographs to follow the general rule applicable to other categories of works, currently the life of the author plus 50 years?* YES.

It is clear that a stronger and more transparent copyright law will generate lots of activities on the market creation front. Most if not all copyright owners are interested in selling access to their copyrighted works. A better protection can only make clearer the transactions between creators and users, between the artists and the public.

Many observers fear that the current proposals for copyright reform will make access to a significant number of 'old' works very difficult. But the contrary may be closer to the truth. Insofar as the copyright owners are interested parties in making their works accessible to a large public in order to derive revenues from them, one may expect that different

arrangements will emerge so that as many users as possible and profitable can have access to a larger number of high quality copies of 'old' copyrighted works than it is the case now.

A few explicit exceptions should be introduced. Among the most important ones, it should be clear that if someone owns a copy of a copyrighted work, then that person should have the right to make it available freely to family and friends on a network (digital or otherwise) accessible to family and friends but not to the general public.

Hence,

1. Introducing legal protection for rights management information used to identify works and other subject matters, should have very positive effects on authors, composers and artists in Canada, on the industry which is responsible for the marketing of their works, and on the general public as consumers who will have access to a larger and higher quality set of choices.

2. Introducing an explicit distribution right, introducing legal protection for technological protection measures such as encryption, and introducing legal protection for rights management information used to identify works and other subject matters should have a very strong effect on software makers insofar as their products will be better protected from imitation or copying. One may expect lower prices as competition for customers become more intense, the better protection of copyright favouring the entry of new innovative competitors. A more transparent

market will serve everybody, at least the better, more innovative, and more reliable software makers.

3. Introducing legal protection for technological protection measures such as encryption and introducing legal protection for rights management information used to identify works and other subject matters will be beneficial to audio-visual producers, multimedia and movie makers in Canada. The TPM and the DRM information should allow a significant reduction in piracy which represents a major drain on the resources which the general public (both the law-abiding consumers and the pirates) seems willing to grant to Canadian audio-visual producers, multimedia and movie makers.

4. Similarly, extending the term of protection of photographs from "50 years" to "the life of the author plus 50 years", introducing legal protection for technological protection measures such as encryption, and introducing legal protection for rights management information used to identify works and other subject matters can only benefit overall the publishers in Canada. It will make created works more available because better protected against unreasonable exploitation, and it will expand the market for those works by allowing better market segmentation. It will likely mean increased publishing activity given that more financial resources are likely to flow in their direction.

As a general conclusion, it seems that many arguments against extending and reinforcing the copyright laws are similar to the arguments against instituting stronger and more transparent property laws in regions where or in times when the protection of property is deficient. The importance of a strong legal property framework in fostering economic development and social welfare enhancement is well known and well documented. One should expect that a strong and transparent copyright framework would likewise foster cultural development and diversity as well as contributing to the social well being of all. It is also important to remember that a strong and transparent copyright framework remains a second-best alternative. Unfortunately, the first best alternative is not feasible. One may hope that it will be feasible in a not so distant future given the amazing and still barely exploited capabilities of new information and communication technologies, those of the present and those yet to be created, thanks to a strong and transparent copyright framework in emergence. Copyright is a continuing scenario, which will be with us for many years to come, as information and communication technologies keep challenging the creation industries.[14]

[14] For a look at the future of copyright policies, see Reinbothe (2002).

12. REFERENCES

- Akerlof, George A. et al., 2002, "The Copyright Term Extension Act of 1998: An Economic Analysis", Brief 02-1 in support of petitioners in the Writ of Certiorari (Supreme Court of the U.S., E. Eldred et al. vs Ashcroft), AEI-Brookings Joint Center for Regulatory Studies.
- Baseman, Kenneth C., Warren-Boulton, Frederick, and Glenn Woroch, 1995, "The Economics of Intellectual Property Protection for Software : The Proper Role for Copyright", *Standard View* 12:2.
- Besen, Stanley M. and Sheila Nataraj Kirkby, 1989, "Private Copying, Appropriability, and Optimal Copying Royalties", *Journal of Law and Economics*, 32, 255-280.
- Besen, Stanley M., 1986, "Private Copying, Reproduction Costs, and the Supply of Intellectual Property", *Information Economics and Policy*, 2, 5-22.
- Boyer, Marcel and Jean-Jacques Laffont, 1999, "Toward a Political Theory of the Emergence of Environmental Incentive Regulation", *Rand Journal of Economics*, 30, 137-157.
- Commission of the European Communities, 2003, "Proposal for a Directive of the European Parliament and of the Council on Measures and Procedures to Ensure the Enforcement of Intellectual Property Rights", COM(2003) 46 final, 2003/0024(COD), Brussels (January 31).
- Charles, Sandra, Mcdougall, Gilles and Julie Tran (2001), "The Importance of the Intellectual Property Industries in the Canadian Economy", Industry Canada, 2001.

- European Union, 2001, "Directive 2001/29/EC of the European Parliament and of the Council on the Harmonization of Certain Aspects of Copyright and Related Rights in the Information Society", Brussels (May 22).
- Gervais, Daniel J., 2001, "Collective Management of Copyright and Neighbouring Rights in Canada: An International Perspective", Canadian Heritage.
- Heins, Majorie, 2002, "The Progress of Science and Useful Arts: Why Copyright Today Threatens Intellectual Freedom", Free Expression Policy Project, (report available at www.fepproject.org/policyreports/copyright.html)
- Horton, Kenneth L., 1996, "The software copyright directive and the Internet : Collision on the information superhighway ?", available at http://www.jeanmonnetprogram.org/papers/96/9609ind.html
- Hugenholtz, P.Bernt, 2000, "Why the Copyright Directive is Unimportant, and Possibly Invalid", *EIPR* 11, 501-502 (Institute for Information and Law, Amsterdam).
- Hugenholtz, P.Bernt, Guibault, Lucie and Sjoerd van Geffen, 2003, "The Future of Levies in a Digital Environment", Institute for Information and Law, Amsterdam.
- Hurt, Robert M. and Robert M. Schuchman, 1966, "The Economic Rationale of Copyright", *American Economic Review* Papers & Proceedings, LVI(2), May, 421-432.
- Industry Canada, 2002, *Supporting Culture and Innovation: Report on the Provisions and Operation of the Copyright Act*.
- International Federation of the Phonographic Industry, 2002, *IFPI Music Piracy Report.*
- Jones, L.P., Tandon, P. and I. Vogelsang, 1990, *Selling Public Enterprises*, Cambridge, MA: MIT Press.

- Katz, Ariel, 2002, "A Network Effects Perspective on Software Piracy", mimeo, Canadian Law and Economics Association Meeting, University of Toronto.
- Kerr, Ian, Maurushat, Alana, and Christian S. Tacit, 2002, "Technical Protection Measures: Part I – Trends in Technical Protection Measures and Circumvention Technologies", report prepared for the Department of Canadian Heritage by the law firm NelliganO'BrienPayne.
- Landes, William M. and Richard A. Posner, 1989, "An Economic Analysis of Copyright Law", *Journal of Legal Studies*, XVIII, June, 325-363.
- Mackaay, Ejan, 2002, "The Economics of Intellectual Property Rights in Civil Law Systems", in Aristides N. Hatsis (Ed.), *An Introduction to European Law and Economics*, Edward Elgar (forthcoming).
- Meurer, Michael J, 2002, "Sharing Copyrighted Works", mimeo, Canadian Law and Economics Association Meeting, University of Toronto.
- Novos, Ian E. and Michael Waldman, 1984, "The Effects of Increased Copyright Protection: An Analytic Approach", *Journal of Political Economy*, 92(2), 236-246.
- PWAC (Periodical Writers Association of Canada), 2001, "Response to the Government Copyright Reform" (September 15).
- Ramello, Giovani B., 2002, "Copyright and Antitrust Issues", mimeo. LIUC, Castellanza (Italy).
- Rappaport, E., 1998, "Copyright Term Extension: Estimating the Economic Values", CRS Report, The Library of Congress.

- Reinbothe, Jörg, 2002, "A Review of the Last Ten Years and a Look at What Lies Ahead: Copyright and Related Rights in the European Union", The European Commission, Internal Market, 10th Fordham Conference (April 23).
- Richardson, Megan et al., 2000, "The Benefits and Costs of Copyright: An Economic Perspective", Centre for Copyright Studies (Australia) Discussion Paper.
- Rushton, Michael, 2002, "Economic Impact of WIPO ratification on Private Copying regime", Canadian Heritage.
- Sandra Macdonald & Associates Ltd., 2002, "Report on the Utility and Feasibility of Developing an On-line Clearance System for Audio-Visual Works", prepared for The Canadian Film and Television Production Association and the TRACE Coalition.
- Silva, Francesco and Giovani Ramello, 2000, "Sound recording Market: the Ambiguous Case of Copyright and Piracy", Oxford University Press.
- Siwek, Stephen E., 2002, *Copyright Industries in the U.S. Economy*, Report by Economists Incorporated prepared for the International Intellectual Property Alliance.
- Wassall, Gregory H. and Neil O. Alper. 1992, "Toward a Unified Theory of Determinants of the Earnings of Artists", in Ruth Towse and Abdul Khakee, ed. *Cultural Economics*, 187-200.
- U.S. Supreme Court, *Eric Eldred et al., petitioners, vs J.D. Ashcroft, Attorney General, Respondent*, 537 U.S. (2003), 01-618 on CTEA – Copyright Term Extension Act of 1998 (Justice Ginsburg for the opinion of the Court; Justice Stevens, dissenting; Justice Breyer, dissenting).

APPENDIX : CONTACTS WITH STAKEHOLDERS (answers as of Feb. 3, 2003)

Society	Name	Contact : email sent	Answer	Info obtained
ACF	Benoît Lachance	info@acf-film.com	NO	NA
DRCC		Christiane@dgc.ca	NO	NA
APFTQ	Claire Samson	Info@apftq.qc.ca	NO	NA
PACC / CFTPA		Info@pacc.ca	YES	*Sandra Macdonald (2002)*
SCAM	Luc Dionne	Dionneca@umoncton.ca	NO	NA
IMAT	Adam Froman	Imat@imat.ca	NO	NA
AMPQ	Gilbert Ouellette	Info@apmq.org	NO	NA
CFTPA	Lenore Copeland	Copeland@cftpa.ca Ottawa@cftpa.ca	NO	NA
CANCOPY	Roanie Levy	Rlevy@cancopy.com	NO	NA
Writers Guild	Maureen Parker	m.parker@wgc.ca	YES	*Sandra Macdonald (2002)*
SAC	Sean Mulligan	Sac@songwriters.ca	NO	NA
SACD	Elizabeth Schlitter	Schlitter@sacd.ca	NO	NA
SPACQ		Spacq@qc.aira.com	NO	NA
COPIBEC	Chantal Carbonneau	c.carbonneau@copibec.qc.ca	NO	NA
SOCAD	Michel Beauchemin	Info@aqad.qc.ca	NO	NA
League of Canadian Poets	Edita Page	Edita@poets.com	NO	NA
RCAAQ	Jean-Yves Vigneau	Rcaaq@cam.org	YES	NONE
PWAC	Susan Stevenson	Sstevenson@pwac.ca	YES	*PWAC (2001)*
WUC	Penny Dickens	Pdickens@writersunion.ca	NO	NA
UNEQ	Bruneau Roy	Ecrivez@uneq.qc.ca	NO	NA
Canadian Authors Association	Al Fowler	Canauth@redden.on.ca	YES	accesscopyright.ca
CARCC	Karl Beveridge	Carfac@carfac.ca	NO	NA
SODART/RAAV	Richard Baillargeon	Sodart@raav.org	NO	NA
Writers federation of NS	Jane Buss	Talk@writers.ns.ca	YES	NONE
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Canadian Photographer Coalition	June Callwood	Callwood@interlog.com	YES	NONE
Alberta Professional Photographers	Chris Stambaugh	Stambaugh@stambaugh-photo.com	YES	NONE
	Bryan Boyle	Brianb@rom.on.ca	NO	NA
Canadian Copyright Licensing Agency		Cgoldrick@accesscopyright.ca	NO	NA