

# CHALLENGES OF INTERPRETING THE NOTION OF SOFTWARE COPYRIGHTS IN THE CURRENT ECONOMIC AND SOCIO-POLITICAL CONTEXT

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## Abstract

*Every country has its own interpretation and enforcement of copyrights. The challenge is in case of a conflict of interpretations to create a common structure accepted by all parties as a base of mutual understanding and agreement. ESCIA guidelines seek to provide a scalable assessment framework which in turn can be a tool for research and development of structures to deal with the different cultural and social economic circumstances of the different countries / the assessment of which system is dominant is an ongoing, ever-changing debate for which you need the guideline tools to steer the discussion in the right direction which is a challenge on its own. The digital economy is the most important part of the global economy. The digital transformation of international production requires regulation, governing, investor behaviour. The negative impact of manipulation of data obtained from consumers by global powerful multinationals is to be considered a major incentive for a rigorous monitorization and regulation of international productions. The diversity of interests, political and financial, make fair regulations covering all aspects of the situation, extremely difficult, in addition to the ever changing parameters governing the subject as such. The complexity of the matter should not prevent an in-depth assessment and solution seeking policy.*

**Keywords:** *software, piracy, computer, economic effects*

## 1. Introduction

Intellectual property rights (IPR) are assuming an increasingly important role in international trade, in investment and in economic relations and are valuable commercial assets and a driving force in technological progress leading to increasing competitive capability and resultant empowerment in the international marketplace.

The globalization or universalization or internationalization of trade and economy, and the multilateral rules that most of us have accepted to be bound by, require us to adopt a post approach regarding IPR through close interaction between government, industry and the creative / inventive segment of society.

The international norms and national laws on copyright and related rights, while recognizing that the promotion of creativity and cultural and information production is an important public interest, also take into account other public interests, such as those which relate to the availability to the public of all the information necessary for the participation in social and political activities, public education, scientific and scholarly research, etc. For these purposes, these norms and laws contain appropriate exceptions to and limitations on the rights of copyright and related rights owners.

## 2. Content

The intellectual property system might play the main role in modern economic policy, and even though a decade ago it was thought that protecting IP rights for software might determine the chances of an economy to recover or to become competitive, the reality we live in proves that society is becoming more and more global, linking people together by their needs and interests and yet still leaving room for national or regional specificity without creating a conflict in between the two areas, but proving that there are natural ways of evolving in your specificity and yet be connected and be a part of the global.

Software industry and IP is increasingly becoming an important tool for sustainable development. Understanding and appreciating the social, cultural and the economic foundations of intellectual property and the copyright system, is a prerequisite for comprehending its increasing importance and role in national strategies for enhancing competition.

In software solutions, intellectual property is not and should not become the end in itself, but a catalyst for accelerating social, cultural and techno-economic growth and development and its evolution in offering effective protection and use has proven spurs socio-economic growth through providing the necessary incentives for increasing creativity, inventiveness and competitive capability. It is (was) believed that a quality conscious approach towards economic

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management would generate higher growth and greater resources for social programs although this approach might increase the gaps between humans, communities, interests.

Intellectual property comprises creations of human mind, of the human intellect. It consists mainly of two branches, one dealing with industrial property comprising technological inventions, utility models, trademarks for goods and services, industrial designs, etc. and the other being copyright. The existence of such exclusive rights is also the legal basis for contractual arrangements between the creators or the ones developing the idea, on the one hand, and the institutions or entrepreneurs wishing to use those ideas in the manufacturing process, on the other. The recognition of the creator, the protection of his rights and the rights of those who invest in the making of his creations, contributed positively to socio-economic development of a developing country and yet now we can see some of the side effects and foresee possible questionable consequences.

With the extension of this system during the last two decades to the protection of computer software, a considerable size of commercial activity of a country involves use of rights protected by copyright. Until recently, one did not have a real idea as to the extent of the economic dimensions of the copyright or cultural industry. In the last two decades, however, independent surveys and studies in certain industrialized countries have indicated how sizeable the industry is. All these studies indicated the contribution of the copyright or cultural industries to their GNP, in Australia 3.1%; Germany 2.9%; India 5.06%; Netherlands 4.5%; New Zealand 3.2%; Sweden 6.6% (although Jennifer Skilbeck in the economic importance of copyright published by the International Publishers Association places it at 3.16%, which seems more likely); the United Kingdom 3.6%; the United States 3.3% for the core industry and 5.8% for the total copyright including the dependent industry.

Computer software industry is a classic example of what effective intellectual property protection can do to ensure economic growth. Protected as a literary work under copyright law since 1984, the industry has grown to be of the foremost in the world with a compounded growth more than 50% between 1990 and 1997, and is increasingly becoming the driving force in information technology. Exports of software increased from US \$225 million in 1992-1993 to US \$1760 million in 1997-1998, to US \$2650 million in 1998-1999 and up 57% to over US \$4 billion in 1999-2000; the projection was that this would go up to US \$9 billion by 2001-2002, to US \$25 billion by 2004-2005 and to US \$50 billion by 2007-2008<sup>1</sup> and it was confirmed. By then the country's software industry is expected to earn an annual revenue of US \$85 billion. The exports, for example, in 1998-1999 were 61 billion to the USA and

North America and 23% to Europe. The compound advantage of the software industry is based on its cost effect world class quality, high reliability and rapid delivery of all of it powered by the state-of-the-art technologies.

China's software industry, has made a substantial contribution to the country's economic development. This industry has created more than 60.000 jobs. The average annual growth rate of the software industry was expected to be 28% in the 5 years, 2000 to 2005. It was also estimated that China will become one of the world's largest Internet markets and that estimation was confirmed. The number of Internet users in China increased, for example from 2.1 million in 1998 to 8-9 million in 1999. The websites were expected to grow to e-commerce activities and their e-commerce turn over was expected to reach US \$1.2 billion by 2002<sup>2</sup>.

The digital economy is becoming an ever more important part of the global economy. It offers many new opportunities for inclusive and sustainable development. It also comes with serious policy challenges – starting with the need to bridge the digital divide. Both the opportunities and challenges are top policy priorities for developing countries. The digital economy is fundamentally changing the way firms produce and market goods and services across borders. Digital multinationals can communicate with and sell to customers overseas without the need for much physical investment in foreign markets. Their economic impact on host countries is thus more ethereal and less directly visible in productive capacity generation and job creation. And, today, the digital economy is no longer just about the technology sector and digital firms, it is increasingly about the digitalization of supply chains across all sectors of the global economy. The digital transformation of international production has important implications for investment promotion and facilitation, and for regulations governing investor behavior. Rules designed for the physical economy may need to be reviewed in light of new digital business models. Some countries have already taken steps to modernize policies; others face the risk of letting rules become obsolete or of unintentionally slowing down digital development. Many countries around the world have development strategies for the digital economy. Yet most of these strategies fail to adequately address investment issues. And those that do tend to focus exclusively on investment in telecommunication infrastructure. The investment policy dimension of digital development strategies should be broadened to enabling domestic firms to reap the benefits of digitalization and easier access to global markets. The World Investment Report 2017 makes a cogent argument for a comprehensive investment policy framework for the digital economy. It demonstrates how aligning investment policies with digital

<sup>1</sup> Shahid Alikhan, The Role of Copyright in the Cultural and Economic Development of Developing Countries, in *Journal of Intellectual Property Rights*, 7, 2002, p. 489-505.

<sup>2</sup> *Ibidem*.

development strategies will play a pivotal role in the gainful integration of developing countries into the global economy and in a more inclusive and sustainable globalization in the years to come. This is an indelible contribution to the discourse on how to narrow the digital divide and meet the enormous investment challenges of the 2030 agenda on sustainable development<sup>3</sup>.

The most attractive industries include services and technology-based activities. The annual parallel survey of IPAs in 2017 provided a ranking of the most promising industries for attracting Foreign Direct Investment in their region. The results for 2017 are broadly in line with responses from past years, with IPAs in developed economies focusing on IT and professional services, while those in developing economies all mention agribusiness among the most attractive industries. Information and communication – which includes telecommunication, data processing and software programming – is emerging as an attractive industry in selected developing regions, confirming that the digital economy is growing in importance beyond developed economies<sup>4</sup>.

Of all suppliers of copyrightable works, suppliers of computer software generate by far the greatest added value. Markets for business software and entertainment software (for example video games) are much younger than other copyright industries and as a rule, they have grown rapidly over recent years. Software is also unique because in contrast to literary texts, movies or sound recordings, the market for software has been subject to unauthorized, digital copying for as long as it exists.

In 1980, software has enjoyed copyright protection in the USA, analogous to literary texts. In many other countries, software also falls in the realm of copyright law but enforcement varies, as will be discussed below. In contrast to other types of copyright works, machine-readable software can also be patented if it is accepted as non-obvious (or considered to constitute an ‘inventive step’ in many European countries). Suppliers of software thus have a choice. Copyright protection concerns the code itself, requires no registration fee, lasts longer and allows for the software itself to remain a trade secret<sup>5</sup>. Patent protection prevents others from putting software with equivalent functions to use, requires complete disclosure, a test of non-obviousness and a registration fee.

There may be a particularly great rift between legal arrangements regarding copyright protection and protection in practice. For example, peer-to-peer file-sharing of copyright works is illegal in most major economies today, but it still occurs on a massive scale. Part of the problem is that in contrast to patents,

benefitting from the ideas and works protected by copyrights does not require much expertise or capital. Copyright infringements occur more frequently and often in the private domain, which inhibits effective enforcement of copyright law. This is one reason why most studies on unauthorized, digital copying use measures of copying rather than measures of the strength of copyright law to assess IP protection.

One problem in research on copyright is that most research on innovation has deliberately ignored the types of aesthetic and intellectual innovations covered by copyright law. To be sure, in the copyright industries technical innovations do occur as well. The adoption of new media technologies is a case in point. However, much innovation in the copyright industries concerns the creation of new media content. In order to measure innovation in copyright industries, it is useful to distinguish between more conventional ‘humdrum innovation’ and ‘content creation’. Humdrum innovation concerns all facets of technological innovations and can be assessed with the familiar instruments of empirical research on innovation. ‘Content creation’ concerns aesthetic and intellectual variations that distinguish different copyright works from each other. To measure content creation, it seems necessary to adapt traditional methods of innovation research. Innovation input is traditionally measured by the size of R&D departments. Regarding content creation, there are two outstanding problems. First, much content creation occurs in relatively small firms and particularly volatile organizational set-ups. Second, content creation is not usually conducted in formally defined R&D departments. Other measures of innovation input are necessary to deal with innovation in small enterprises, with self-employed creators, or with user / amateur innovation that seems to play an important role in the cultural sector (e.g. regarding user-generated content)<sup>6</sup>.

Empirical studies concerned with so-called ‘piracy’ of computer software often deal with copyright and patent infringements at the same time, and the authors rarely bother with this distinction. Many empirical studies on software piracy precede the current interest in copying of other types of copyright works. The bulk of this literature takes a business and management perspective. It is less concerned with social welfare and implications for public policy but with the interests of private business, in particular suppliers of software. Furthermore, in contrast to research on unauthorized, digital copying of recorded music or movies, the extensive literature on software ‘piracy’ features few original assessments of the impact on sales and rights holder revenues. Estimates of lost sales due to piracy come from software suppliers and their representatives.

<sup>3</sup> Mukhisa Kituyi, *Foreword*, in *Word Investment Report 2017, Investment and the Digital Economy*, United Nation Conference on Trade and Development, Geneva, 2017, p. IV.

<sup>4</sup> *Ibidem*.

<sup>5</sup> Christian Handke, *Economic Effects of Copyright. The Empirical Evidence So Far*, Rotterdam, 2011 p. 8-9.

<sup>6</sup> *Ibidem*, p. 15.

The academic literature mostly discusses piracy rates (the ratio of users utilizing legitimate software and users of pirated software) but does not quantify the likely impact on rights holder revenues. There may be several reasons why academic researchers hesitate to forward estimates of lost sales due to piracy. The rapid rate of product innovation in the industry makes it hard to isolate the effect of unauthorized use on sales. There may have been few sudden and substantial changes in the de facto level of copyright protection for software, which could have been analyzed as natural experiments. Furthermore, the rapid growth of the market for computer software could reduce the concern for sales displacement from piracy<sup>7</sup>. The coincidence of rapid revenue growth, great innovation intensity and extensive piracy seems to have motivated many studies on how network effects may mitigate any adverse effects of piracy<sup>8</sup>.

The role the protection of copyright and related rights is above all the promotion literary, musical and artistic creativity, the enrichment of national cultural heritage and the dissemination of cultural and information products to the general public. Such protection offers the indispensable incentives for the creation of new valuable works and for the investment into production and distribution of cultural and information goods. This is done through granting appropriate economic and moral rights to authors, performer, producers and publishers, through establishing adequate framework for the exercise of these rights, and through providing efficient mechanisms, procedures, remedies and sanctions that are necessary for their enforcement in practice.

It was accepted that an efficient and well-balanced system for the protection of copyright and related rights is necessary for the preservation of national culture and identity. Experience shows that for this, it is not sufficient to grant protection to national creators, producers and publishers. Without adequate protection also for them, foreign works and cultural products may inundate the markets of the given country and create a kind of unfair competition for any domestic creations and publications<sup>9</sup>. Yet again, one cannot stop wondering nor question, given the today market, how it was possible for the software protection of certain products to motivate and challenge a fearfull competition provoked by markets like Vietnam or China.

It is / was accepted and embraced by a large part of the academic community the idea that an appropriate copyright system is also indispensable for the participation of international cultural and economic cooperation. Without this, a country may not be able to attract foreign investment in a number of important fields, and may not get access to certain cultural and

information products and services in such an obstacle-free manner as it would be desirable for the acceleration of the social and economic development. Yet, the paradox faced by the economic development for areas that use world heritage innovations to provide alternatives without trademarks for disproportional law prices that allow the consumers south east Asian market to benefit of the same technology as western Europe or American markets for sometimes less than 10 percent of the EU or US market price.

The protection of IP is based on many examples to prove that an appropriate, well-balanced copyright regulation may contribute both to the survival and to the success – sometimes spectacular success – of smaller and medium-sized enterprises.

One example is an old story- but the example is from an early period of its history when, on the basis of the present criteria, it still could have been regarded a kind of developing country: the United States of America from the period when it had just obtained its independence and was in the stage of establishing its own economic, social and legal system. As far as copyright was concerned the first idea – which, at the first sight, perhaps seemed to be attractive and clever – was to promote local culture and creativity through granting copyright protection for the works of domestic authors, leaving, however, foreign works – first of all works published in England – unprotected. The results proved to be catastrophic from the viewpoint of what the isolationist approach to copyright was believed to serve. Those publishers – according to our present comparative scale, certainly small or, at least, medium-sized ones – that had chosen to invest in the publication of some still less well-known American authors were unable to compete with the others which achieved easy and safe success by publishing unprotected works of famous and popular English writers and poets without any need whatsoever for bothering with obtaining authorization and paying remuneration to them. The then “SME” publishers supporting local creativity either went bankrupt or changed publishing policy in abandoning their patriotic extravaganza.

Another example is from a developing country, and quite a huge one, which just as a consequence of the success story involved, is emerging as one of the most important players in the field concerned: India. The great success of the Indian software industry has even started its dynamic extension also to the European and U.S. markets (and not only through “exporting” its excellent experts). There is general agreement that, in the success story of the numerous software SMEs of that huge country – some of which, of course, in the meantime, have grown out this category – in addition to certain other factors (such as a well-thought governmental development strategy and an

<sup>7</sup> *Ibidem*, p. 19.

<sup>8</sup> *Ibidem*, p. 19.

<sup>9</sup> Mihály Ficsor, *The Importance of Copyright and Related Rights for Economic Development with Special Reference to the Position of SME'S*, In *Wipo National Seminar On Copyright, Related Rights, And Collective Anagement*, organized by the World Intellectual Property Organization (WIPO) in cooperation with the Ministry of Culture, Khartoum, February 28 to March 2, 2005, p. 2

advantageous educational structure), the early introduction of a well-balanced copyright protection for computer programs played a decisive role.

Another one is from a country which, at the time of the story was still a reluctant member of the group of the so-called socialist countries (although, as the Western press put it, the merriest barrack in the camp), which then happily became a “transition country”, and in 2004, became a member of the European Union: Hungary. Copyright protection was recognized in the statutory law (the first time in Europe) in 1983. This alone would not have been sufficient in a so-called socialist country to become the basis for an SMEs success story. By that time, however, certain economic and political changes allowed the establishment of small private enterprises (or sometimes even medium-sized ones). The carrier of the small software houses established in that period became truly a great success story, bringing Hungary into the frontline of software development in Central and Eastern Europe and contributing – along with many other factors – to a smooth transformation of the (ever less) centrally planned economy into a full-fledged market economy.

At the end of the 70's and the beginning of the 80's, there were still a lot of heated debates at the international level on what kind of intellectual property protection might be adequate for computer programs, the growing importance of which at that time was becoming evident. During those debates, patent protection – which now, in certain countries, has started a spectacular, although in some aspects controversial, new carrier – was, in general set aside and rejected as a major option. The possibility of a sui generis system was considered more or less seriously (of which still there are some very much articulate *arrière-garde* advocates), but copyright was emerging as the most ready-made and most easily applicable option. The breakthrough towards copyright as a generally accepted option took place in February 1985, at a meeting organized in Geneva at the WIPO headquarters. It was due to the excellent working paper, to the thorough discussion at the meeting, but also to the existing positive examples to which the working paper had been able to refer. At that time, in addition to some positive developments in the case law of some countries, there were already five countries where statutory law explicitly recognized the copyright protection of computer programs.

It may not be a surprise that the United States of America was among the first five. In the case of that country, the contribution of copyright protection might not be so easily and evidently identified as the single key factor for the enormous success of the software industry, although its important role could hardly be neglected. However, India and Hungary were also among those first five countries, and, in the case of these countries it is easier to identify what kind of impact copyright protection had made.

Yet again, one cannot ignore the history and the lessons that past times emphasize: the main basis and premises for some of the national economies to emerge was, at least at a certain point, the ability to use freely,

without financial restraints, the world heritage of the best creation of human kind. My wonder: how will the evolution of the world software development is going to be influenced by the lack of reglementation / zero recognition for IP on markets like east south Asian markets. Furthermore: is it possible that overprotective regulations that focus on the software's author's financial rights might turn into a subtle, masked brake for triggering the creativity and the evolution from public usage? And how well is the example of decompilation of computer programs is actually being taken seriously.

There is no need to elaborate on some very well known examples where the breathtaking success of certain software enterprises – which at the beginning were born even not just as small or medium-sized ones but as micro-enterprises – has led. They have obtained quite an extensive market dominance with the possibility of their proprietary products obtaining the status of *de facto* world-wide standards relegating by this their potential competitors (among them all software SMEs) into the depending status of simple clients.

This evolving scenario was recognized and duly taken into account in the European Community in the framework of the preparation and adoption of the directive on the legal protection of computer programs. The directive (Council Directive No. 91/250/EEC of 14 May 1991) contains certain provisions to protect users of computer programs against the dangers of overprotection in favor of software developers: such as the ones guaranteeing for the lawful owners of copies of computer programs to be able to use it for the intended purpose, including error protection (Article 5(1)), to make back-up copies (Article 5(2)) and to observe, study or test the functioning of the program in order to determine the ideas and principles underlining any element of the program (Article 5(3)). The latter provision has already quite a substantial relevance also for the possible competitors – among them many small medium enterprises – in the software markets. However, what is particularly important for them – especially for the more vulnerable SME's of the field – is the regulation of the issue of “reverse engineering” or “decompilation” of programs in Article 6 of the directive. This regulation became necessary in order to eliminate the possibility of some anti-competitive practices of owners of certain widely used computer programs based on the exclusive right of reproduction and / or the exclusive right of adaptation (and translation) granted to them by Article 4 of the directive. In the absence of an appropriate regulation, owners of rights in such programs would have been able to prohibit the transformation of the programs (only made available by them in object code form) into source code form (this transformation is called “decompilation” – or “reverse engineering” of the program). And without such decompilation, the potential competitors would not have been able to develop and make any computer programs that would have been able to function together – “interoperate” – with the existing and widely used, quasi standard programs. Such a

consequence would have been, of course, particularly disastrous for SMEs of the software development sector. The regulation was not easy. There was quite an important resistance against any specific rules authorizing decompilation, since some major software houses were afraid that the new norms may be used also for simple piratical activities. It seems, however, that the provisions in Article 6 of the directive have established an appropriate balance between conflicting legitimate interests and eliminated the possible dangers as much as possible. The said Article of the directive provides that the authorization of the rightholder is not required where reproduction of the code and “translation” of its form are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that certain conditions are met. These conditions serve as guarantees that the limited freedom granted in this field does not prejudice the legitimate interests of owners of rights. The conditions are as follows: (a) these acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to do so; (b) the information necessary to achieve interoperability has not previously been readily available; (c) these acts are confined to the parts of the original program which are necessary to achieve interoperability; (d) the information obtained must not be used for goals other than to achieve the interoperability of the independently created computer program; (e) it must not be given to others except when necessary for the interoperability of the independently created computer program; and (f) must not be used for the development, production or marketing of a computer program substantially similar in its expression, or for any other act which infringes copyright<sup>10</sup>.

It was proven that software piracy determined economic development. Most leading studies on software piracy are cross-sectional or panel studies with countries (or US states) as the unit of analysis: there were explored explanations for different piracy rates for business software, there were results that suggested highly developed countries exhibit lower piracy rates, there were conclusions stating inverse relationship between development and the extent of software piracy as well.

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Next to income / economic development, the literature discusses a number of other factors determining software piracy, like the fact that culture that puts greater emphasis on individualism rather than collectivism correlates with less business software piracy. Also, it was stated that various indicators of the strength of the legal and judicial system are associated with less piracy.

While dealing with official, secondary data is usually considered to be preferable among economists, existing data does not address many specific phenomena related to unauthorized copying. Survey-based studies on the determinants of software piracy confirm that increasing retail prices are associated with greater piracy rates, consistent with what economic theory predicts for relative prices of close substitutes. Unauthorized copies seem to be inferior goods in the sense that demand for them decreases with wealth. Also, it was concluded that the type of education mattered.

It seems clear enough that unauthorized copying occurs in part because of financial incentives. With access to some widely diffused ICT, the pecuniary costs of acquiring an unauthorized copy are usually much lower than retail prices<sup>11</sup>.

Unauthorized copies are no perfect substitutes for authorized copies, however, in software domain, it might be that the quality of the unauthorized copy is just as good as the original. Also, decompilation and the ability to modify, adapt and improve a software might have better consequences for the consumer

## 3. Conclusions

This well-balanced and precise regulation *has made it possible* – not only in the European Community but also in other countries where this model has been taken over and applied – *for software-developers to continue and extend their creative activities with a chance to succeed*, and many of them have used this opportunity with great efficiency. The big challenge is still to be ruled by the free market, a natural consequence of globalization, and that will still provoke major debates with no certain foreseeable effects on software intellectual property rights.

<sup>10</sup>*Ibidem*, p. 5-6.

<sup>11</sup> Christian Handke, *op. cit.*