EVOLUTION OF COPYRIGHT LAW, TECHNOLOGICAL INNOVATIONS AND COMPUTER PROGRAM**

Chudi C Nwabachili & Noel N Udeoji

Abstract

History has shown that copyright law was the product of a bitter struggle between private and public interests, reflecting a clash between economic and social goals. It was born in the wake of a technological revolution inspired by the invention of printing in Europe. The technological changes triggered profound social, economic, and cultural changes globally. Presently, digital technology with its potential for mass dissemination of information has catalyzed similarly profound societal developments. This paper therefore makes the assertion that time has come to rethink the fundamentals of copyright law as intangible property right, its evolution, and the scope of its coverage, exceptions and limitations, bearing in mind the contemporary needs of technological innovation, advancement, and revolution. This consideration of the evolution of copyright law in the past will conduce to a closer understanding of its condition at present, and to a clearer appreciation of its probable development in the future, at least, to ensure and guarantee the survival of this age long maxim, that "there is no right without a remedy" computer programs inclusive.

Introduction

Prior to recent past, there has never been a record of complaint that an author's rights have been infringed. It was only after the invention of printing that an author had an awakened sense of the injury done him in depriving him of the profit of vending his own writings; because it was only after Gutenberg had set up as a

printer, that the possibility of definite profit from the sale of his works became visible to the author. Before then, he had thought mainly of the honor of a wide circulation of his writings; and he had been solicitous chiefly about the exactness of the copies. With the invention of printing there was a chance of profit; and as soon as the author saw this profit diminished by an unauthorized reprint, he was conscious of injury, and he protested with all the strength that in him lay, until by slow steps the author gained the protection he claims, as well as arousing public opinion. The digital and technological developments of the past years is another challenge, bearing in mind that even the generation of a computer program (software) is the creation of literary work, and statutory. The question now is whether control over the dissemination of works should be strengthened or removed, and how to structure the incentives offered to the relevant owners of copyrighted works.[1] The major issues are the recurrent clashes between copyright holders' attempt to strengthen their ability to combat the free circulation of their works, soft copy especially, and internet intermediaries' attempt to relax the grip of copyright exclusivity in order to promote their business model, which flourishes with the ever increasing accessibility and availability of copyrighted works. Where there is right in copyright there is a remedy was also feebly acknowledged by the United States of

Chudi C NWABACHILI; Professor; Department of Public and Private Law, Faculty of Law; Chukwuemeka Odumegwu Ojukwu University Igbariam, Anambra State Nigeria (+234-803-340-4185) charleschudi2009@yahoo.com

*****Noel N Udeoji; LLM, Lecturer II, Department of Public and Private Law, Faculty of Law, Nnamdi Azikiwe University, Awka, Nigeria (+234-803-324-0300) udeojinoel@yahoo.com.

[1] Orit Fischman-Afori, 'The Evolution of Copyright Law and Inductive Speculations as to Its Future' [March 2012] (19) (2) (2) *Journal of Intellectual Property Law* 233 to 236.

America through an order issued by the Senate of Venice in 1469, granting John of Spira the exclusive right to print the epistles of Cicero and of Pliny for five years.

1.0 Brief History of Copyright.

Copyright predates the Statute of Anne. Scholars traced it to the declaration of King Diarmund while passing judgment in respect of a dispute between one Mr Finnanin and Mr Columcille. In that case, Finnanin accused Mr Columcille of copying his Bible without permission. The King Diarmund noted: *"to every cow her calf, and to every book its copy"*[2]. However, a more precise account of the origin of copyright protection is traceable to England where the Crown and the Church (in a bid to prevent the circulation of heretical and seditious materials) monitored the printing of books and censored the press. As the printing machine technology was later developed,[3] it became easier to reproduce manuscripts at cheaper rates.[4] The widespread piracy and duplication of works resulted in the promulgation of the Statute of Anne in 1709.[5] This Act gave authors/creators the exclusive right over their works for as long as 14 years with a renewal option for another 14 years. Other copyright legislations followed. The English Copyright Act of 1842 was followed by Copyright Act of 1911. The 1911 Act was extended to Nigeria in 1912 by Order No. 12 of June 1912, which generally granted protection for a period of 50 years after the author's death.

[2] Royal Irish Academy, MS 24, 25.

[3] Gutenberg printing technology introduced sometime in 1439. See para 2.0 below on …Technological Innovations.

[4] FE Skone James and Copinger *Copyright* (12th edn, London: Sweet & Maxwell 2002) 7.

[5] 8 Ann. C.19 (Eng.) The long title "An act for the encouragement of learning, by vesting the copies of printed books in the authors or purchasers of such copies, during the times therein mentioned."

However, the Act can be said to be a mere introduction to serve the colonial master's economic interests, being that only works first published in England or made by an author resident in the Crown's territory could be accorded protection. It is important to note that pre-colonial Nigeria had features of copyright protection in the sense that performers and storytellers were usually entertained and compensated with gifts and certain refreshments after each performance.[6]

1.1 Copyright Act of 1970

Copyright Act of 1970 repealed the 1911 Act. It was passed as a Decree on December 24, 1970, under then General Gowon led military government of Nigeria. There were twenty (20) sections and three schedules in the legislation, which provided for works eligible for copyright, conferment of copyright, nature of copyright in certain works, first ownership, assignment and licensing, infringement and actions for infringement. It provided powers for the appointment of a competent authority to resolve copyright licensing conflicts, which were not activated during the existence of the legislation. Relying only on copyright obtaining its source from common law rights were abolished to that extent. The sections created for repeals, transitions and saving provisions as well. Interpretations and citation were the last three sections. The first schedule to the Act provided for the term of copyright and interestingly, it reduced the term of copyright from 50 years after the death of the author as contained in the Copyright Act of 1911 to 25 years for literary, musical and artistic works. Being the first indigenous Act, it was expected to protect the Nigerian interest and reflect the peculiarities of her people as well as her culture and traditions. A reduction to 25years was also

[6] Adebambo Adewopo, *Nigerian Copyright System: Principles and Perspectives* (Odade Publishers 2012) 13

promulgated in the case of photography after the end of the year in which the work was first published. At the time, the local based copyright industry in Nigeria was just growing and required a firm policy structure to lend it support for sustenance. In December 19, 1988, a new Copyright Decree was promulgated[7] due to agitation by industries affected, as well as loopholes in the 1970 Act. Tony Okoroji had this to say;

> The very weak provisions of Decree No 61 of 1970, the copyright law then in force, was identified as the major obstacle to effective confrontation of the copyright problem. The civil provisions were cumbersome and had many loopholes… The criminal sanctions…were laughable. There was no provision for any imprisonment. There was therefore very little legal deterrent against piracy… It became very clear that the most important and urgent task … was to get an effective copyright law promulgated in Nigeria.[8]

1.2 Copyright Act of 1988

At the end of Nigerian civil war in 1970, oil boom brought immense wealth to the country and lots of money to spend and people needed to get back with life, entertainment therefore

[7] Codified as Cap C28 Laws of Federation of Nigeria (LFN) 2004.

[8] Tony Okoroji, *Copyright Neighbouring Rights & The New Millionaires: The Twists and Turns in Nigeria* (Tops Limited, 2008).

offered comfort and developed into an important industry. Entertainment by way of indigenous and foreign music were in high demand, this propelled development of the industry. Technological development enabled the invention of the cassette player and cassettes that brought about cheaper and easier means of copying musical works. Introduction of facilities to mass produce works on cassettes further brought challenges of piracy among other infringing activities in the entertainment and literary industry. Owing to high level of piracy and related sharp practices, concerned stakeholders, which included producers, authors, performers, as well as publishers set up Anti-Piracy Vanguard which comprises of Music and Publishing Industries. Despite several anti-piracy raids and collaborations with the Nigeria police, piracy was still on the rise and the copyright law recently passed had no positive impact in curbing piracy. The Nigerian copyright industry was frustrated and agitated for identified legislative reform as a cardinal means of fighting the challenges posed by copyright infringement. After series of meetings and lobbying, the 1988 Copyright legislation was passed into law and it became part of Nigerian legal system.

Since its promulgation in 1988, it has been amended twice, firstly in 1992 and then again in 1999. The 1988 Act had 41 sections, but the combined effect of the amendments to the Act and recodification of 2004 has moved the number of sections to fifty-three (53) while retaining the original number of parts and schedules, that is, four (4) Parts[9] and five (5) Schedules[10].

[9] Part I was Copyright; Part II: Neigbouring rights; Part III: Administration of copyright and; Part IV: Miscellaneous.

[10] The First Schedule was on Terms of copyright; Second: Exceptions from copyright control; Third: Special exceptions in respect of a sound recording of a musical work respectively; Fourth: Compulsory licenses for translation

The 1988 Act established the Nigerian Copyright Council[11] and reasonably provided safeguards[12] and remedies and sanctions for copyright infringement. The 1992 amendment altered section 38 which provides for the appointment of Copyright Inspectors who had authority to search infringers' premises and make arrests, even without warrant. This principle was emphasised in the case of *NCC & Ors v Musical Copyright Society of Nig. Ltd/GTE & Ors*[13]

> …by way of emphasis, copyright inspectors appointed by the Commission under s. 38 (1) and (2) LFN, 2004 (the Act) have the powers to enter, inspect and examine at any reasonable time any building or premises which is reasonably suspected as being used for any activity which is an infringement of copyright; and/or arrest any person who is reasonably believed to have committed an offence under the Act. S. 38 (5) gives a copyright inspector the powers, rights and privileges of a

and reproduction of certain works; and Fifth: Translation and savings provisions.

[11] Now Nigerian Copyright Commission (NCC).

[12] The 1992 amendment altered s.38 which provides for the appointment of Copyright Inspectors with authority to search infringers' premises and make arrest. S.39 provides for establishment of Collecting Societies. These societies collect and enforce royalties on behalf of their members, and distribute the proceeds in predetermined proportions.

[13] (2016) LPELR-42264 (CA).

police officer as defined under the Police Act and under any other relevant statute respecting investigation, prosecution and defence of a civil or criminal matter under the Act. With respect to arrest without warrant, a copyright inspector in whose presence a copyright offence is committed can arrest the offender on the spot without a warrant. Or where the copyright inspector is in hot pursuit of an infringer of copyright and has caught up with him, an arrest of the infringer could be done by the copyright inspector without a warrant. But in other cases a warrant should be required to legalize the arrest. As for search of premises and buildings, the Constitutional guarantee of the right to the privacy of an individual under s. 37 of the CFRN, 1999 may give way if a search warrant signed by the appropriate authority (Magistrate, for example) is obtained by the inspector before the search of such premises or building which will be protected by law. The exception, I think, is where the inspector is in hot pursuit of an infringer and the infringer enters a building or

> premises and is caught red handed with incriminating copyright materials.[14]

Section 39 of the Act provides for the establishment of collecting societies. These collecting societies collect and enforce royalties on behalf of their members. However, approval of the NCC to operate must be sought for and obtained.[15] These royalties are distributed in determined proportions. In *Musical Copyright Society v Adeokin Records and Anor,*[16] the court held that collecting societies represent the interest of their members. This does not mean that they are owners of the copyright in the work, they merely collect royalties on behalf of their members.

2.0 A Brief Historical Appraisal of the Technological Innovations.

Over the years, there has been manifestations of scientific and innovative abilities. It is after the invention of printing that the origin of copyright came to the fore. Mr. De Vinne shows that in 1451, at Mentz, Gutenberg printed a book with movable types. Fourteen years later, in 1465, two Germans began to print in a monastery near Rome, and moved to Rome itself in 1467; and in 1469 John of Spira began printing in Venice.[17] Nicholas Jenson who was sent to Mentz by Louis XI, introduced the art into France

[14] Per Ikyegh, J.C.A, pp. 32-33, paras C-E.

[15] *NCC & Ors v Musical Copyright Society of Nig. Ltd/GTE & Ors (Supra). "The 1st respondent was found to be a collecting society, so as the law now stands, it must seek and obtain approval under Section 39 of the Copyrights Act before operating the collecting society. Not having done so, it cannot be said to be operating legally.*" Per Ikyegh, J.C.A, p. 34 paras C-D.

[16] [1992] FHCLR 313.

[17] Orit Fischman-Afori, 'The Evolution of Copyright Law and Inductive Speculations as to Its Future', *op. cit.* (n 1).

in 1469. Caxton set up the first press in England in 1474.[18] All these had a major impact on the production of literary works which were hitherto done by hand. In the beginning, these printers were publishers also; most of their first books were Bibles, prayer books, and the like. In 1465, the original editing of the works of a classic author was witnessed, the comparison of manuscripts, the supplying of lacuna, the revision of the text, called for scholarship of a high order, sometimes possessed by the printer-publisher himself; but more often than not learned men are engaged to prepare the work for the printer, and for the latter to see it through the press. This first edition was a true pioneer's task, it was a blazing of the path and a clearing of the field. Once done, the labour of printing again that author's writings in a condition acceptable to students would be easy. Therefore, the printer/publisher who had given time and money and hard work to the proper presentation of a Greek or Latin book, was outraged when a rival press sent forth a copy of his edition and sold the volume, at a lower price possibly, because there had been no need to pay for the scholarship which the first edition had demanded. It is worthy to remark that the earliest person to feel the need of copyright protection should have been a printer-publisher, they stood for the author and were exactly in his position. He was prompt to protest against this subversion of the fruit of his labour, and the earliest legal recognition of this rights was granted less than a score of years after the invention of printing had made the injury possible.[19] The radical development of the printing technology gave rise to the Stationers Company and enactment of Statute of Anne.[20] As the world advanced in the renaissance era,

[18] *Ibid.*
[19] *Ibid.*
[20] *Ibid.*

scientific inventions were made. We shall classify the innovations into centuries and list the inventions that occurred.

2.1 The 19th Century

There were various innovations that had an impact in the field of digital technology which in turn affected the copyright regime. They include: Telephone, which was patented in 1876; phonograph player which was patented in 1877; the gramophone record, which was patented in 1887; Cinematograph, in 1888; Kodak Camera, patented in 1888; and magnetic tape recorder, in 1899[21].

2.2 The 20th Century[22]

Further research gave birth to the invention of television in 1923; videotape recorder in 1951; recordable audio cassette, in 1962; Floppy Disk, in 1967; ARPANET, in 1969; the first home video game system Magnavoc Odyssey, in 1972; VCR, in 1972; Portable Handheld Cellular Phone, in 1973; Sony Walkman Audio Cassette Player, in 1979. Others are IBM personal Computer, in 1981; and Compact Optical Disk, in 1982[23]. Perhaps the most radical introduction came with the development of the Internet in 1983. The Internet has been described as the world's biggest copy machine[24]. The Internet was introduced in Nigeria in the early 1990s *wherein* Globacom financed the construction of 9200 kilometres of Fibre Optic Cable from

[21] Teaching Copyright, A Technological Timeline. <https://www.teachingcopyright.org/handout/lawtechnology-timeline.html> Accessed 12 March 2020.
[22] *Ibid* at 2.
[23] *Ibid* at 3.
[24] Anon 1997 PC Week 3.

Europe to Lagos[25]. The introduction of the internet and the complexities of the growing world let to the introduction of digitization and certain technologies to accommodate the demands and complexities of global development. In this regard, we have Macintosh Personal Computer, introduced in 1984; Discman introduced in 1984; Web Server Browser Developed, in 1990; and Digital Video Disk (DVD) developed in 1995.

2.3 The 21st Century

By this time, the copyright regime had been reshaped by digital and technological innovations. For example, artists stored their songs on compact disk (CD) players, literary works were now stored on floppy disks and computers, movies were stored in VCDs and cinemas adopted the real time sequencing rendition. Notwithstanding these developments, stakeholders in the scientific and technological field introduced new devices which could store more, process better and communicate faster. In this regard, we have; the Apple Ipod[26], the Local Area Networks (LAN)[27]. Then introduction of Bulletin Boards, Blogs and Web management in the early 21st century[28].

[25] Ana Santos Rutschman, 'Weapons of Mass Construction: The Role of IP. in Nigeria's Film and Music Industries' [2015] (29) *Emory International Law Review*.

[26] The Apple Ipod could store over 1000 songs and render them based on the user's preference, launched in 2000.

[27] LANs are data communication facilities that connect geographically proximate computers. It allows for the transfer of large files from one computer to the other.

[28] Under these platforms, users or administrators with similar interest can share materials and information relating to the latest releases, updates and how to circumvent restrictions.

2.4 The Modern Era

Various mind-blowing innovations were discovered in the modern age. We had the introduction of Social Media Networking; E-mail management; Online Shopping[29]; and Smartphones innovations. Swiss Army Knife software tools were also introduced. This software could amend data, interpret and decode programs through reverse engineering and also create further software. Today, we have the technologies of the peer-to-peer and file-sharing networks[30], such as apster, Aimster, Grokster, Utorrent, KaZa, Wapda, Winny), the introduction of file swapping[31] and online storage services, such as Megaupload, RapidShare, Dropbox, and GoogleDrive. Further introduction of Fiber Optic Technology which makes it easier and faster to connect to the World Wide Web (www) and numerous computers around the continent. The Fibre Optic Cables carry digital codes as pulses of light[32] which results in a faster data transmission.[33]

3.0 Eligibility and General Regulation of Works

Section 1 (1) of the Act[34] provides that the following literary works shall be eligible for copyright; that is works expressed in

[29] Like Kindle, Amazon, Asus, where patented and copyrighted works could be purchased

[30] *A and M Records v Nasper* 239 F.3d 1004 (2001) where the court held that prohibitive use of such networks can amount to infringement of the right of the copyright owners.

[31] <http://www.buzz-cnn.com/free-file-sharing-sites/amp/> Accessed 4 July 2020.

[32] Nicola Lucchi, 'Digital Media and Intellectual Property, Management of Rights and Consumer Protection in a Comparative Analysis' (Springer 2006) 2

[33] IM Nwosu, 'Copyright Protection: The Legal and Sophisticated Response in the Digital Age', Long Thesis, University of Lagos Nigeria, Akoka, 2016.

[34] Copyright Act C28 LFN 2004.

print and writing, which covers all written and printed material, including writings such as books, novel, art, poetry, essays, stories, features, biographies and computer programmes, encyclopedia, dictionaries, letters, memoranda reports, teleplays, etc. It is necessary to note that regulation of copyright law is generally a question of national laws and each country stipulates the boundaries of what is copyrightable, their nature, applicable rights and term of protection. Traditionally, most copyright laws provide for the protection of literary and artistic works, sound recordings and musical compositions, broadcasts and neighboring/performance rights. These traditional categories of eligible works appear ill-suited to the exigencies of the modern time. The mere digitization of a piece of copyrighted material may implicate two or more categories of works simultaneously or even necessitate the creation of new and more fluid categories of a *sui generis* nature deserving of discrete legal protection. The limitations of national legislations have given rise to an international regime of laws to address transboundary copyright issues starting firstly with the Berne Convention on Literary and Artistic Works of 1886,[35] the Universal Copyright Convention established in 1952,[36] the Geneva Phonograms Convention[37] and the Rome Convention.[38] In 1996, the WTO Treaty introduced the TRIPS Agreement[39] which stipulated certain minimum standards of protection for copyrighted works premised on the framework

[35] 828 UNTS 221, S. Treaty Doc. No. 99-27.
[36] 25 UST 1341, T.I.A.S. No. 7868 (1952).
[37] Convention for the Protection of Producers of Phonograms Against Unauthorised Duplication of Their Phonograms, October 29th, 1971.
[38] International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations, 26 October 1961. 496 UNTS 43.
[39] Trade Related Aspects of Intellectual Property Rights, Annex 1C of the WTO Agreement 1995.

of the Berne Convention as part of the international trade in goods and services. Most of these international instruments did not directly address the special role of digital technologies and their ramifications for copyright ownership and enforcement.

The WIPO Internet treaties[40] introduced with effect from 2002 attempted to extend the provisions of Berne Convention and TRIPS Agreement to these new technologies by allowing rights-holders to protect their rights through encryption technologies best suited to the needs of the digital age. These treaties introduced minimum requirements for the protection of copyright owners by member states of WIPO from unauthorized access and use of their works on the internet and other digital platforms by recognizing their rights to control these works and to be compensated for their use.[41] The WIPO Internet treaties also introduced anti-circumvention provisions to all digital rights management techniques and the prohibition of intentional deletion of associated electronic digital rights management information.[42]

The United States of America (U.S) implemented the provisions of the WIPO Internet treaties in its Digital Millennium Copyright Act (DMCA) enacted in 1998.[43] In addition to criminalizing the circumvention of technical protection measures and access control technologies adopted by copyright holders, the DMCA also introduced exemptions and protections from direct and

[40] The WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty, adopted 20 December 1996.
[41] Arts 6, 7 and 8 WCT; Arts 7- 10 of Ch. II and 11-14 of Ch. III WPPT.
[42] Arts 11 and 12 WCT; Arts 15, 18 and 19 Ch. IV WPPT.
[43] The Digital Millennium Copyright Act of 1998 amending Title 17 of the United States Code, Pub. L. 105-304.

indirect liability for internet intermediaries and Internet Service Providers (ISPs). Also, the Copyright (Information Society) Directive[44] implements the provisions of the WIPO Internet Treaties in the European Union (EU). This Directive distinguishes between reproduction rights and the right of communication to the public, which covers transmissions and publications distributed on the internet. Transient and incidental copying forming part of a network transmission or other legal uses are exempted for the benefit of ISPs. The anti-circumvention provisions extend to the manufacture, importation, distribution, sale and rental of devices intended for such use, specifically marketed and advertised for circumvention purposes, and have limited commercial uses other than to sidestep copyright protection measures, or are primarily designed and adapted for the purpose of enabling or facilitating such evasive measures.[45]

Recently, the EU issued a new Directive on copyright in the Digital Single Market[46] intended to ensure *"... a well-functioning marketplace for the exploitation of works and other subject matters...taking into account in particular digital and cross-border uses of protected content."* The measure seeks to protect copyrighted material distributed online, encouraging collaboration between content creators and internet platforms and engendering a just and more equitable distribution of profits generated from such content.[47] However, digital technology comes with endless possibilities and allows us to transmit and manipulate data in ways that transcend our previous techniques

[44] The EU Copyright Directive 2001/29/EC.
[45] Arts 2-4, 6 and 7
[46] Directive on Copyright in the Digital Single Market. Directive (EU) 2019/790 of 17 April 2019.
[47] Arts 15, 17, 18, 19 and 20. This Directive came into effect on 7 June 2021.

of replication and dissemination[48]. Millions of materials can now be accessed online at the click of a button. Aduwa has noted;

> The cumbersome exercise of searching by hand through the library's card catalogue or periodical indexes can be made easier by typing few key words pertinent to the research topic into a computer and the researcher can receive extensive list of related sources of articles in books and journals in just a matter of minutes[49].

4.0 Computer Programs.

In the 1970's, the arrival of computer products for mass markets, notably personal computers and computer games put paid to 'first generation' notions that functioning elements, and above all, computer programs, could be adequately protected within the framework of contracts and associated confidence. While their legal mechanisms have remained vital, they have come to be underpinned, first by copyright in software and now, to an increasing extent also by patents upon inventive techniques associated with programming.[50]

[48] Allen N Dixon and Martin F Hansen 'The Berne Convention Enters the Digital Age' [1996] *European Intellectual Property Review* 604-636,

[49] S E Aduwa-Ogiegbaen and EOS. Iyamu, *Using Information and Communication Technology in Secondary Schools in Nigeria: Problems and Prospects* (Educational Technology & Society 2005) 8 (1) at 110.

[50] Our scope however limits us to copyright in software.

4.1 Copyright in Program.

As in the working out of complete copyright works such as films or symphonies, the program which instructs a computer to perform the desired operation often goes through a series of evolutionary steps from preliminary conception to detailed and complex expression. In this process, a crucial stage in the conception is the expression of the basic steps to be executed, the algorithm, in the form of a flow-chart or other logical flow diagram. Thereafter the statement of instructions in a computer language is relatively unskilled though it may be very laborious. The detailed writing may be in a so-called 'high level' language (such as Fortran or Cobol), giving the program in source code. The computer itself then converts this into operational terms of object code, by means of a separate system control program. Since the advent of the personal computer, producers of software, some of it the result of very large investment indeed, have been determined to prevent imitations appearing on the mass market and to prevent down-line copying by legitimate purchasers. They turned to copyright as the form of intellectual property most immediately adaptable to their purpose and strove to establish, country by country, that the generation of a program is considered the creation of literary work.

However, two hazards in particular emerged. First, there was a counter argument that, at least when the program reaches electronic form, it has become a means of operating the machine and is no longer appropriate subject matter for copyright protection.[51] This was a particularly damaging view, not least

[51] The High Court of Australia by majority held in *Computer Edge v Apple Computer* [1986] FSR 537, joining in the revival of Davey L.J.'s dictum: *"a literary work is intended to afford either information and instruction, or pleasure, in the form of literary enjoyment"*.

because most programs are now written entirely on computer, rather than first on paper. Secondly, in countries which require for copyright that a sufficient level of originality be shown, there might be no protection for a program involving only humdrum writing skills.[52]

Partly because of these considerations, for appropriateness of copyright protection for computer programs, there have been contemporaneous attempts to procure legislation specifically incorporating programs into the copyright fold, mainly as literary works.[53] While in UK, the judges showed no tendency to resist this deployment of copyright,[54] an Act was nevertheless procured in 1985 which sought to forestall any lapse into apostasy.[55] In the Copyright, Designs and Patent Act (CDPA) 1988 of UK, that position was reaffirmed. Going down, the 1991 Computer Programs Directive (CPD) required a standard set of provisions in the national copyright laws of EU States and this was adopted into the CDPA by amendments.[56] The excruciating gestation of the Directive left it with strange marks, and its subsequent conversion into UK law has added others.

[52] The German Supreme Court's decision, Inkasso-Program (1986) 17 LLC. 681, altered by the CPD art 1(3). To be discussed in the next paragraph below.

[53] Along with international recognition of computer programs as literary works see TRIPS art 10(1) and WCT art 4. See also section 1 (1) of the Copyright Act, C28 LFN 2004.

[54] Thus there were interim decisions in which copyright protection was assumed. E.g., *Sega Enterprises v Richards* [1983] FSR 73; *Thrustcode v WW Computing* [1983] FSR 502.

[55] Copyright (Computer Software) Amendment Act 1985, applying the CA 1956 to programs as it applied to literary works.

[56] Copyright (Computer Programs) Regulations 1992 (SI 1992/3233.

4.2 Existence of Copyright.

'Literary work' generally, is any work that is not dramatic or musical and which is written, spoken or sung, now explicitly includes a computer program and (separately) preparatory design material for a program.[57] The program must be recorded in writing or otherwise; but this is defined to include writing in code, necessarily by hand, and "regardless of the method by which, or medium in or on which, it is recorded".[58] This is wide enough to embrace storage in a computer. According to the CPD protection extends *"to the expression in any form of a computer program"* but not to its underlying ideas and principles thus excluding algorithms and programming language, individual or complex commands, graphic user interface or data file formats.[59]

There will still be the general copyright considerations: has there been sufficient labour, skill and judgment to satisfy the requirement that there is an 'original literary work'? The mental input may therefore consist in the writing of the program from its first sketching in any detail, through source code to object code.[60] It can also consist in compiling a suite of programs together.[61]

[57] CDPA 1988, s. 3 (1) (b), (c). Unlike the Australian and US legislation, there is no definition of "computer program". Australian courts have interpreted the definition of "computer program" in s.10 of the Copyright Act 1968 (Cth) to exclude macro commands (*Data Access v Powerflex Services* (1999) 202 CLR 1, HC Aust) and to include an editor file and table file used as part of a content management system for websites (*Dais Studio v Bullet-Creative* [2007] FCA Aust).

[58] CDPA 1988, ss. 3 (2), 178, "writing".

[59] *Navitaire v Easyjet* [2006] RPC 3

[60] What is a sufficient working out of an initial idea to count as copyrightable 'expression' must be judged in the circumstances; but certainly, source code may be copyright: *Ibcos Computers v Barclays Mercantile* [1994] FSR 275 at 296.

[61] *Ibcos Computers v Barclays Mercantile* [1994] FSR 275 at 290.

Very simple programs may fail to embody sufficient "labour, skill and judgment"[62]; but, provided that they are not in substance copied, programs will mostly pass that threshold and be given a breadth of protection proportionate to the intellectual value of their content.[63] The Directive however only seeks to impose a test of originality for software which requires the program to be "the author's own intellectual creation".[64] For some Commission officials, the UK implementation is defective in not introducing the wording. The general rules for literary works also apply to questions of authorship, since this is permitted by the CPD.[65] So in UK law, the programmer or programmers will be author or joint authors.[66] Their lives will therefore measure the term of protection, which however, inappropriately, follows the longest-

[62] The process of converting a program for use on a different computer can be a complex business involving "translation" into a different source code language; this secondary work ought to attract copyright, even where it may also involve adaptation of the first version: cf. *John Richardson Computers v Flanders* [1993] FSR 497 at 518.

[63] cf. *Autodesk v Dyason* [1992] RPC 575, where the High Court of Australia (by majority) found that a locking device needed to gain access to a popular design program had been infringed by an alternative device which, like the first, gave electronic instructions to "turn the key". Pumfrey J. criticized the decision for considering substantiality separately in relation to this small part of a program, and thus justifying protection for copyright in any part of the whole which is needed to make it work: *Cantor Fitzgerald v Tradition* (UK) [2000] RPC 95 para 75.

[64] CPD art 1(3), so provided chiefly in order to oblige the German courts to abandon the high standard of originality which they had adopted in *Inkasso-Program*.

[65] *Ibid* art 2, which is a moderate concession away from strict author's right theory.

[66] Contributions such as error fixing and setting the functional specifications and parameters of the software were not regarded as contributions to programming: Fylde Microsystems v Key Radio [1998] FSR 449.

life-plus-70-years rule.[67] Where the work is created in employment, first ownership must go to the employer, in the absence of a contrary contractual agreement.[68] In all other cases the ownership trail starts with the author. If he or she is commissioned to write the program, there may be an implied undertaking (if there is no express term) to assign the right.

4.3 Exclusive Rights[69]

The CDPA 1988 takes an embracing approach to the exclusive rights in a program (and equally to works stored as data in a computer) by defining "copying a work" to include storing the work in any medium by electronic means. This includes the making of copies which are transient or are incidental to some other use of the work.[70] The CPD is more specific, but probably goes little further: it requires the exclusive right to cover any permanent or temporary reproduction of a program[71] by any

[67] The Commission's original intention to impose a limit of 50 years' protection was surrendered in order to show that the EU was treating programs as works within the Berne Convention. The Convention was last revised before their inclusion was a practical issue. Accordingly, countries wishing to foster their international protection treated them as if within the Convention *pour encourager les autres*. Now their protection as literary works under Berne is required by TRIPS art 10(1) and WTC art4.

[68] The importation of this convenient presumption appears the thin end of a disruptive wedge for author's rights theorists. The Directive restricts it to the "economic" rights. This is of no importance to UK law, since there are no moral rights in computer program copyright.

[69] Copyright Law Review Committee, (Australia), Final Report on Computer Software Protection (1995); Drexl, What is Protected in a Computer Program? (1994).

[70] CDPA 1988, s.17(1)(2)(6), which anticipated the requirements of the CPD on the matter: see art 4.

[71] *Ibid* s. 24(2).

means and in any form, in part or in whole,[72] to be authorised, including loading, displaying, running, transmission and storage. Programs have been the foremost form of digital record to have proved preeminently copiable. So far as dealing in copies are concerned, in relation to parallel importation across State boundaries, it is in the CPD that EU has sought to enshrine in national copyright laws its formula for intra-EEA exhaustion, together with extra-EEA non-exhaustion.[73] A surprising interpretation of exhaustion rules occurred, however, in *UsedSoft GmbH v Oracle International Corp*[74] where the CJEU ruled that the right of distribution of a copy of a computer program can be exhausted through authorised downloading of that copy from the internet where the right-holder has also conferred, in return for a payment of a fee, a right to use that copy for an unlimited period. Whether this is indicative of a more general approach to exhaustion in an online setting remains to be seen.

4.4 Substantial Taking.

Major commercial programs are, almost inevitably, subject to direct, line-by-line copying. The software industry has had to tackle not only those who make a business of piracy but also private corporations, professional practices, government organisations and educational establishments which clone multiple copies of programs from a single purchase. It is the disparity between the cost of originally producing programs and those of direct accurate copying which has so much strengthened the political argument for their protection.[75]

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[72] Whatever this may imply, UK law operates in accordance with its general test of substantial taking of the "work".
[73] CDPA 1988, s.18(3).
[74] [2012] ECDR 19 CJEU at 72.
[75] So also for all digitally recorded materials.

Copyright also covers selective, altered, summarized and otherwise varied versions of a work, where it still involves substantial reproduction of the original. Indeed, it is explicitly provided that adaptation, as an act of infringement, includes making an arrangement, an altered version or a translation (from one language or code to another) of a program.[76] Since programming is a sphere in which, for many reasons, derivation in some sense may be occurring in the course of evolving new programs, there is endless scope for argument about what should amount to infringement. Successful programs invite the challenge of more or less competitive variants. With a form of protection as ubiquitous as copyright, it is particularly difficult to distinguish the inexcusably predatory from the acceptable competitive.

4.5 Exceptions

a. Back-up Copies.

CDPA 1988, entitles lawful users of a program to make "necessary" back-up copies.[77] Making back-ups of programs as well as stored data is widely considered a matter of sensible practice; so it can only be hoped that what is "necessary" will be given reasonable scope. A contractual clause seeking to override the entitlement is void.[78] In addition, in order to correct errors in a program or for any other purpose "necessary for lawful use", there is power to copy or adapt the program; but this may be excluded by a contractual term which after all prohibits such inference and so sends the user back to the manufacturer or supplier for debugging and other maintenance.[79]

[76] CDPA 1988, s.21, amended to comply with the CPD art 4(b).
[77] CPD art 5(2); CPDA 1988, s.50A.
[78] *Ibid* art 9(1); CPDA 1988, s.50A (3).
[79] *Ibid* art 5(1) 9(1); CPDA 1988, art50A (2), 50C.

b. Decompilation

Decompilation will become significant if it leads to the writing and production of a program which is not itself an infringement of the program decompiled. If it can be shown that the final product infringes then it can itself be attacked; in support of that, decompilation for the purpose of writing such a program cannot fall within the exception provided by article 6[80] Decompilation is concerned with clear, line-by-line, copying and so does not raise questions about "substantial taking" of the kind discussed above. Those who argued against any exception took their stand partly on the difficulties of demonstrating infringement in rewritten final products.[81] They claimed that they must be able to object to the one step in the evolution of those products which unequivocally involved straightforward copying. Their opponents riposted that other copyright works could be consulted and drawn upon in other to follow instructions or to make other works, provided that the results were not themselves infringements.[82] Therefore, and from this perspective, it was merely a peculiarity of computer technology that a single copy had to be made before the step of consultation could take place. The actual exception now inserted in the CDPA 1988 is an adapted version of article 6 of the CPD. It might have been more discreet to tread this bloody and treacherous battlefield exactly in the footsteps of the Directive; but for the valiant draftsman.[83].

[80] *Ibid* art 6(2)(c); CPDA 1988, s.50B (3)(d).
[81] Lake *et al* [1989] EIPR 43; Hart [1991] EIPR 111; Miller (1993) 106 Harvard L.R. 977.
[82] Colombe and Meyer [1990] EIPR 79, 325; Karjala [1994] 19 U. Dayton LR 975; Vinje [1994] EIPR 364.
[83] Following to modern approach to European texts, Pumfrey J. has said that either the language of the British draftsman embodies the Directive's requirement, or it is a transposition into UK Law*: Navitaire v easyJet Airlines* [2006] RPC 3 para 88.

Under the new s.50B of CDPA, it is not infringement of copyright for a lawful user to decompile a program for a "permitted objectives", provided that a set of limiting conditions are satisfied. A term in an agreement, which seeks to prevent such decompilation, is void.[84] On the other hand, the defence of fair dealing for purposes of research or private study has no application to decompilation.[85] The section departs from the CPD at two basic points. It defines "decompiling" as converting a copy of a computer program expressed in a low level language into a version in a higher level language; or, incidentally while doing so, copying the program.[86] Moreover, eschewing entirely the concocted term "interoperability", it defines the "permitted objective" of decompilation as: obtaining the information necessary to create an independent program which can be operated with the program decompiled or with another program.[87]

4.6 Screen Displays.

The displays on the screen provide the crucial elements of the "graphic user interface" (GUI). They are the keys which allow the user to instruct the computer what is wanted of the program being run. The immense spread of computer usage, and the progress towards "open", mixed programming, make it viral that this

[84] CDPA 1988 s.50B (4), 296A; the contract must have been entered after 1 January 1993: Copyright (Computer Programs) Regulations 1992 (SI 1992/3233) reg.12(2).

[85] CDPA 1988, s.29(4). Though it remains relevant to any other computer use which otherwise would constitute infringement, see Dreier [1991] EIPR 319 at 325.

[86] CPD wisely avoids any comparison in the level of languages. The UK section may not apply to a "hex dump", which is the conversion of object code in binary form into hexadecimal code, not itself a higher level language.

[87] This is clearer than the CPD in defining the types of interoperable connection.

process should be made as simple and easily memorised as possible. Nevertheless, each user builds up a fund of knowledge about a program(s) which turns upon familiarity with particular displays and their operation. At this stage of the evolving technology,[88] the lack of standard usage may still tie the user to the system he or she knows. At present, therefore, new software competitors may in effect need to emulate the screen displays of leading programs if they are to make much headway in the market. In the UK, the issue in copyright law has so far been considered only in passing and in the CJEU ruling in *Bezpecnostni softwarova asociace v Ministerstvo kultury*.[89] There are, however, signs that display may be treated either as literary, artistic or film works, which give exclusive copyright protection,[90] but only where they can show to result from "intellectual creation".[91]

[88] Compare car driving, as did the US Court in *Apple v Microsoft*, 24 USPQ 2d 1081, 1088-1089.

[89] C-393/09 [2011] E.C.D.R. 3; [2011] FSR18 CJEU.

[90] In *John Richardson Computers v Flanders* [1993] FSR 497, Ferris J. correctly distinguished a screen display as a product of the program, distinct from the program itself. He considered that the display might itself be a photographic work or a film; and that it might reproduce a drawing so that if copied there would be indirect infringement of copyright in the drawing: at 527. In the *Navitaire v easyJet Airlines* [2006] RPC 3, Pumfrey J. accepted that screen displays or aspects thereof could be protected as literary or artistic works and that there had been limited infringement in this respect. In the *Novia Productions v Mazooma Games* [2006] RPC 14 the Court of Appeal accepted that screen graphics may be artistic works and that series of screen displays may be films, although on the facts no infringement was found. The argument that screen displays may be dramatic works is not yet a success. See *Powerflex Services v Data Access* (1997) 37 IPR 436; Jew [1997] EIPR 732.

[91] C-393/09 *Bezpecnostni softwarova asociace v Ministerstvo kultury* [2011] ECDR 3; [2011] FSR18 CJEU paras 44-46.

In the U.S the issue provoked a rash of litigation, which has turned in favour of defendants as courts have come to appreciate the tying effect on users. Apple, for instance, failed in claims against Microsoft.[92] Lotus failed to protect the menu command hierarchy of its "1-2-3" spreadsheet against Borland, who replicated it (using its own code) and provided for the transmission of the user's own Macros[93] from the Lotus sheet.[94] In both decisions much emphasis was placed (following *Computer Associate v Altai*) on filtering out unprotectable elements which were functional, unoriginal or indispensable in the circumstances, or which produced mergers of expression into idea. There is no mistaking the strong antipathy which the courts felt towards so extended a reach for this new and strange application of copyright protection.

UK copyright law lacks any principle which places 'functional' elements beyond copyright, just as it has no general concept of fair use to call in aid. But, as already noted, similarities which are functional may be discounted in deciding whether that taking is substantial. If courts here were to become as indignant as their American counterparts about claims of this nature, they might

[92] *Apple v Microsoft*, 35 F 3d. 1435 (1994) refusing a broad "look and feel" approach (of Whelan parentage) in favour of a scrupulous analysis to exclude non protectable elements (out of Altai); leading to the conclusion that what was sought to be protected was functional and therefore not the subject of copyright.

[93] i.e. chains of commands which the user has linked so that all will be performed upon a single instruction.

[94] *Lotus Development v Borland International*, 49 F. 3rd 807 (1995), affirmed by the Supreme Court (4-4).

well use these limitations robustly.[95] If the claims could be said to affect trade between EU countries, there might also be a prospect of challenging the assertion of copyright as anti-competitive.

5.0 Conclusion

The maxim that "there is no right without a remedy," indicates the line of above legal development. A person has a sense of wrong when anything he claims to own is taken from him. So, from the admission of a wrong grows up the recognition of a right. As soon as it receives the sanction of a state, moral right became a legal right, a legally protected interest; that even the generation of a computer program (software) as a creation of literary work, though statutory, has made a strong case for itself to be so protected not minding the hazards that erupted in the process. In the dawn of history, nothing was less a physical possession than literature; it was not only intangible, it was invisible even, as against the idea attached only to tangible things (actual physical possession) in the beginning. This has now grown to the conceptual and ideological debate over the goals of copyright law and in the economic clash between the holders of a variety of interests. If the U.S Republican Senate of Venice in 1469, can feebly acknowledge that where there is right in copyright, there is a remedy, by issuing an order granting John of Spira the exclusive right to print the epistles of Cicero and of Pliny for five years, it is well appropriate, for well over five hundred and fifty (550) years later, through proper legislative couching, to ratify that the generation of a computer program is the creation of literary work, thus protectable without more, in Nigeria.

[95] There now seems little scope to apply the concept of non-derogation from grant in this context: see Creative *Technology v Aztech Systems* [1997] FSR 491 CA Sing.