PROPRIETARY RIGHTS IN COMPUTER PROGRAMS: COPYRIGHT PROTECTION AND MALTA*

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Interest in the relationship between law and technology has been growing steadily (albeit slowly) over recent years. This is perhaps inevitable in a society which is increasingly dependent on novel and constantly evolving technologies which are absorbed at an incredibly fast rate into our every-day life.

Although relatively a fledgeling field, 'Law and Technology' already contains many branches of specialisation and in most cases each branch's importance in the legal field grows in direct proportion to the increasing importance of the relevant technology in day-to-day life. Thus, if a new technology is particularly important economically the need for adequate legal regulation grows correspondingly. Hence the growing interest in protecting computer programs. Programs or 'software'[1] (the terms may, for our purposes, here be used interchangeably) are at the foundations of one of the largest growth industries of the last decade. The computer software industry is today measured in several billion dollars and the upward trend on the graph looks as if it's going to remain that way for quite some time to come. If we are to believe those who predict that our society is rapidly moving towards the age where every home, school and office will have a computer, the continuing strength of the computer software industry is easy to comprehend. The chief problem with software from the legal point of view is that a computer program is very difficult and expensive to

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1. *For the non-technical reader:* A computer is a mechanical or electrical device for processing information. Modern computer technology, although increasingly electronically sophisticated, is divided into what are popularly known as "hardware" and "software". "Hardware" refers to the actual machine comprising the electronic circuitry, keyboard, Visual Display Unit or monitor, printer, etc., while "software" refers to the sets of instructions which enables the machine to process information. As indicated above, "software" and "program" may, for simplicity's sake, be used interchangeably. Thus, in a computer, the machine's circuitry, technically referred to as a Central Processing Unit (CPU) executes programs in order to process information. In plain English, the CPU does the work it is instructed to do. These instructions are contained on computer programs.

create but very easy and cheap to copy. It takes hundreds and thousands of man-hours to write and finalise a program, meaning that programs take several weeks and months to develop but they may be copied in minutes, often with the same ease that one records a phonograph record onto a tape-recorder. What therefore must the law provide in order to adequately protect the author/owner's proprietary rights vis-a-vis computer programs?

In researching legal protection of computer software, one is likely to encounter hundreds, indeed thousands of pages of literature written recently on the subject. One can scarcely hope to present a truly comprehensive analysis of this topic in less than a hundred pages of print, and such an analysis is therefore necessarily beyond the scope of this brief article. The aim here therefore is to increase awareness of the need for legal remedies for problems presented by the widespread sale and use of computer programs especially with regard to the protection afforded by copyright law. The relevant Maltese statutes will be briefly examined and suitable reform considered from a comprehensive point-of-view. Again, although a strong case may be made for discussing the protection of proprietary interests in *both* 'hardware' and software *together*, this paper is restricted to an examination of legal safeguards of software only.

In the leading U.S. case *Apple Computer Inc. v. Franklin Computer Corp.*, Judge Sloviter neatly summarised a basic knowledge of computer programs as follows: "There are three levels of computer language in which computer programs may be written. High level languages, such as the commonly used BASIC or FORTRAN, uses English words and symbols and is relatively easy to learn and understand (e.g. "GO TO 40" tells the computer to skip intervening steps and go to the step at line 40.) A somewhat lower level language is assembly language, which consists of alphanumeric labels (e.g. "ADC" means "add with carry"). Statements in high level language and apparently also statements in assembly language, are referred to as written in "source code". The third, or lowest level computer language, is machine language, a binary language using two symbols, 0 and 1, to indicate an open or closed switch (e.g. 01101001 means to the Apple (Computer) add two numbers and save the result). Statements in machine language are referred to as writen in "object code".

The CPU can only follow instructions written in object code. However programs are usually written in source code which is more intelligible to humans. Programs written in source code can be converted or translated by a "compiler" program into object code for use by the computer. Programs are generally distributed only in their object code version stored on a memory device.

A computer program can be stored or fixed on a variety of memory devices, ... The ROM (Read Only Memory) is an internal permanent memory device consisting of a semiconductor "chip" which is incorporated into the circuitry of the computer. A program in object code is embedded on a ROM before it is incorporated in the computer. Information stored on a ROM can only be read, not erased or rewritten.... The other device used for storing the programs ... is a diskette or "floppy disk", a auxiliary memory device consisting of a flexible magnetic disk resembling a phonograph record, which can be inserted into the computer and from which data or instructions can be read. (Instead of "disks" some machines use magnetic tapes similar to those used for sound recordings.)

Computer programs can be categorized by function as either application programs or operating system programs. Application programs usually perform a specific task for the computer user, such as word processing, checkbook balancing or playing a game. In contrast, operating system programs generally manage the internal functions of the computer or facilitate use of application programs." 714 F.2d 1240 (1983) U.S.A.

THE CASE FOR COPYRIGHT

Practice and analysis have shown that various types of computer programs may be protected to different degrees under different parts of the Commercial Law. Indeed, had it been the intention here to embark on a comprehensive analysis[2] of the subject, one would have had to examine the varying extents of protection afforded by the Law on Patent, Copyright, Trade Secrets, Trade Mark Unfair Competition etc., but as indicated previously the following discussion is largely limited to one of the most important and widely applicable forms of protection: copyright.

The importance of copyright is largely due to the fact that as far as computer programs are concerned its usefulness is not as restricted as that of other major forms of protection such as Patent or Trade Secret. This is in turn due to the intrinsic nature of a program. Although the author of a program may invest enough original effort in composing the notational sequence for the work to qualify for copyright protection, the effort involved is really the author's individual expression; the logic and design may be original, but the underlying principles of the methods used are well established in computer science. The element of novelty essential for patentability to exist is rarely found in programs, especially in the programs mass-produced for the micro-computer market, which is economically (and therefore, to a certain extent, legally) the most important sector which infringement of proprietary rights may affect. In his authoritative work[3], Duncan M. Davidson points out that "Only a minute number of programs (perhaps less than 1 percent) are inventive enough to be patented... Many programs have short product lifespans due to rapid technological advances. Patenting is simply not useful for their protection."[4]

Although inconsistent at times, the recent trend in Europe and in the United States, is for Patent Offices and the Courts to deny patent protection to programs. On the continent this trend may be traced back to

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2. For detailed analysis of the protection of computer programs under Patent, Copyright, Trade Secrets, Trade Mark, Unfair Competition *vide:*
Duncan M. Davidson, *Protecting Computer Software: A Comprehensive Analysis*, Jurimetrics Journal, ed. Summer 1983, U.S.A. 1983 pp. 337 – 425;
Morton D. Goldberg, *Copyright and Computer Software – Protection, Preemption and Practice*, Software Protection: The Computer/Copyright Interface, Law and Business Inc., Washington D.C. U.S.A. 1984;
Peter M. North, *Breach of Confidence: proposals for reform*, 'Data Processing and the Law', ed. C. Campbell, Sweet & Maxwell, London 1984 pp. 171 – 193;
James A. Sprowl, *Towards a unified theory of proprietary protection for digital information systems*, 'Data Processing etc.' *op.cit.* pp. 221 *et.seq.*;
Schmidt, *Legal Proprietary interests in Computer Programs: The American Experience*, Jurimetrics Journal 21, U.S.A. 1981;
M.C. Jacobs, *Proprietary Protection of Software, Hardware and Data*, Computers and the Law 202, (3rd. ed. 1981) U.S.A.;
R.C. Lawlor, *Infringement of Program Copyrights*, Computer and the Law 208, (3rd. ed. 1981) U.S.A..

3. Duncan M. Davidson, *Protecting Computer Software* etc., *op.cit.*

4. *ibid.* at p.357.

as early as 1968 when new legislation in France excluded software,[5] and within five years neutral Austria and Switzerland, the Netherlands and Denmark in the EEC and even Poland in the COMECON sphere, followed the French example.[6] The 1973 European convention[7] excludes software "as such" from patent protection and this exclusion "as such" was introduced in a quasi-identical fashion in the United Kingdom in 1977.[8] The Germans followed close on Britain's heels and in a 1978 amendment, excluded "programs for data processing installations" from protection under Patent Law.[9] Meanwhile, in the United States, the Patent Office has, since 1966, been rather consistent in not granting patent protection to computer software although the Reagan administration brought with it promises of improved processing of patent applications at the Patent Office. The American Congress has done little to clarify the matters at issue in spite of being constantly urged to do so by the Courts. The latter have in three leading cases denied patent protection to the program *in litis* but have in no way decreed a total incompatibility between patent and program.[10] Indeed, two recent decisions of the U.S. Supreme Court indicate that in limited instances patents incorporating a computer program (as part of a larger process or apparatus which is patentable) may be upheld.[11] Notwithstanding all these developments however the real obstacle to the development of Patent Law as the major source of legal protection for computer programs is not legislative carelessness or judicial prejudice but rather the intrinsically unpatentable nature of most programs developed. While it is true that both patent and copyright are concerned with protecting *originality* the basic difference between the two concepts becomes all important: the former exists to protect *original ideas* (i.e. new inventions/discoveries) while copyright is intended to protect *original expression*. Thus, one is inclined to agree with Bryan Niblett's conclusion that since "It is a small minority of commercially valuable programs that contain novel and non-obvious inventive matter ... the patent system is in no way a satisfactory answer to the software industry's call for legal protection."[12]

Limited protection is also possible under Trade Secret/Breach of Confidence Law but again this is not practical in protecting the majority of progams since: a) trade secrets are most useful in the relatively small market catering for the larger computers, (main-frames and minis) where large and complex programs (often tailor-made) are licensed to a comparatively very small and restricted class of users, whereas in economic terms the need for

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5. FRANCE, 1968 Patent Law, art.7.
6. Soltysinski, Computer Programs and Patent Law: A Comparative Study, 3 RUTG. J. COMPU. & L. 1 (1973).
7. Munich Convention 1973, art.52 (2) (c), art.53.
8. U.K. Patents Act 1977 S.1(2) HMSO.
9. BRD Patent Act S.1(2) No.3.
10. *Gottschalk v. Benson*, 409 U.S. 63 (1972); *Dann v. Johnson*, 425 U.S. 219 (1976); *Parker v. Flook*, 437 U.S. 584 (1978).
11. *Diamond v. Diehr*, 450 U.S. 175 (1981); *Diamond v. Bradley*, 450 U.S. 381 (1981).
12. Bryan Niblett, *Copyright Protection of Computer Programs* in 'Data Processing etc., *op.cit.* p.197.

protection is more important in the world-wide mass market catering for the micro-computers which are invading homes, schools and small businesses; b) remedies against third parties in good faith (i.e. who are unaware of the confidential nature of the program) are limited in most cases; c) there exists difficulties in enforcing Trade Secret laws at the trans-national level, especially with regard to procedural differences between Civil Law and Common Law countries. In real terms therefore, while not excluding the use of Trade Secret Laws where practical and applicable, software industries require a simpler and cheaper method better adapted to protecting thousands and millions of programs which are marketed (and therefore potentially copied) world-wide, such as the programs used in home and business micro-computers.

This brief, and by no means exhaustive, consideration of the relevance of Patent and Trade Secret laws, leaves us with Copyright as the primary (though not the exclusive) means of protecting proprietary interests in computer programs. The next stage of the discussion will therefore centre around where exactly one can find protection in Copyright Law and which are the problem areas of the subject.

The almost universal trend has been to accept a program (or at least the source code) as qualifying as a *'literary work'* and this has even found its way into the standard text books,[13] as well as into some statutes and the case law of many countries. The reason for this is that the copyright laws of most countries contain a fairly wide definition of what constitutes a literary work. The U.K. Copyright Act 1956 as amended, to which the Malta Copyright Act, 1967 may trace the inspiration and origin of a good deal of its sections and concepts, does not make any specific inclusion of computer programs under the definition of 'literary work'. At the same time however, as in most other legal systems (including our own) the U.K. Act does not require any evaluation of the literary merit or quality of the work. What is important for a work to qualify for copyright is that it is 'original' and published in a tangible form (usually printed or written). When computer programs are published, they are not normally made available to the public in printed or written form, but are usually recorded on a memory device such as a disk or cassette. This however does not alter the fact that the program was originally written by the programmer in some form of notation. As such therefore, under many systems of law, regardless of the form of embodiment (be it disk, tape, or even on silicon chip) but provided that it is fixed in a tangible medium, a computer program can be said to qualify for copyright as a 'literary work' if it fulfils the other criteria required by copyright i.e. the logic and design involved independent skill and effort in its composition and that the work is not of trivial length.

When compared to the position obtaining in many advanced legal systems, the Maltese attempt at defining a 'literary work'[14] is clumsy,

13. Copinger and Skone James, *Copyright* (12th ed.) p.154; Laddie, Prescott & Vitoria, *The Modern Law of Copyright* 2.136, 2.10–11.

14. S.2: "literary work" in Malta Copyright Act 1967, Act No. VI, 1967; "literary work" means, irrespective of literary quality, any of the following, or works similar thereto 1

unimaginative and by no means comprehensive. In fact it does not define a 'literary work' at all but rather it simply lists those works which the legislator wished to consider as copyrightable. A further handicap is that the Act uses the word 'means'[15] rather than 'includes' when referring to the list of items recognised as literary works. Although, at first glance, this would seem to hinder any extension of the notion of literary work to new types such as computer programs this need not be necessarily so.

If the Courts were ever to be faced with a case *before* the law is suitably reformed they may resort to a liberal interpretation of what constitutes a literary work by taking into consideration the following criteria: a) although not *specifically included* in the list of S.2, computer programs are not *explicitly excluded* from the notion of a literary work, unlike "any written law, law report or judicial decision" which *are* specifically excluded;[16] b) the phrase: "literary work means, irrespective of literary quality, any of the following *or works similar thereto.*"[17] As indicated above, a computer program is a work *notionally similar* to more conventional literary works. The legal doctrine on which copyright is based is the intention to protect the proprietary interests of an author who has invested independent skill and effort in the *expression* of ideas which are embodied in some material form. Thus, the author of a book writes the book in his own individual style (though not necessarily disclosing any inventive processes) and this expression is fixed in hand-written, typed or printed form. The material embodiment of a film director's talent is celluloid whilst that of a musician or singer would be tape or disc. In the same way, a computer programmer writes a program in a special notation very much like the musician would use bass and treble clefs and other symbols when composing a musical score. Since S.2 does not in any real sense *define* a literary work, but rather gives examples, Maltese courts would be free to examine the doctrinal notion of a literary work within the concept of copyright and then decide as to whether a computer program would fall within such a notion, using the modern criteria developed by jurists, judges and legislators world-wide. Our judges should therefore have little difficulty in following the example set by foreign courts in finding computer programs copyrightable as literary works.

When turning to the position in the U.K. on whose 1956 Copyright Act, our own 1967 Act is loosely modelled, one finds that it has been generally accepted that, when reduced to writing, a computer program constitutes a literary work. Indeed the 1956 Act extends the definition of

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(a) novels, stories and poetical works,
(b) plays, stage directions, choreographic works or entertainments in dumb show, film scenarios and broadcasting scripts,
(c) textbooks, treatises, histories, biographies, essays and articles,
(d) encyclopaedias and dictionaries,
(e) letters, reports and memoranda,
(f) lectures, addresses and sermons,
but does not include any written law, law report or judicial decisions;"

15. *ibid.*
16. *ibid.*
17. *ibid.*

literary work to include any written table or compilation, which is of great interest when discussing the copyright-ability of computer data-bases, which may be, in effect, original compilations of data. Until 1982, U.K. case-law had not yet produced any clear specific decisions on the copyright-ability or otherwise of computer programs,[18] although many leading common law authorities on the subject were happily citing *Northern Office Micro-Computers (Pty) and others v. Rosenstein*,[19] wherein the South African Supreme Court found for a medical applications program source code in written and machine-readable form as being copyrightable under the 1978 South African Copyright Act which is similar in many respects to the U.K. 1956 Act and therefore perhaps some form of cousin of our own 1967 Act in Malta. Should this decision prove to have any 'persuasive value' in the U.K. as well as in Malta this would be an added pointer to the increasing trend towards standardisation in the legal outlook of many countries in the field of law and technology.

Since the World Intellectual Property Organisation (WIPO) came out with its Report[20] discussing the pros and cons of patent and copyright as the most suitable form of protection for software and concluded that a copyright-oriented scheme would be most suitable, the courts of the major developed nations seemed to have adopted a similar attitude. The nature of computer software as a literary work, for example, was highlighted in *Visicorp v. Basis Software GmbH*[21] in the German Federal Republic where a 'VisiCalc' program was held to be copyrightable as a "linguistic work of a literary nature" under S.2 of the BRD's Copyright Act. Davidson quotes recent decisions in France and Japan which held software to be copyright-able under those countries' respective copyright laws.[22]

While anticipating that courts world-wide will continue to find that computer programs qualify for copyright protection, it is undeniable that the judges' job would be made much easier by clarifying relevant statutory provisions through legislative reform aimed at introducing explicit and adequate reference to programs as copyrightable works. In the U.K. the

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18. There have been however a number of out-of-court settlements accepting infringement of copyright of computer programs. Davidson also quotes the following decisions available on LEXIS:
Systematics Ltd. v. London Computer Centre Ltd. (1982);
Formal Comm. Mfg. Ltd. v. ITT (U.K.) Ltd. (1982);
Sega Ent. Ltd. v. Alca Elec. Ltd. (1981);
Gates v. Swift (1982).

9. *Northern Office Micro Computers (Pty) Ltd. and others v. Rosenstein* (1982), F.S.R., 124 (S.C. of S.A.). See for example, Peter Prescott, *Copyright and Computers*, 'Data Processing etc.' *op.cit.* at p.211; Bryan Niblett, *Copyright Protection of Computer Programs*, 'Data Processing etc.' *op.cit.* at p.200.

20. "Model Provisions on the Protection of Computer Software", *International Bureau of the World Intellectual Property Organisation*, Geneva (1978).

21. *VisiCorp v. Basis Software GmbH*, 1st Mun. Dist. Ct. Dec. 21, 1982 as reported at 9 Comp. L. & Tax Rep. No 8, at 4 (March 1983).

22. *P. v. BMV*, (Paris Ct. App., Dec. 1982); *Tatto v. I.N.G. Enterprise* (Tokyo Dist. Ct., Dec. 6, 1982); Duncan M. Davidson, *Protecting Computer Software* etc. *op.cit.* at p.414.

Whitford Committee[23] and, more recently, the Thatcher Government's Consultative Document[24] on the matter both point towards British intentions of amending the Copyright Act 1956 through new legislation explicitly providing that computer programs attract copyright protection under the same conditions as literary works, in whatever form the program may be expressed. Although enacted more recently than the U.K. 1956 Act, the Malta Copyright Act 1967 too, as indicated above, is crying out for reform, especially with regard to clarification and improvement of definitions. In reforming our statutes we can doubtless learn a good deal from the American experience. The United States has for a long time maintained its leading position in the field of computers, technologically as well as in the extent of applications, and this has also been reflected in the legal field. The 1980 Computer Software Copyright Act is the relevant recent amendment of the U.S. 1976 Copyright Act and is a commendable attempt at bringing the law in line with the requirements of a consumer-based society which has well and truly entered into the 'technological' and "information" age. Other than the clear definition of the subject matter of copyright in general[25] and of a 'literary work',[26] U.S. Copyright law now explicitly defines a 'computer program' as *"a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."*[27] Of direct interest, as Goldberg points out, is the U.S. House Report which establishes the view that "The term 'literary works' does not connote any criterion of literary merit or qualitative value: it includes catalogs, directories and similar factual reference or instructional works and compilations of data. *It also includes computer data bases and computer programs to the extent that they incorporate authorship in the programmer's expression of original ideas, as distinguished from the ideas themselves."*[28] The growing ubiquity of the computer in advanced societies will, over the next decade or so, lead to the introduction of specific provisions (similar to the ones enacted in the United States outlined above) in copyright laws world-wide, with the U.K. and Maltese Copyright Acts as prime candidates for review.

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23. *Report of the (Whitford) Committee to consider the law on Copyright and Designs*, (Cmnd. 6732, HMSO 1977).

24. *Reform of the Law relating to Copyright, Designs and Performers' Protection: A Consultative Document*, (Cmnd. 8302, HMSO 1981).

25. U.S. Copyright Act 1976, 17. U.S.C. S.102 "Subject matter of copyright: In general (a) Copyright protection subsists in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include the following categories: (1) literary works."

26. U.S. Copyright Act 1976, 17 U.S.C. S.101:
"Literary works" are works, other than audiovisual works, expressed in words, numbers or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks or cards in which they are embodied."

27. *ibid.* at S.101.

28. Morton D. Goldberg, *Copyright and Computer Software* etc. *op.cit.* at p.246 (emphasis added).

PROBLEM AREAS

Until now, the discussion in this paper has chiefly centred around the suitability or otherwise of copyright as a means of protection, the trends in the case-law of some of the more advanced nations and the subsequent need for reforming existing statutes in a way so as to improve definitions as well as formally and specifically recognising computer programs as works entitled to protection under the legal noton of copyright. The next step would be to consider the main areas where problems may and *are* being encountered by authors/owners attempting to use copyright law to protect their proprietary interests.

A. PUBLICATION

For copyright to subsist under many systems of law the work must be 'published'. Publication under the Maltese 1967 Copyright Act, for example, means that the work must be "made available to the public in sufficient manner as to render the work accessible to it."[29] Our 1967 Act however makes a distinction between copyright "conferred, by virtue of nationality or domicile"[30] and copyright conferred by "reference to country of origin."[31] Thus, as the law stands today, if the author is a citizen of, domiciled in, or (in the case of limited liability companies) registered in Malta, it seems that publication is *not* required for copyright to attach to a work, but all other works must first be published in order to qualify for protection. This distinction follows that made explicitly in the 1911 Act in the United Kingdom, and in similar provisions of the U.K. 1956 Copyright Act.

Is a computer program protected under copyright before publication? This is not a problem peculiar to computer programs but to all copyrightable works, and the present position in Malta and the U.K. is regulated in the manner just described above. Yet, the moment in time when copyright attaches is a vexed question receiving much attention world-wide. There is today a growing tendency to place less emphasis on publication and attach more importance to the basic *'raison d'être'* of copyright: it exists to protect the independent skill and effort invested by the author in his work. In this light the author/owner is entitled to have his work protected as soon as it is embodied in a form which may be copied or stolen. The United States has thrown the element of publication overboard and as from the coming into force of the U.S. 1976 Copyright Act, copyright attaches as soon as a copyrighted work is fixed in a tangible medium of expression for more than a brief moment.[32] In spite of disagreement over details, American jurists are more or less insistent on the importance of computer programs carrying some form of copyright notice, whether published or not. In due course

29. Malta Copyright Act, 1967 S.2(2).
30. *ibid.* S.4.
31. *ibid.* S.5.
32. U.S. Copyright Act 1976, 17 U.S.C. S.101.

more and more legislators (our own included, one hopes) will make the complete break from the concept of publication as a prerequisite for copyright to subsist and do away with the distinctions between 'home-spun' works and works of foreign nationals, such as those existing in Malta and in the U.K. Copyright infringement is very much akin to theft, and theft is theft wherever it occurs, and whether the work is published or not. Such distinctions are artificial and have no basis in a growingly internationalised legal doctrine.

At the international level however, the Universal Copyright Convention (UCC) of which Malta is a member, appears to extend protection only on publication, and this is highlighted in the emphasis made upon the necessity of having the copyright notice placed upon works *first published* in visually perceptible form.[33] The main problem here is that such an international convention is much more difficult to revise and amend than a municipal law and it therefore seems that trans-border protection of unpublished works will remain a doubtful matter for some time to come.

B. LIMITATIONS ON COPYRIGHT AND 'PRIVATE USE'

An interesting feature of the Malta 1967 Copyright Act is that copies made for 'private use' are not an infringement of copyright.[34] Here we differ from the U.K., where until recently it was believed that "To record on a tape recorder, for instance, a gramophone record, even for one's own private use, will be an infringement."[35] In contrast, the 1980 amendments in the U.S.A. were quite specific in determining the extent of limitations on copyright with respect to computer programs: one is only permitted to make copies of a program by way of archival or 'back-up' copies or if the copy is an 'essential step in the utilization of the computer program in conjunction with a machine and *that it is used in no other manner*. These restrictive provisions imposed an obligation of destruction of all archival copies "in the event the continued possession of the program should cease to be rightful" as well as requiring authorization of the copyright owner for transfer of rights over the copy, which in any case may *only* take place as part of the transfer of rights over the copy from which such copies were prepared.[36] In comparison to the detailed nature of the U.S. provisions, our chief problem in Malta is again one of lack of definition. Our statute does not elaborate on the limitations or otherwise of 'private use' of any kind of copyrighted work, let alone newcomers such as computer programs.

At first, the problem may not appear to be that great, especially from a practical point of view. Software manufacturers are not overconcerned with the many enthusiasts who make copies of programs on their home computer for their 'private use' as it were, since this anyway presents enormous problems of enforcement were it to constitute a categoric infringement of copyright. What they are worried about is large-scale commercial piracy,

33. Universal Copyright Convention, art. VI.
34. Malta Copyright Act, 1967 S.7 (1)a.
35. *Leaper on Copyright*, Stevens, London at p.101.
36. U.S. Copyright Act 1976, 17 U.S.C. S.117.

where there product is copied and sold without authorization in direct competition with the original product. These considerations need not however deter a certain amount of speculation on the exact nature of 'private use' in the law of copyright.

Our local 'private use' seems to lend itself to wider interpretation than the American provisions regulating copying of computer programs. An emerging problem is that posed by the phenomenon of computer clubs blossoming all over the place, with Malta being no exception. One of the useful fringe benefits of these clubs is that members get to know of other enthusiasts with whom they can exchange programs with the sole purpose of mutual copying. This usually goes something like "I'll lend you my *Space Invaders* if you'll let me have your *Galactic Battleships*." Mild enough perhaps, but more enterprising computer club members have been known to make dozens of copies which are eagerly gobbled up by their fellow members (at a modest profit of course!) All lost sales as far as the rightful copyright owner is concerned! Computer clubs are usually encouraged by the hardware manufacturers but many software houses quickly realized that these clubs may not necessarily result in an increase of their program sales.

Are computer clubs covered by 'private use' or is copyright being continuously infringed, albeit on a relatively small scale when using a commercial yardstick? Again, like the question of publication this problem is not peculiar to computer programs. The much-celebrated recent U.S. Supreme Court decision in the *Sony*[37] case upheld the legality of the sale of video-recorders which may be used to make copies of audio-visual works. Private, and especially home users heaved a sigh of relief. Can the same attitude be adopted vis-a-vis computer programs? When the legislator inserted the term 'private use' in the Malta 1967 Act did he intend it to be interpreted as 'domestic use' as Prof. Micallef has suggested,[38] or every use which is non-commercial? Does the Maltese connotation of 'private use' mean that private individuals may make copies of commercially marketed computer programs for his private enjoyment or may he make a copy only to protect the investment he makes when he purchases the program from its authorised manufacturer/copyright owner, as in the underlying intention of S.117 of the U.S. Copyright Act referred to earlier? If they wish to clarify the position, our policy-makers will have to take this decision when our Act next comes up for review.

C. *OBJECT CODES AND SOURCE CODES*

This aspect of the subject has given rise to a good deal of argument and debate and it has been better-explained if slightly over-argued elsewhere. The *radix malorum* lies in the realisation (by whom, has been lost somewhere back along the years of wrangling over the issue) that the object

37. *Sony Corp. of America v. Universal City Studios Inc.*, Docket N. 81 – 1687 U.S.S.C. January 17, 1984.

38. Prof. J.A. Micallef, *Copyright Law in Malta*, p.4 Cases and Materials on the Trader, Malta 1984.

code 1) does not *formally* resemble the source code from which it is derived and 2) it is merely a set of instructions to a machine, neither intended to be nor practically capable of being understood by a human being, especially since programs are usually marketed in disks or tapes and not in written or printed form The foregoing have been raised as objections to the copyrightability of computer programs in object code form. (Computers cannot understand source code, which has to be translated into the binary language called the object code for the program's instructions to be converted into the electrical impulses necessary for the machine to operate. Therefore since most programs are distributed in object code, lack of copyright protection would be a serious problem.)

Few people dispute that a computer program is written by its author in source code, in very much the same way than any other 'literary work' is written. The only difference is that instead of writing in English, French or whatever, programmers use a computer language such as BASIC or FORTRAN. So why make any distinctions between the copyrightability of source code on the one hand and object code on the other? 1) Although formally different, object code is a precise translation of the source code and as a translation or derivative the program embodied in the object code is entitled to the same degree of copyright protection as the source code. This is because the *expression*, the logic and design of the program which is, after all, the real subjet of copyright, remains identical whether embodied in *source code* or whether translated into a different embodiment, the *object code*. 2) As will be stressed further on in this paper, intelligibility to human beings is irrelevant to the notion of copyright. In any case it is untrue that object code is indecipherable to human beings. A traned programmer can decipher binary objet code in the same way that a trained musician can read a music score. The fact that not all human beings can read binary or music does not detract from copyrightability.
from copyrightability.

Thus, slavish copying as well as laborious decompilation of object code to get at the original source code is a clear infringement of program copyright. On the other hand it is abundantly clear that an independently written program which performs the same *functions* as another copyright work is no infringement. One must not conufse *expression* (the proper subject of copyright) with *functions*. Everybody is entitled to achieve the same result using original effort and independent means. This is very true of computer programs. A program may be written in many ways, each programmer having a highly individual style; there are many routes to the same result and just about as many copyrightable individual expressions.

The principle of the copyrightability of *both* object code and source code is winning universal acceptance and has been confirmed by several recent decisions in the U.S.A.[39] as well as in *Northern Office Micro-*

39. *Apple Computer Inc. v. Franklin Computer Corp.*, Appl. Ct. 3rd Circuit (1983) 714 F.2d 1240 (1983).
Apple Computer Inc. v. Formula International Inc., 562 F. Supp. 775, 218 U.S.P.Q. 47 (1983)

Computers (Pty) v. Rosenstein[40] in South Africa. Indeed one gets the feeling that arguments about object codes not being copyrightable will soon be as relevant as red flags and 4 mph limits are to 'horse-less carriages'.

D. ROMS

As in other problem areas, the major drawbacks of Maltese copyright law in this topic are the lack of clear or real definitions of the subject matter of copyright in general and 'literary works' in particular.

A program may be embodied in a number of different mediums of expression: i.e. written or typed in source code on paper, recorded magnetically in object code on tapes or diskettes and even on a ROM. ROM stands for Read Only Memory and this means that the program is stored as a pattern of electrical charges on the surfaces of a silicon 'chip'. This component is connected permanently in the internal circuitry of the computer and may only be accessed to via the computer's controls but may not be reprogrammed by the ordinary user. The arguments against the copyrightability of ROMS are connected to those against copyrightability of object codes in general, namely, a progam embedded in ROM 1) forms an integral part of the machine and 2) it is not an exact derivative of the program written in source code; 3) it is not directly intelligible to the human user.

These arguments are invalid since:

a) the program, (i.e. the logic and design which is the subject of copyright) embedded in a ROM is identical to the same program when recorded on tape or written on paper. It is simply embodied in a different medium.

b) intelligibility to human beings is not a prerequisite of copyright. This has been accepted at law in a number of ways: i) e.g. in this context, Prescott quotes the telegraph code cases in the U.K. in which it was held that a mere collection of 5-letter groups, purposely meaningless in any known language, was entitled to protection as a literary work.[41] ii) today sound recordings and films are almost everywhere afforded copyright protection, yet phonograph records, magnetic tapes and celluloid film strip are not intelligible to human users without a record-player, tape-machine or film projector to go with them. The analogy to the program and computer is very close: programs are either available on tapes or diskettes in a way that one can run different programs on the same computer by the simple expedient of changing the tape or diskette (just as one changes phonograph records or magnetic tapes when one wishes to hear a different tune) or else the program may be embodied in a component, the ROM inside the machine.

Midway Mfg. Co. v. Strohon, 564 F. Supp. 741, 219 U.S.P.Q. 42, (1983)
G.C.A. Corp v. Chance, U.S.P.Q. 718, (1982)

40. *Northern Office Micro Computers (Pty) v. Rosenstein* (1982) F.S.R., 124 (S.C. of S.A.).

41. *Graves v. Pocket Publications*, 54 T.L.R., 952 (1936 – 45)
Eanco v. Mandops, (1980) R.P.C. 213, C.A.
Ravenscroft v. Herbert (1980) R.P.C. 193
Peter Prescott, *Copyright and Microcomputers*, Data Processing etc., *op.cit.* at p.214.

which means that the program is installed internally on a permanent basis, instead of being introduced from the exterior.

The main trend today is for copyright to be extended to programs in *whatever form they may be embodied.* The Americans have already arrived at this stage through a liberal interpretation of the requirement of 'fixation'[42] laid down in the U.S. Copyright Act, in a string of leading cases, namely *Williams Electronics Inc. v. Arctic International Inc.*,[43] *Apple Computer Inc. v. Franklin Computer Corp.*,[44] *Apple Computer Inc. v. Formula International Inc.*,[45] *Midway Mfg. Co. v. Strohon.*[46] The British too are moving in this direction as may be seen from the recent U.K. Government Consultative Document,[47] and one hopes that this aspect would find its place in a Maltese legislator's scheme for amending our Copyright Act.

E. COPYRIGHTABILITY OF OPERATING SYSTEMS PROGRAMS

In his analysis,[48] Davidson discusses at some length the implications of any distinction which may be made between a program's function in communicating to the human user and that of manipulating the internal operations of a computer. His concern arose chiefly from arguments to this effect raised in the hearing of the leading case referred to already, *Apple Computer Inc. v. Franklin Computer Corp.* The practical difficulty lies in that many programs combine both functions to varying degrees, and as to whether operating systems programs are protectable under patent or copyright.[49] Davidson was writing when the *Apple* case was still pending before the U.S. 3rd Circuit's Court of Appeals but he was quick to point out the fruitless nature of making such distinctions when discussing copyrightability: "The fallacy in the 'communication argument' is that it presumes that the copyrightable work in question is the *functioning* of the program and not the *writing* of it ... a program need not produce any output to be protectable; it is sufficient that the original written program is found to consist of authorship, for that authorship is readable in the same way other literary works are readable."[50]

At around the same time that Davidson's article was published, the Appeal Court decided *Apple* very much in line with Davidson's own

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42. U.S. Copyright Act 1976, 17 U.S.C. S.102.
43. 685 F.2d 870, 215 U.S.P.Q. 405, (1982).
44. 714 F.2d 1240, 219 U.S.P.Q. 113 (1983).
45. 562 F.Supp. 775, 218 U.S.P.Q. 47 (1983).
46. 564 F.Supp. 741, 219 U.S.P.Q. 42 (1983).
47. *Vide* Notes 23 & 24 *supra.*
48. Duncan M. Davidson, *Protecting Computer Software* etc. *op.cit.*
49. At this stage, it is worth noting that under Maltese Copyright Law patentability of a work does not exclude copyrightability of the same work. This is implicit in S.3(3) of the Malta Copyright Act, 1967: "A design or model of manufacture *eligible for copyright under this Act* shall not, by registration under the Industrial Property (Protection) Ordinance acquire a term of copyright beyond that specified under subsection (2) of section 4 of this Act."
50. Duncan M. Davidson, *Protecting Computer Software* etc. *op.cit.* at p. 373.

inclinations holding clearly that "Apple does not seek to copyright the method which instructs the computer to perform its operating functions but only the instructions themselves. The method would be protected, if at all, by the patent law, an issue as yet unresolved."[51] In delivering the Court's opinion, Judge Sloviter quotd the CONTU report (on which amendments to the U.S. Copyright Act had been based) in that "The copyright status of the written rules for a game or a system for the operation of a machine is unaffected by the fact that these rules direct the actions of those who play the game or carry out the process."[52]

The importance of clear definitions in statute laws is highlighted by the U.S. Appeal Court's reliance on the wording of the law: "Perhaps the most convincing item leading us to reject Franklin's argument is that the statutory definition of a computer program as 'a set of instructions to be used in a computer in order to bring about a certain result,' makes no distinction between application programs and operating programs."[53]

If such a problem were to arise locally, whether at the legislative or the judicial level, it would not be unwise to consider adapting the basic criteria applied by the U.S. Appeal Court in *Apple* to our own needs. Since the legal concept of copyright is concerned with *expression*, a program would be copyrightable if it meets all other normal requirements of copyright, regardless of its function.

F. COMPUTERS AS AUTHORS

The nature of copyright is to a certain extent inextricably linked to the author of a work, indeed in cases of 'literary works' the duration of copyright protection is usually calculated with reference to the life (and death) of the author. If one were to advocate the acceptance of a computer program as a literary work, then one is compelled to discuss, albeit briefly, who is the copyright owner of a work partially or totally produced by a computer. In turn this question can only be solved by determining who the author is.

In a world where CAD (Computer Aided Design) is being increasingly used in advertising to attract potential customers, denoting the extent of research that backs a product being marketed, computers can and *are* used in producing original works as diverse as drawings, symphonise and, commonly enough, computer programs. This problem has been mentioned in some text-books and examined in the U.K. both by the Whitford Committee and the Government Consultative Document.[54] The Whitford Committee considered three possible candidates for the authorship: 1) the author of the program used in the computer to produce the new original work; 2) the compiler of the data used with the program who is operating the

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51. *Apple Computer Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 219 U.S.P.Q. 113 (1983) at p.1251.
52. *ibid* at p.1252.
53. *ibid.*
54. *Vide* Notes 23 & 24 *supra.*

computer; 3) Both 1) and 2) as joint authors.

Even if one assumes that the computer is nothing more than a sophisticated tool, it would perhaps be logical to conclude that the new original work would not have seen the light of day had it not been for ***both*** elements: i.e. the program used and the data processed using the program's instructions. Both program and data were indispensable to the creation of the new work.

In considering who should be recognised as the author, Bryan Niblett disagrees with the Consultative document's suggestion that the author of a computer-generated work is the person responsible for running the data through the programmed machine. Niblett stresses that "The author of an original work is the person who supplies the originality and this is either the programmer or the compiler of the data – or both."[55] This conclusion is in agreement with the Whitford Committee's views on the matter.

Basing themselves on the fact that the concept of the term of copyright of literary works is tied to the life of the author, the mainstream British attitude appears to be that only a human being is capable of being an author and that therefore a computer can never be considered as an author. If one accepts this premise one has to return to the considerations of the Whitford Committee, the Consultative Document and Niblett outlined above. In this case, Laddie, Prescott and Vitoria in what has become a standard text[56] come up with yet another alternative. Rejecting the notion that copyright ownership of a computer-generated work should vest in either the programmer or the compiler of the data, they suggest that this should vest in "the owner or hirer of the computer who has expended the capital in setting up and operating the system."[57] The big snag foreseen by the proponents of this theory is where such 'author' is a body corporate since then copyright protection could exist in principle, in perpetuity. What they recommend is a *sui generis* solution by way of legislation providing "a fixed period of copyright independent of any human life"[58] as is the case with photographs or sound recordings. Niblett would doubtless object to this proposal on the grounds that the owner/hirer may not have in effect, contributed any 'originality' as normally required of authors. Despite Niblett's objections, this latter proposal may be tenable if qualified in the following way: 1) where computers and programs are simply used in conjunction to produce a translation of another work (as in the case of 'compiler' programs used to convert a program in original source code to machine-readable object code), this would clearly constitute an infringement of the copyright of the translated work; 2) where the new computer-generated product is manifestly or proven to be not really attributable to the investment and effort of the owner/hirer, then copyright ownership may be determined at the discretion of the court on principles of

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55. Bryan Niblett, *Copyright Protection of Computer Programs*, 'Data Processing and the Law', *op.cit.* at p.204.

56. Laddie, Prescott & Vitoria, *The Modern Law of Copyright*.

57. *ibid.* at 2.140.

58. *ibid.*

equity. It must be stressed that the *entire* topic of authorship of machine-produced work requires legislative attention.

CONCLUSION

A. SUMMARY

In this analysis the following points have been examined:
1) The need for legal protection of computer software and the possibility of protecting programs through a liberal and doctrinal interpretation of the term *'literary works ...* and *works similar thereto'* under the Malta Copyright Act 1967 as in force at the time of writing.
2) Amendment of Malta's Copyright Act, 1967 with a view to:
a) properly defining the subject matter of copyright in general
b) properly defining 'literary works'
c) clearly and explicitly recognising a computer program as a 'literary work' entitled to copyright protection, regardless of i) the nature of the medium in which the program is embodied and ii) the nature of the program's function
d) introducing an adequate definition of 'computer program'
e) doing away with the distinction between copyright conferred 'by reference to country of origin' and 'by virtue of nationality or domicile', insofar as this adversely affects the protection of works prior to publication
f) clarifying the notion of 'private use'
g) introducing provisions determining who is the copyright owner of computer-generated work and what is the term of copyright duration in such cases.

Although not specifically relevant to 'computer programs', which is the subject of this paper, one must make brief mention at this stage of the importance of ensuring copyright protection of computer data bases. A proper definition of 'literary works' which would clearly be extended to include "any original compilation of data" would clarify any doubts about the protection of the enormous effort invested in the compilation of computer data bases. This alone however would not suffice to stop up the *lacuna* which would exist in the case of *legal* data bases since, as the law stands today, written laws, law reports or judicial decisions are *explicitly excluded from copyright protection as literary works*. The legislator would do well to qualify this proviso by a clear indication that this inability to be copyrighted would not exist where such laws, law reports or judicial decisions are incorporated in an original compilation such as a computer data base.

B. INTERNATIONAL ASPECTS

While not ruling out the emergence of a local software industry, the international aspects of this subject are, at present, of greatest interest to foreign software houses and their local representatives in search of legal

remedies to copyright infringement in Malta. The following discussion is concerned with the protection afforded in Malta to copyrighted computer programs *not published* in Malta. ('Foreign works' are granted copyright protection as soon as they are *first published in Malta* under S.5 of the Copyright Act, 1967.) This type of protection is possible under the major international copyright conventions: Malta is a member of the Universal Copyright Convention (UCC) and it continues to adhere to the 1928 Rome text of the Berne Convention. Under both conventions Malta is bound to apply the principle of national treatment, i.e. it affords the same protection to the copyrighted works of foreign nationals as that enjoyed by Maltese nationals under the Malta Copyright Act 1967.

Before settling down to tackle the problems presented by Maltese copyright law discussed in this paper, a foreign copyright owner will have to consider certain provisions of the international copyright conventions to which Malta subscribes. Here, it must be pointed out at the outset that, although Malta is a member of the International Copyright Union or the Berne Convention as it is more commonly called, it adheres to the Rome text of 1928, not having been able to accept the Brussels revision of 1948, the Stockholm revision of 1967 and the Paris revision of 1971, due to the fact that our 1967 Copyright Act has opted for a standard copyright term of 25 years which is below the 50 year minimum term now required by the Berne Convention as amended. In this respect Malta follows the standards set by the UCC and Maltese judges may be inclined to take this apparent preference for the UCC into consideration if ever called upon to decide a case. Since, however, Malta remains, to a certain extent a member of both conventions it may be useful to examine the salient points of both the UCC and the Berne Convention which may be relevant to the protection of computer programs. The definitions of literary works in both conventions are sufficiently wide to be extendable to include computer programs, but some problems may be encountered by copyright owners seeking remedies under the UCC. The Berne Convention as amended, affords protection to a work whatever the mode or form of its expression and therefore computer programs embodied in object code/machine-readable form would seem to be covered. The UCC, on the other hand, as already indicated earlier on in this paper, defines publication as the "reproduction in tangible form and the distribution to the public of copies of a work *from which it can be read or otherwise visually perceived.*[59] Since computer programs are for the most part available to the public embodied in object code on diskettes, tapes or ROMS and can therefore *not* be *visually perceived* (i.e. in such cases it is the embodiment which may be visually perceived but not the program which is, of course, the real subject of copyright), this may raise doubts as to their copyrightability in the terms of the UCC provisions. Since Malta's adherence to the Berne Convention has been rather qualified in the past it would not be unwise perhaps for copyright owners to examine Niblett's proposal aimed at satisfying the UCC's requirements: "As a matter of prudence, it should be carefully considered whether the sale or licence of a

59. Universal Copyright Convention art. VI (emphasis added).

published computer program in a country which is a member of the UCC and not of Berne should be accompanied by the provision of a tangible copy which may be perceived visually."[60]

A second aspect to be considered is the question of formalities required by both Conventions for copyright to subsist. Whereas the Berne Convention requires no formalities, the UCC prescribes that signatories will consider domestic formalities to be satisfied if the copyrighted work clearly bears the three elements of copyright notice namely: the symbol , the name of the copyright proprietor, and the year of the first publication. All three must appear on a computer program whatever its embodiment be it paper, diskette, tape or ROM 'chip' for copyright to attach under the UCC.

If Maltese Courts were to hold that Malta's adherence to the 1928 text of the Berne Convention constitutes grounds enough for computer programs to be copyrightable regardless of the form in which they are embodied or non-compliance with the copyright notice required by the UCC, then there would appear to be little cause for concern. The foregoing arguments however remain relevant to a discussion of computer programs in a Maltese context. Malta's lack of natural resources need not deter the growth of a flourishing Maltese software industry since success in this field depends to a very large extent on human ingenuity rather than on an abundance of raw materials. And like other exporters abroad, any Maltese who would wish to tap a lucrative market such as the United States in order to sell programs whether in the form of diskettes, tapes or silicon chips, would do well to remember that the United States is a UCC member but not a Berne country and take the necessary precautions.

C. THE LOCAL SCENE

Despite the fact that Malta, with a population of only 320,000 is a relatively small market, damages resultant from unauthorised copying may still be counted in millions. For a long time now, anyone who cares to enter our capital city, Valletta, is assaulted by commercial piracy at every turn. Starting from the Bus Terminus, proceeding through City Gate and passing through the open-air market in St. John's Square one is astounded by the roaring trade that exists in pirated music cassettes. The main culprits here are street hawkers who set up their stalls or open their van doors or kiosks at strategic points as the case may be, though certain music shops have not been above dipping a finger (or more) in the piracy pie either. Over the past two years or so we have had two relative newcomers arrive on the piracy scene: video tapes and computer programs. In both instances the copyright owners abroad are becoming increasingly anxious.

Piracy of computer programs is increasing at an alarming rate since Maltese ingenuity knows little bounds whether as a cottage industry or on a more organised basis. In the present computer boom enthusiasts may perhaps be forgiven if, in trying to save every cent possible on program purchases, they do not worry unduly about buying unauthorised copies

60. Bryan Niblett, *Copyright Protection* etc. *op.cit.* at p.205.

(unlike music cassettes or phonograph records, the quality of a copy of a computer program does not suffer as much when compared to the original). Saving an average of two to four pounds on every program (sometimes more) means that one can build up a software library cheaper and faster. But if and when a copyright owner will seek to uphold his proprietary rights, from 'Space Invaders' on T.V. screens or monitors to 'Program Pirates' in our court-rooms the time lapse may be counted in months rather than in years.

D. REFORM

In the same way that the study of the evolution of law is an indirect study of the evolution of human society, it inevitably turns out to be a study of the legal system's attempts to ***catch up*** with developments in society. Indeed, there is a growing tendency today to measure the efficacy of a legal system by the speed of its adaptability to change and innovation in society whilst still preserving the desired standards of justice and social order.

In the light of the above, what in the early years of study of criminal law, was a source of amusement, e.g. the penalties imposed by S. 352 (3) of our Criminal Code on anyone who "drives animals (whether of burden or riding animals) over a drawbridge, with or without a vehicle, otherwise than at an amble", today, on reflection becomes a sad reminder of the tendency of statutes to remain static while life becomes more and more complex. Likewise it took more than half a century for the law to catch up on the copyright implications born with the invention of sound recordings and cinematography. (The relevant provisions were first introduced in the Copyright Act of 1956 in the U.K. and in the Copyright Act of 1967 in Malta.) In the field of computer programs millions may be lost as a result of the infringement of proprietary rights by unauthorised copying. One trusts therefore that the review of existing statutes and the introduction of the amendments as considered in this paper would help facilitate the administration of justice when the issue inevitably ends up in our Commercial Courts.

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