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AN INTRODUCTION TO INTELLECTUAL PROPERTY RIGHTS

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Copyright law protects expressions of ideas rather than the ideas themselves and is conferred on all Original literary, artistic, musical or dramatic, cinematograph and sound recording works. Under the TRIPS Agreement, computer programmes now qualify for copyright protection just as any other literary work. Copyright matters most in the computer software industry to the off-theshelf business applications sector.

The Patents Act, 1970 states that a computer program per se other than its technical application to industry or a combination with hardware is not patentable. Thus, software can be registered as a patent only if it is in combination with hardware and not otherwise. The issue of whether to grant patents to software-related inventions was reignited as stakeholders, especially multinational companies, considered the protection available under the Copyright Act to be inadequate. While stronger protection is needed for software inventions in India, the patentability of such inventions remains ambiguous. However it is hoped that the government will accelerate its efforts to achieve a consensus within the software industry – and further, that the patent regime will be reshaped for the benefit of the software industry as a whole.

The existence of IPRs is very old. The basic aim of conferring an IPR upon the person owning the same is to give a social recognition to its holder. This social recognition can further bring economic benefits to its holders. It is just and reasonable to award a person an IPR in the form of "limited monopolistic rights" for his/her labor and efforts. At the same time, exceptions in the form of various licenses are also made so that public interest cannot be compromised. The public interest and personal interests are thus reconciled in the form of limited period duration of these rights and their abuses can be tackled stringently, especially when public interest demands so. Thus, the TRIPS Agreement was formulated to bring basic level harmonisation in IPR laws all over the world. The provisions of the TRIPS Agreement are the most extensive and rigorous in nature. They protect all forms of IPRs collectively. The protective umbrella of TRIPS covers the following IPRs:

- (1) Copyright and Related Rights,
- (2) Trademarks,
- (3) Geographical Indications,
- (4) Industrial Designs,
- (5) Patents,
- (6) Layout designs of Integrated Circuits, and
- (7) Protection of Undisclosed Information.

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It must be noted that by virtue of Article 1(2) of the TRIPS Agreements¹, the Control of Anti-Competitive Practices in Contractual Licences has been excluded from the definition of "intellectual property". Thus, the TRIPS Agreement covers virtually the entire gamut of IPRs.

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What is Copyright?

Copyright is a form of intellectual property protection granted under Indian law to the creators of original works of authorship such as literary works (including computer programs, tables and compilations including computer databases which may be expressed in words, codes, schemes or in any other form, including a machine readable medium), dramatic, musical and artistic works, cinematographic films and sound recordings.

Copyright law protects expressions of ideas rather than the ideas themselves. Under Section 13 of the Copyright Act, 1957, copyright protection is conferred on literary works, dramatic works, musical works, artistic works, cinematograph films and sound recording. For example, books, computer programs are protected under the Act as literary works.

Copyright refers to a bundle of exclusive rights vested in the owner of copyright by virtue of Section 14 of the Act. These rights can be exercised only by the owner of copyright or by any other person who is duly licensed in this regard by the owner of copyright. These rights include the right of adaptation, right of reproduction, right of publication, right to make translations, communication to public etc.

Copyright protection is conferred on all original literary, artistic, musical or dramatic, cinematograph and sound recording works. Original means, that the work has not been copied from any other source. Copyright protection commences the moment a work is created, and its registration is optional. However it is always advisable to obtain a registration for a better protection. Copyright registration does not confer any rights and is merely a prima facie proof of an entry in respect of the work in the Copyright Register maintained by the Registrar of Copyrights.

As per Section 17 of the Act, the author or creator of the work is the first owner of copyright. An exception to this rule is that, the employer becomes the owner of copyright in circumstances where the employee creates a work in the course of and scope of employment. Copyright registration is invaluable to a copyright holder who wishes to take a civil or criminal action against the infringer. Registration formalities are simple and the paperwork is least. In case, the work has been created by a person other than employee, it would be necessary to file with the application, a copy of the assignment deed.

One of the supreme advantages of copyright protection is that protection is available in several countries across the world, although the work is first



published in India by reason of India being a member of Berne Convention. Protection is given to works first published in India, in respect of all countries that are member states to treaties and conventions to which India is a member. Thus, without formally applying for protection, copyright protection is available to works first published in India, across several countries. Also, the government of India has by virtue of the International Copyright Order, 1999, extended copyright protection to works first published outside India.

Any serious enquiry into the subject of IP and development has to consider the crucially important role of copyright and the copyright-based industries (including publishing, film, television, radio, music and now computer software too) in the production and dissemination of knowledge and knowledge-based products. These industries supply the intellectual "raw material" for science and innovation, as well as for education and instruction in general, and they have helped bring about dramatic increases in productivity through aiding the creation of information-based products like desk-top publishing software, electronic mail or sophisticated scientific computer databases. Moreover, the copyright-based industries have developed into a huge source of wealth and employment creation in the knowledge-based global economy. In the US, for example, their overall combined value has increased at such a rapid rate in the last twenty or thirty years, that together they currently contribute more than \$460 billion to US gross domestic product and sold almost \$80 billion in exports in 1999.² For developing countries this provides both enormous opportunities and challenges:

"The creation and ownership of knowledge products are of increasing importance because of the centrality of information and knowledge to post-industrial economies. The concept of copyright, originally intended to protect authors and publishers of books, has broadened to include other knowledge products such as computer programs and films... Copyright has emerged as one of the most important means of regulating the international flow of ideas and knowledge-based products, and will be a central instrument for the knowledge industries of the twenty-first century. Those who control copyright have a significant advantage in the emerging, knowledge-based global economy. The fact is that copyright ownership is largely in the hands of the major industrialized nations and of the major multimedia corporations placing low per capita income countries as well as smaller economies at a significant disadvantage."³

Copyright & Computer Software

As others have noted, there is a digital divide between the developed countries and the developing world. In the knowledge-based global economy, computer technologies are an essential requirement for accessing and using information, accelerating technology transfer and boosting the growth of productivity. At the



same time, computer software products are perhaps the most heavily protected of all forms of knowledge-based products. Under the TRIPS Agreement, computer programmes now qualify for copyright protection just as any other literary work, as well as for other forms of IP protection, including by patents in some nations, such as the US. Developing countries, of course, have a range of requirements for computer software applications in their industries, hospitals, schools and government offices. But most commonly, they need affordable access to off-the-shelf business software packages, such as word-processing, spreadsheet, e-mail and Internet browsing products. Companies in Europe and North America, with Microsoft being the major player, dominate the global market for these products. The software industries of developing countries, even in India, are mostly absent from the off-the-shelf, packaged computer programs sector.

Copyright matters most in the computer software industry to the off-the-shelf business applications sector. Unlike bespoke software applications, these products have a mass market and can be easily copied. Copyright protection enables companies to prevent copying, limit competition and charge monopoly prices for these products. In developing countries, this presents two main problems. First, as there is currently widespread copying together with low local purchasing power in developing countries, there is a concern that stronger protection and enforcement could mean a more limited diffusion of such technologies. This may be a particular risk because the network effects of business applications tend to re-enforce the dominance of existing software producers. Examining the evidence, however, we conclude that this problem is not insurmountable for developing countries, if the right steps are taken. For example, governments and donor organizations could review their software procurement policies with a view to giving greater consideration to low cost business software products, including generic and open-source products that are widely available. The second problem is that where the source code of software is also protected, this may make it harder to adapt the products for local needs. It may also restrain competition in development of inter-operating applications, through follow-on innovation by reverse engineering. Under TRIPS, developing countries are permitted the flexibility to allow reverse engineering of software, so this problem may be avoided if national copyright laws are drafted appropriately. As another practical measure, more widespread use of the various open source software products, where source code is made available unlike proprietary software, may be considered. Alternatively, some in industry argue that with stronger copyright enforcement, closed source proprietary developers may be more willing to make source code available to software developers in developing countries.

It is clearly beyond our mandate to recommend what kind of policies developing countries should follow for procurement of computer software. For instance,



whilst low cost or open source software may a priori offer cost and other advantages over proprietary software, many factors besides software license fees affect the total cost of an IT system such as customising the system to the user's specific needs, as well as servicing, and maintaining the system. That said, given the considerable needs which developing countries have for information and communication technologies and the limited funds which are available, it would seem sensible that governments and donors should certainly consider supporting programmes to raise awareness about low cost options, including open source software, in developing countries. Developing countries and their donor partners should review policies for procurement of computer software, with a view to ensuring that options for using low-cost and/or open-source software products are properly considered and their costs and benefits carefully evaluated. Developing countries should ensure that their national copyright laws permit the reverse engineering of computer software programmes beyond the requirements for inter-operability, consistent with the relevant IP treaties they have joined.

Software is a product of human intellect and can be rightly termed as "intellectual property." Considering the very vital role it plays in today's world economy and development, protection of software is a very crucial issue. There has been a demand worldwide for the protection of software. The Trade Related aspects of Intellectual Property ("TRIPS"), Berne Convention, and World Intellectual Property Organization ("WIPO") have included provisions for the protection of software. Copyright laws throughout the world have extended protection for software.

International Instruments

Software is marketed either through traditional channels (retailers, e-tailers⁴ etc) or distributed from a website with a "click-wrap"⁵ license agreement. Such an arrangement leaves a lot of room for unlawful copying of software. Statutory protection of software has, therefore, become increasingly important. Most of the countries have modified their copyright laws to include software within its ambit.

Under copyright laws, protection is available only to the form or expression of an idea and not to the idea itself. The object of copyright protection in a computer program is not the underlying idea, but the computer language used to express that idea. The coding of the program is carried out independently. In that case, the idea underlying the program is expressed in a way that differs from the way in which the originator of the program has expressed this idea. The new code thus constitutes the expression (of the underlying idea) and is protected but the methods and algorithms within a program are not protected. Algorithm is a list of well-defined instructions for completing a task. It is a set of instructions on what steps are essential to process information by the computer and in what



specific order it has to perform these operations in order to carry out a specified task. Thus, algorithms are mere ideas which cannot be protected under the copyright law. Source code ⁶ and object code⁷ are the products of algorithms; they are the expressions of the ideas contained in the algorithms and, therefore, they can be protected against literal copying under copyright law⁸.

"Look and feel" of a computer program given by a programmer or an interface designer also can be termed as the expression of ideas of the programmer and the interface designer. Though this is a non-literal expression, it has been afforded protection under the U.S. copyright law. These and various other issues concerning software protection have been dealt with in the international instruments. Following is an account of the various international instruments for software protection.

TRIPS

This is the first international Treaty to explicitly include computer programs within the illustrative list of copyrighted works. TRIPS sets forth three different forms of protection for software: copyright, patent and trade secret regime. TRIPS includes a specific provision in Article 10 that expressly requires member states to protect software, whether in source or object code, as literary works under the Berne Convention. However, the member countries have a right to provide more extensive protection of intellectual property rights within their national legal systems.

Article 27.1 recognises patent protection for software related invention for the member states so long as the invention satisfies the other requirements⁹ for patentability which are country specific. Therefore, software may be granted patent protection in a particular country if it fulfills the specific conditions set forth under the laws of that country.

Article 39 of TRIPS provides an alternative to copyright protection. It talks about protection for undisclosed information and offers a trade secret regime for software protection. Trade secret regime is applicable for the protection of trade secrets which may include software. A particular software may contain lot of valuable and confidential information about a company which forms its trade secret. Civil and criminal actions are provided for in most legislation against the unauthorised disclosure or use of confidential information. In this case, there is no exclusive right, but an indirect type of protection based on a factual characteristic of the information (its secret nature) and its business value. Unlike patents, trade secrets are protected as long as the information is kept secret.

Thus, TRIPS does not preclude additional forms of protection for computer programs and a member can offer patent, copyright and trade secret protection for computer programs. Keeping in mind the higher standards of creativity required by patent law the software developer can choose any form of protection



which is most desirable to him. As the source code is comprehensible only by a trained programmer and not by normal persons, the proprietors generally protect the source code under the trade secret regime and the object code is protected as a copyright. Reverse engineering¹⁰ is one practice which is very common to software. There has been a debate as to whether reverse engineering amounts to infringement. TRIPS allows reverse engineering of computer programs only by honest avenues. Wholesale copying of computer programs is prohibited under TRIPS. Copying with modifications here and there is permitted and copying amounting to fair use is also permitted under the copyright laws of many countries. Consequently, the practice of re-implementing functional components of a protected program in "clones" is not prohibited. It is pertinent to mention here that programs that are independently coded and deliver the same functional performance or behaviour as the originator's own software are not said to infringe the latter's rights in his software as this will amount to fair use. This encourages competition and innovation by firms in all countries.

Berne Convention

The Berne Convention does not explicitly mention computer programs in its illustrative list of copyright works. However, as per TRIPS, member states should recognise computer programs (software) as literary works.

Article 2 (7) of the Berne Convention makes the protection of works of applied art dependant on domestic legislation i.e. the extent to which protection may be granted and the conditions under which such works will be protected is dependent on the statute of the particular country where the work originated. Works enumerated in Article 2 of the Berne Convention are mere illustrations of the kinds of works to which copyright might extend. These illustrations are not exhaustive. Therefore, works such as computer programs that exhibit utilitarian characteristics and also contain expressive elements can be brought under the ambit of work of applied art.

However, Article 7(4) of the Berne Convention exempts, *inter alia*, the works of applied art from the general term of protection and sets up a minimum term of only 25 years from the making of the work. As Article 2(7) makes the protection of works of applied art dependant on domestic legislations, the term of protection may be applicable accordingly with respect to different countries.

Universal Copyright Convention ("UCC")

Under the UCC's national treatment provisions, software created by a U.S. author or first published in the US is protected in other UCC member countries to the extent that the member country's copyright laws protect software. The UCC provides that any member country that requires, as a condition of copyright protection, compliance with formalities (such as registration, deposit or notice) must treat such formalities as satisfied if all



published copies of a work bear the symbol "©", the name of the copyright proprietor and the year of first publication. This provision applies, however, only to works that (i) were first published outside the country requiring the observance of the formalities, and (ii) were not authored by one of that country's nationals. In contrast to Berne Convention, formalities such as registration are permitted under the UCC in order to bring an infringement suit.

India being a member to the UCC, authors of software in US will get protection in India also as per the terms and conditions laid down in the Indian Copyright law.

WIPO Copyright Treaty

In 1996, two copyright treaties were negotiated under the auspices of WIPO. These treaties are: WIPO Copyright Treaty ("WCT") and the WIPO Performances and Phonograms Treaty ("WPPT"). The WCT of 1996 is a special agreement to the Berne Convention and requires compliance with Berne Convention. This treaty makes explicit that computer programs are protected as literary works under Berne Convention. It also states that compilations of data for which the selection or arrangement of the contents are sufficiently original are protected as compilations. Software makers are granted a right to control rentals of computer programs. It requires treaty nations to provide adequate and effective protection against the circumvention of technical measures that restrict the ability of others to exercise the rights owned by the copyright owner.

Among the countries where subject matter protection exists for software, there are substantial differences in the laws and regulations governing protection. For example, the author of a "U.S. origin" work who desires to file suit for copyright infringement in the US must first register the work with the U.S. Copyright Office. This is not the case with most other countries. In some countries, registration provides certain evidentiary benefits. In Japan, for example, the legal effect of one type of optional registration is to create a rebuttable presumption that the program was created on the date declared in the application, but a program must be registered within six months of its creation. In Venezuela, unless a U.S. author has already registered its software in the U.S. Copyright Office, when the author seeks to register its copyright in Venezuela (which one might do to prove originality for purposes of possible litigation in Venezuela), the author must also file assignments from each person who worked on the software.

European Community Directive on the Legal Protection of Computer Programs ("EC Software Directive" ("ESD"))

In 1991, Article 1.1 of the ESD required member countries to extend copyright protection to computer programs. In the midst of many restrictions imposed on the use of software by another except the owner, ESD has introduced relaxation



in these restrictions concerning mainly reverse engineering. Article 6 of the ESD conditions reverse engineering for compatibility purposes on the fact that the information necessary to accomplish compatibility must not have been previously readily available and it should be confined to the aspects of the program related to the need for compatibility. There is no specific exception for research, and the limited scope of reverse engineering permitted by the terms of the ESD is not to be construed in a manner that would unreasonably interfere with the owner's normal exploitation of the computer program. Reverse engineering for purposes of creating competing products is thus prohibited under the ESD.

Enforcement of Protection

Although the availability of legal protection for software has increased rapidly around the world over the years, the scope and the feasibility of enforcement of that protection continue to vary significantly in different countries. The use of the Special 301 provisions of the 1988 U.S. Trade Act has resulted in greater protection for software in several countries. These give more emphasis on proscription of piracy rather than providing injunctive measures against infringement. The Business Software Alliance and the Software & Information Industry Association have been effective forces for monitoring software piracy around the world, promoting various changes in legislation and taking legal actions to enforce copyright protection. The accession of the US to the Berne Convention, which fosters the protection of intellectual property rights through the TRIPS Agreement, were important milestones in the use of multilateral agreements for dealing with protection for software. These multilateral efforts are intended to promote adequate and effective protection of intellectual property rights while ensuring that national laws enforcing such rights do not themselves become barriers to trade. In most countries, the only meaningful remedy is to seek an order to stop or enjoin further infringing activities, with only limited prospects for collecting damages. Reverse engineering is virtual copying of software. US law and law of European Union deal with this concept differently depending on the provisions of the international instruments discussed above.

Indian Scenario

In India, computer software does not form the subject matter of patents as the requirement of the patent law is that the process must result in something "tangible" and "vendible." Though not many in India demand software protection, it is a much needed protection considering the growth of the Information Technology industry in the country. India has adopted most of the particulars of the international instruments discussed above and has incorporated its own law on software protection based on the essentials of these instruments. National Association of Software and Service Companies



("NASSCOM") is an ardent supporter of strong intellectual property laws in India. In 1990, NASSCOM began an active public awareness campaign to educate users about the lawful use of software. NASSCOM has also been actively working towards providing various anti-piracy measures¹¹; it has also successfully facilitated enforcement laws against software piracy in India and has continuously engaged with the government of India for required changes in the IPR laws, keeping in line with WIPO and other international laws and treaties. It works closely with BSA to enforce copyright laws. The major statutes that cover software protection in India are the Copyrights Act, 1957 ("Act") and Patents Act, 1970.

India has one of the most modern copyright protection laws in the world. Major development in the area of copyright during 1999 was the amendment to the Copyright Act of 1957 to make it fully compatible with the provisions of the TRIPS. The provisions of this Act are a reflection of the international instruments discussed above.

The Act defines computer and computer programs. "Computer Program" means a set of instructions expressed in words, codes, schemes or in any other form, including a machine readable medium, capable of causing a computer to perform

a particular task or achieve a particular result.¹² "Literary work" is defined as that which includes computer programs, tables and compilations including computer databases.¹³ These additions in the Act have widened the scope of protection under the Copyright Act, 1957. Copyright, in relation to a computer program means the exclusive right to do or authorise to do any of the following acts¹⁴:

(1) To reproduce the work in any material form including the storing of it in any medium by electronic means;

(2) To issue copies of the work to the public not being copies already in circulation;

(3) To perform the work in public, or communicate it to the public;

(4) To make any cinematographic film or sound recording in respect of the work;

(5) To make any translation of the work;

(6) To make any adaptation of the work;

(7) To do, in relation to a translation or an adaptation of the work any of the acts specified in relation to the work in the above;

(8) To sell or give on commercial rental or offer for sale or for commercial rental any copy of the computer program. However, commercial renting does not apply to computer programs where the program itself is not the essential object of the rental. The provisions contained in the WCT are well reflected here, though India is not a signatory to the WCT.



To do any of the above acts related to the computer program or to use it, a license is required from its owner. Any person who knowingly makes use on a computer of an infringing copy of a computer program is liable to be punished with imprisonment for a term of at least seven days and can be extended to three years and with fine of at least Rs. 50,000¹⁵. The term of copyright in published literary work published within the lifetime of the author is 60 years from the beginning of the calendar year following the year in which the author dies. In case of anonymous or pseudonymous works, the duration is 60 years from the calendar year following the year in which the author dies. Thus, the minimum term of 25 years stipulated in the Berne Convention is not applicable in India.

Basis of Protection

The basis of protection of a literary work in India is that the work must not be copied from another work, but must originate from the author. Author, in relation to literary work which is computer generated, is the person who causes the work to be created. Therefore, copyright subsists in a computer program provided sufficient effort or skill has been expended to give it a new and original character. However, a computer program, which does no more than produce the multiplication tables, or the alphabet, cannot lay claim to copyright protection. That is because the amount of skill or effort entailed in such an exercise is too trivial to render the resultant work something which is new and of original character.

Besides satisfying the criteria of "originality," a computer program also has to conform to the requirement of first publication as stipulated in the Act. The work must be first published in India and if it is published outside India, then the author should be a citizen of India at the time of publication. As regards unpublished work, the author should be a citizen of India or domiciled in India at the date of making of the work. However, the government of India passed the International Copyright Order, 1958 whereby any work first published in any country which is a member of the Berne Convention or the UCC will be accorded the same treatment as if it was first published in India. It is pertinent to mention here that registration of copyright is not compulsory in India.

Acts not Amounting to Infringement

In compliance with the provisions of the TRIPS, the Act¹⁶ has clarified that the following acts do not constitute infringement of copyright in software:

(a) Making copies or adaptation of a computer program by a lawful possessor of a copy of such computer program from such copy in order to utilize the program for the purpose for which it was supplied or to make back-up copies purely as a temporary protection against loss, destruction or damage in order



only to utilise the computer program for the purpose for which it was supplied.

(b) Doing any act necessary to obtain information essential for operating interoperability of an independently created computer program with other programs by a lawful possessor of a computer program provided that such information is not otherwise readily available.

(c) Observation, study or test of functioning of the computer program in order to determine the ideas and principles which underline any elements of the program while performing such acts necessary for which the computer program was supplied.

(d) Making copies or adaptation of the computer program from a personally legally obtained copy for non-commercial personal use.

Patents Act, 1970

The Patents Act, 1970 states that a computer program per se other than its technical application to industry or a combination with hardware is not patentable¹⁷. Thus, software can be registered as a patent only if it is in combination with hardware and not otherwise.

Pirated software affects software developers, retail store owners and also all software users. Furthermore, the illegal duplication and distribution of software has a significant impact on the economy. This calls for its stronger legal protection. The primary protection of software in India is found in the Copyrights Act, 1957. There are very few cases pertaining to protection of software in India, most of them with Microsoft Corporation as the aggrieved party. In one of these cases¹⁸, the Delhi High Court awarded punitive and exemplary damages against the wrongdoer who were involved in piracy activities by hard-disk loading. With the growing concept of software technology parks and the importance of software in every business, more and more companies want protection under the legal regime to obviate software piracy.

The availability of injunctive relief and criminal remedies are particularly vital to the software industry. Software developers often rely on civil ex parte injunctive procedures to identify infringers. However, civil procedures in many developing nations are time-consuming, cost-prohibitive, and largely ineffective against professional criminals. Therefore, software developers are often forced to rely on criminal prosecutions by public authorities to deter rampant piracy of their products.

Copyright versus Patent – The Great Debate

In India, software has traditionally been protected under Copyright Act, 1957 ("Act")¹⁹ as software programme.²⁰ Computer software, also known as computer programme, has a market value and is subject to fierce competition due to a shorter life circle and the potential danger of blatantly being copied or



developed by reserve engineering. Granting protection to software through appropriate intellectual property mechanism, therefore, becomes essential to secure enhanced rights of the creator over the software and encourage creativity, innovation and investment. Such a protection to computer programme can also be seen as a form of legal subsidisation to a particular industry and technology. Attempt to extend protection under patents was hindered in 2005 with an amendment in the Patents Act, 1970 ("Patents Act") which excluded a computer programme from the list of inventions which could not be patented. The expression used in Section 3(k) of the Patents Act is "a mathematical method or a business method or a computer programme per se or algorithms." The interpretation of "computer programme per se" has been a contentious issue and often understood that software inventions could be patented while mere computer programmes should not be patented while mere position in India, the specific questions that emerge are:

(i) considering the nature and significance of software, is copyright protection sufficient?

(ii) given the limitation of the copyright protection and the advantages that patents offer, should software be subject to patenting?

Software protection under copyright

Section 2(ffc) of the Act provides protection to "computer programme" as a set of instructions expressed in words, codes, schemes, or in any other form, including a machine readable medium, capable of causing a computer to perform a particular task or achieve a particular result. This protection extends only to the particular expression of an idea that was adopted and not the idea itself or the procedures, methods of operation or mathematical concepts.²¹ Copyright confers an exclusive right to reproduce the material, issue copies, perform, adapt and translate the work for a minimum period of the lifetime of the author plus sixty years.²² It entitles the owner to prevent copying of the protected work, to prevent the distribution of copies and to prevent preparation of derivative works.

Computer software includes items like the programme manuals and papers, punched cards and magnetic tapes or discs required for the understanding or operation of computers, all of which are capable of copyright protection as they fall under the notion "literary work." The expression "schemes or in any other form" indicates that the source code, which is a computer programme written in a programming language, and the object code, which is the version of a programme in which the source code language is converted or translated into the machine language of the computer with which it is to be used of a computer programme - are entitled to copyright protection. Both the TRIPS Agreement, 1995 and WIPO Copyright Treaty, 1996 provide that computer programmes, both in source and object code must be protected by copyright. Procedurally, the



ease with which copyright can be obtained and the duration of protection it provides makes it a popular mode of protecting software.

Is copyright protection for computer programme adequate in India?

There are certain limitations of copyright protection in India. For instance, the law as it stands today cannot prevent the creation of a competing programmes that utilizes the same ideas as an existing programme. Further, there is no protection of the "ideas" underlying the computer programme, which often have considerable commercial value. The expression of a method of operation and principles of a computer programme cannot be protected by copyright. Functional aspects of a computer programme are excluded from copying. It also fails to prevent the reverse engineering from independent inventions and has often been found more susceptible to piracy (cyber-piracy as well) and data theft. In order to prove copyright infringement, it is essential to establish that the Defendant has in fact copied the work from the owner of the copyright. Interestingly, there is no infringement and the owner of a programme is entitled to make copies (including back-up copies) or adaptation of a computer programme, so long as the copy is utilised for the purpose for which it was supplied.²³ Distinction between form and idea

Under both the Indian and American systems of law, the protection available to a copyright-protected work is protection in respect of the form and substance of the work and not the idea behind the work. Therefore, applying this principle in the context of computer software, the owner of the copyright over an item of software has the right to prevent any other person from physically copying the code, as it is written, but does not have the right to prevent the utilisation of the idea behind the code, provided the person utilising this idea does so in a manner that is different from his arrangement of the code. Thus, it is necessary to note that unlike the case of a patent over a mechanical product, the copyright over an item of software code does not entitle the author to prevent another software developer from producing the same type of software in a different form and structure.

However, at the same time, it needs to be stated that the point where the idea translates itself into the expression of an idea is an issue that has been the subject of judicial scrutiny by courts in USA. The following principle was laid down in *Apple Computer Inc.* v. *Franklin Computer Corpn.*:

"Just as a patent affords protection only to the means of reducing an inventive idea into practice, so the copyright law protects the means of expressing an idea; and it is as near the whole truth as generalisation can usually reach that, if the same idea can be expressed in a plurality of totally different manners, a plurality of copyrights may result, and no infringement will exist."

Interpreting this principle, it has been concluded that the basis for the determination of the copyrightability of a software program was affirmed as



being the intellectual property right, inherent in the form and substance of the instructions to the computer and not to the idea behind their arrangement. This would imply that creative copying of the instructions so as to result in the same program being developed through the use of different lines of code would be deemed to be not a violation of the copyright in the program, as the copyright vests in the instructions themselves and not the end product.

Non-literal copying

The next issue that needs to be considered in this context is as to exactly what type of software reproduction is hit by the offence of infringement of copyright, particularly in cases where the alleged infringer had not copied the code line by line, but had taken something less specific. In this regard, various tests have been developed by courts in USA, in order to arrive at a conclusion as to the type of software and the extent to which it could receive protection. One such test has been to discern whether the look and feel of the two programs was the same. If the answer to that question was in the affirmative and if it could be shown that the Defendant had access to the Plaintiff's program, copyright infringement was likely to have occurred.

The Whelan test

The question whether there could be copyright infringement in copying the "overall structure" of a program, even if neither the object code nor the source code of the program had been copied came to be examined by the US Court of Appeal, for the Third Circuit in *Whelan Associates Inc.* v. *Jaslow Dental Laboratory, Inc.* In this case, the alleged infringer rewrote a program that was originally coded in a particular computer language in a different programming language. While evolving the look and feel test the court concluded (on the basis of prior decisions that had held that there could be infringement of copyright in a play or book by copying the plot or plot devices of the play or book when the total "concept and feel" of the alleged infringing work was substantially similar to that of the copyrighted work) that the said test should apply to infringement of copyright in computer programs.

The Court also concluded that the detailed structure of a program was part of the expression of an idea than the idea itself, and therefore, the copying of the expression of the idea in the program would amount to an infringement of copyright. The principles laid down by the court in Whelan case can be summarised as hereunder:

- Copyright programs are classified as literary works for the purposes of copyright.
- The copyrights of other literary works can be infringed even when there is no substantial similarity between the work's literal elements. One can violate the copyright of a play or a book by copying its plot or plot devices. Copyright



"cannot be limited literally to the text, else a plagiarist would escape by making immaterial variations".

- Among the more significant costs in computer programming are those attributable to developing the structure and logic of the program.
- Allowing copyright protection beyond the literal computer code would provide the proper incentive for programmers by protecting their most valuable efforts, while not giving them a stranglehold over the development of new computer devices that accomplish the same end.
- It is not true that "approximation" of a program short of perfect reproduction is valueless. On the contrary, one can approximate a program and thereby gain a significant advantage over competitors even though additional work is needed to complete the program.
- The issue in a copyrighted case is simply whether the copyright-holder's expression has been copied, not how difficult it was to do the copying. Whether an alleged infringer spent significant time and effort to copy an original work is therefore irrelevant for decision as to whether he has pirated the expression of an original work.
- The conclusion is inescapable that the detailed structure of a program is part of the expression, not the idea of that program. Copyright protection of computer programs may extend beyond the program's literal code to their structure, sequence and organisation.

The test laid down in Whelan case came to be known as the "structure, sequence and organisation" test, since the court held that copyright protection of computer programs may extend beyond the programs' literal code to their structure, sequence and organisation.

The Altai test for infringement

However, this test was not adopted by the Second Circuit Court of Appeals which propounded a new test in *Computer Associates* v. *Altai*. In this case, OSCAR 3.5 was the product of Altai's carefully orchestrated rewrite of OSCAR 3.4. None of the ADAPTER source code remained in the 3.5 version; thus ALTAI made sure that the literal elements of its revamped OSCAR program were no longer substantially similar to the literal elements of Computer Associate's ADAPTER source code. While examining the question as to whether ALTAI'S OSCAR 3.5 was substantially similar to Computer Associate's ADAPTER program, the following points were established by the court in *Altai* case:

• It is essential for protection of literary property that copyright cannot be limited literally to the text, else, a plagiarist would escape by making immaterial variations. Thus, where "the fundamental essence or structure of one work is duplicated in another", Courts have found copyright infringement.



- Those aspects of a work which "must necessarily be used as incident to" the idea, system or process that the work describes, are also not copyrightable. Therefore, those elements of a computer program that are necessarily incidental to its function are similarly unprotectable.
- The principle laid down in Whelan that the non-literal elements of computer programs was entitled to copyright protection as literary works, is acceptable.
- The Whelan rule had received a mixed reception in American Courts. While some decisions adopted its reasoning , others had rejected it.
- A computer program's ultimate function or purpose is the composite result of interacting subroutines. Since each subroutine is itself a program, and thus, may be said to have its own "idea", Whelan's general formulation that a program's overall purpose equates with the program's idea is descriptively inadequate.
- The rationale of *Whelan* case was suspect with the passage of time since its opinion was based on a somewhat outdated appreciation of computer science. A three-stage test was therefore formulated in order to determine whether the non-literal elements of two or more computer programs are substantially similar.

The abstraction test

In ascertaining substantial similarity under this approach, a court would first break down the allegedly infringed program into its constituent structural parts. The abstraction test "implicitly recognises that any given work may consist of a mixture of numerous ideas and expressions". As applied to computer programs, the abstraction test will comprise the first step in the examination for substantial similarity. Initially, in a manner that resembles reverse engineering on a theoretical plane, a court should dissect the allegedly copied program's structure and isolate each level of abstraction contained within it. This process begins with the code and ends with an articulation of the program's ultimate function. Along the way, it is necessary to retrace and map each of the designer's steps in the opposite order in which they were taken during the program's creation.

(1) The process of filtration

Then, by examining each of these parts for such things as incorporated ideas, expression that is necessarily incidental to those ideas and elements that are taken from the public domain, a court would then be able to sift out all non-protectable material. Strictly speaking, such filtration serves "the purpose of defining the scope of the plaintiff's copyright".

Under the doctrine of incorporation/merger, "where there is essentially only one way to express an idea, the idea and its expression are inseparable and copyright is no bar to copying that expression" Under these circumstances, the expression



is said to have "merged" with the idea itself. In order not to confer a monopoly of the idea upon the copyright owner, such expression should not be protected.

The American Congress established the National Commission on New Technological Uses of Copyrighted Works (CONTU) to study the implications of the new technologies and recommended revision to federal intellectual property law. CONTU recognised the applicability of the merger doctrine to computer programs in its report to Congress thus:

"Copyrighted language may be copied without infringing when there is but a limited number of ways to express a given idea.... In the copyright context, this means that when specific instructions, even though previously copyrighted, are the only and essential means of accomplishing a given task, their later use by another will not amount to infringement."

The Court has also held that where it is virtually impossible to write about a particular historical era of fictional theme without employing certain "stock" or standard literary devices such expression is not copyrightable. In many instances it is virtually impossible to write a program to perform particular functions in a specific computing environment without employing standard techniques. It follows that such standard techniques are not copyrightable and will have to be filtered out.

The Court will also have to filter out elements dictated by concerns of efficiency. In the context of computer program design, the concept of efficiency is akin to deriving the most concise logical proof or formulating the most succinct mathematical computation. Thus, the more efficient a set of modules are, the more closely they approximate the idea or process embodied in that particular aspect of the program's structure. While hypothetically there might be a myriad number of ways in which a programmer may effectuate certain functions within a program, efficiency concerns may so narrow the practical range of choice as to make only one or two forms of expression workable options. If there are only a limited number of efficient implementations for any program task, it is quite possible that multiple programmers, working independently, will design the identical method employed in the allegedly infringed work.

(2) Copyrightability of material in the public domain

The Court in Altai1 has specifically dealt with copyrightability of computer software based on material found in the public domain. Such material is free for the taking and cannot be appropriated by a single author even though it is included in a copyrighted work. Quoting this general rule of copyright, the court stated that it found no reason to make an exception to this rule for elements of a computer program that have entered the public domain. Thus, a court must also filter out material available in the public domain before it makes the final inquiry in its substantial similarity analysis.

(3) Comparison



Left with a kernel, or possibly kernels, of creative expression after following this process of elimination, the Court's last step would be to compare this material with the structure of an allegedly infringing program. Once a court has sifted out all elements of the allegedly infringed program which are "ideas" or are dictated by efficiency or external facts, or taken from the public domain, there may remain a core of protectable expression. The result of this comparison will determine whether the protectable elements of the programs at issue are substantially similar so as to warrant a finding of infringement.

(4) Policy considerations

Demarcating the precise line between idea and expression ultimately impacts on the scope of copyright protection afforded to a particular type of work, and therefore, any such line must necessarily strike a judicious balance between "protection" and "competition". If programmers are not guaranteed broad copyright protection for their work, they will not invest the extensive time, energy and funds required to design and improve program structures. At the same time, it needs to be understood that the interest of copyright law is not in simply conferring a monopoly on industrious persons, but in advancing the public welfare through rewarding artistic creativity, in a manner that permits the free use and development of non-protectable ideas and processes.

The Altai Court also seemed to opine that patent registration, with its exacting upfront novelty and non-obviousness requirements, might be the more appropriate rubric of protection for intellectual property of this kind. With this rationale, the Court concluded that the test formulated by it which would have the effect of narrowing the scope of copyright protection was in accordance with legislative intent and fundamental principles of copyright law. English courts have also adopted a similar approach to the protection of computer software.

Extent of existing patent protection in India

Patent is granted to any "new" and "useful" art or process or method or manner of manufacture or machines or appliances or other articles or substances produced by manufacture. It grants an absolute monopoly or the right to prevent others from marking, using, offering for sale without the consent of the patent holder for a period of 20 years from the date of the application. Right is granted to the one who applies first, regardless of who invents first. In the case of software, it is sometimes accompanied by hardware also and, in such a case, the protection extends to the level of the idea embodied by a software and injuncts ancillary uses of an invention as well. In the Manual of Patent Practice and Procedure released by the Indian Patent Office ("Manual")²⁴, technical applicability of the software claimed as a process or method claim, is required to be defined in relation with the particular hardware components. Thus, the "software *per se*" is differentiated from the software having its technical application in theindustry. As per the Manual, a claim directed to a technical



process carried out under the control of a programme whether by means of hardware or software, cannot be regarded as relating to a computer programme as such. For example, "a method for processing seismic data, comprising the steps of collecting the time varying seismic detector output signals for a plurality of seismic sensors placed in a cable."²⁵ Here the signals are collected from a definite recited structure and hence allowable. An invention consisting of hardware along with software or computer programme in order to perform the function of the hardware may be considered patentable, for example, embedded systems.

Arguments against software patenting

Computer software is a complex component which generally comprises of several million lines of code having the potential of thousands of inventions, any of which is capable of being patented.²⁶ It depends upon a vast range of technologies which evolve rapidly and gets replaced in markets even before the previous becomes redundant, so such two or more inventions can simultaneously survive in the market. The basis of granting patent to software (to foster the growth and evolution of the industry) is defeated as even if software meets the technological criteria for patent protection, such protection would be useless because of the very short market life of software. A great deal of debate surrounds the validty of the grant of twenty years protection versus lifetime plus sixty years for copyright. A valid view is that twenty years of monopoly rights is preposterous in an industry where the rate of turnover of technology is less than a year or so.

Software patents hinder the development of software and free and open source software. The effect of patenting has led to keeping the software source code, which is the essence of practical technical knowledge in software, secret. The process of integrating functions of one piece of software into another, and vice versa, which is the key to innovation in software is now facing impediment due to patenting of source code. As the patent applications are confidential, so a computer programmer will never be aware if he is violating any patent. This makes the survival of small players difficult. When protection for the code or expression is available under the Act, there seems no reason to protect the ideas or functionality of that software as well. Understandably, patenting of software helps large software corporations that already have a large number of software patents and those corporations that do not create software, but only trade in patents/sue on the basis of patents.

Advantages that patent can offer to computer programme

The patenting of software has certain advantages over copyright:-

(i) Their usefulness contributes in the evaluation of a company's intangible assets.

(ii) In a patent infringement claim, patent holder has the advantage of not facing the defence of independent creation.

(iii) The patent holder has a monopoly right to license his product and since disclosure of the invention is a requirement of patentability, the inventor will not be concerned with secrecy problems that copyright holder faces.

(iv) The patent holder receives a 20 year monopoly over the invention, during which time others are prohibited from making using or selling the invention. Patent protection is not compromised by competitors' independent invention and reverse engineering. The developers who do not want their technical knowledge to benefit competitors can keep their software source code secret. Such a protection is a great incentive to R&D companies. The positive effects include rewarding the inventors and perpetuating the industrial tradition, the economy, and the legal system. The patent litigation process in India is getting better by the day aided by the rising patent awareness in India, many constructive changes in the patent system and the change in judicial approach in decisions like *TVS Motors vs. Bajaj* and *Auto Roche* v. *Cipla*. However, changes in the legislation are yet to be made.

Present scenario towards harmonisation

Prior to May 20 2003, the Indian Patents Act, 1970 defined an "invention" as anynew and useful article, process, method or manner of manufacture; machine, apparatus or other article; or substance produced by manufacture; including any new and useful improvement thereto. While there was no specific provision excluding the patentability of software per se or business methods from the interpretation of this definition, it could be clearly ascertained that only methods for the manufacture of a vendible or tangible product were patentable. Therefore, methods implemented by software inventions and software per se and business methods were not patentable. Some protection was provided under the Copyright Act, 1957, which included computer programs and computer databases within the definition of "literary works". With the arrival of multinational companies following liberalisation in 1991, India's IT industry expanded and fast became a crucial plank of the national economy. A wide range of computer and business method inventions - including automation methods, testing methodologies and web-enabled applications - assumed critical importance to the burgeoning industry, giving rise to support for software patents within this group. The issue of whether to grant patents to softwarerelated inventions was reignited as stakeholders, especially multinational companies, considered the protection available under the Copyright Act to be inadequate. Stronger protection was both expected and required.

Consequently, in 2002 the Patents Act was amended, redefining an "invention" as "a new product or process involving an inventive step and capable of industrial application", in line with Article 27 of the TRIPs Agreement. More



importantly, a new Section 3(k) was introduced, providing that mathematical and business methods, computer programs per se and algorithms were not considered patentable inventions. Disappointingly, however, inventors could derive little benefit from these provisions in practice in the absence of any guidelines.

In a welcome move, the government thus took further steps to extend broader protection to software inventions: the Patents (Amendment) Ordinance 2004 was promulgated in December 2004 and Section 3(k) was amended to exclude from patentability "a computer programme *per se* other than its technical application to industry or a combination with hardware". However, while this amendment admittedly expanded the scope of patentability of software inventions, it could not be substantially exploited. The Patents (Amendment) Act, 2005 repealed the ordinance and restored the earlier position.

Practice

Pursuant to Section 3(k) of the Patents Act, mathematical and business methods, computer programs per se and algorithms are not patentable. Accordingly, business methods have been categorically excluded from patentability. The Patent Office considers a particular method to be a business method if it involves a monetary transaction or mere marketing or salepurchase methodology. The interpretation of "computer programme per se" has been a contentious issue and has been viewed in different ways. The wording undoubtedly implies that the legislature's intention was that mere computer programs should not be patentable, but that software inventions – in other words, inventions implemented by software which are more than mere computer programs – could be patented.

The Indian Patent Office released a Draft Manual of Patent Practice and Procedure in 2005 providing guidelines on the types of claim allowed in respect of software-related inventions. As per the guidelines, claims to computer programs *per se*, computer-readable media with programs recorded thereon, methods implemented by software that lack technical effect and methods with a technical effect but lacking hardware support in the specification are not patentable. The guidelines state that in respect of a method, "the method claim should clearly define the steps involved in carrying out the invention. It should have a technical effect. In other words, it should solve a technical problem... The claim orienting towards a "process/method" should contain a hardware or machine limitation."

Way Future

There have been no real developments since the release of the Draft Manual in 2005. The government issued another version of the manual in 2008. The guidelines on software inventions are more elaborate, but similar in content. In



response to pressure from different sectors, the government invited comments from interested parties, including legal practitioners and industry, and organised stakeholder meetings across the country to develop a consensual approach. These meetings generated intense debate, with the open source industry opposing the guidelines set out in the manual and arguing that the manual tries to introduce software patent protection. This narrow interpretation has been vehemently contested by others, who contend that the guidelines cannot be a determining factor for interpreting the law, but are used only to describe practice and procedure. The hardware limitation for processes or methods having a technical effect was also contested. It was contended that these may be novel independent of hardware features which may be known, and that the protection is intended for novel or nonobvious processes and methods themselves, without reference to the physical medium through which they are implemented.

Moreover, if a hardware limitation was required, it could allow many users to avoid infringement of a patent simply by choosing alternative hardware. Opinions were also voiced in favour of the allowance of claims relating to computer-readable media storing novel inventive programs. Supporters argued that since damages are determined based on the number of copies of the product sold, method claims do not provide adequate protection because they base damages on the number of times the software manufacturer runs the infringing software for test purposes. The intense debate on software-related inventions compelled the government to provide assurance that it will convene a meeting with the software industry to discuss related issues. However, so far no developments have taken place in this regard. The Draft Manual, when finalised, will not have the force and effect of law, but will act as a guideline for the Patent Office. In fact, the preface of the Draft Manual states that: "The manual does not constitute rule making and hence does not have the force and effect of law. Statements made in the manual are not in themselves an authority in any action by an officer of the Patent Office. While the manual may be regarded as a hand book, it does not impose any particular line of action and may not be quoted to that end."

While stronger protection is needed for software inventions in India, the patentability of such inventions remains ambiguous. There is an urgent need to make the patent system transparent on an equitable basis and to provide technology specific training to Patent Office officials, in order to cultivate a broad and positive outlook. It is hoped that the government will accelerate its efforts to achieve a consensus within the software industry – and further, that the patent regime will be reshaped for the benefit of the software industry as a whole.

Conclusion

It is submitted that the narrow protection afforded to computer software under the law of copyright as in *Altai* reflects the correct balance between the need to



encourage creative work and also to ensure that an undue monopoly which restricts free use and development of ideas is not created. This is especially important given the fact that the term of copyrighted works in India is the lifetime of the author of such works plus a period of 60 years. Such an extensive period of copyright protection may be excessive and ill-suited to a computer program where the normal period of obsolescence may be just a few years.

The three-staged approach suggested by Altai case has been subsequently cited in a host of decisions. In addition, courts in Canada, the United Kingdom and France have endorsed the *Altai* analysis. While it may not be possible to definitely conclude that the same tests would necessarily be applicable in case of copyright infringement in the Indian context, the principles set out therein would be extremely persuasive. This is especially so given the fact that with the conclusion of TRIPs which has incorporated by reference the principles enshrined in the Berne Convention, copyright law has now become increasingly harmonised across all jurisdictions. Thus, principles enunciated by the courts of a foreign jurisdiction can inform the operation of copyright law in India as well, and it would not be inappropriate to refer to the Altai principles to understand the scope of copyright protection in computer software in India.

- 2 Story, A. (2002) "Copyright, Software and the Internet", Commission on Intellectual Property Rights Background Paper 5, Commission on Intellectual Property Rights, London, p.11. Source: http://www.iprcommission.org
- 3 UNESCO (1998) "World Information Report 1997/98", UNESCO, Paris, p.320. Source: http://www.unesco.org/webworld/com_inf_reports/wirenglish/chap23.p df
- 4 An e-tailer is a retailer that primarily uses the internet as a medium for customers to shop for the goods or services provided.
- 5 Click-wrap is a common type of agreement mostly found on the internet as part of the installation process of many software packages.
- 6 Source code is a level of computer language consisting of words, symbols and alphanumeric labels. It is a high level language and is incomprehensible to human beings.

¹ Article 1(2) reads- For the purpose of this Agreement, the term "intellectual property" refers to all categories of intellectual property that are the subject of Sections 1 through 7 of Part II. The Control of Anti-Competitive Practices in Contractual Licences falls in the 8th category; hence it is excluded from the protective umbrella of intellectual properties.



- 7 Object code is a level of computer language which is intelligible to human beings.
- 8 Bonito Boats, Inc. v. Thunder Craft Boats, Inc. 489 U.S., 141, 103 L. Ed. 2d 118, 109 S. Ct. 971 (1989); Whelan Associates, Inc. v. Jaslow Dental Laboratory Inc., 797 F.2d 1222 (3d Cir. 1986).
- 9 In India the requirements of patentability as per the Patents Act, 1970 are that the invention must be new, useful and non-obvious. Invention means a new product or process involving inventive step and capable of industrial application.
- 10 Reverse engineering is the process of discovering the technological principles of a device or object or system through analysis of its structure, function and operation. It often involves taking something (e.g. a mechanical device, an electronic component, a software program) apart and analyzing its workings in detail, usually to try to make a new device or program that does the same thing without copying anything from the original.
- 11 Providing an anti-piracy toll-free hotline.
- 12 Section 2(ffc).
- 13 Section 2(o).
- 14 Section 14 (b) of the Act.
- 15 Section 63B of the Act.
- 16 Sections 52(1)(aa), 52(1)(ab), 52(1)(ac) and 52(1)(ad).
- 17 Section 3 (k) of the Patents Act, 1970.
- 18 Microsoft Corporation v. Ms. K. Mayuri and Ors. 2007 (35) PTC 415 (Del).
- 19 Protection is also extended under the Berne Convention.
- 20 Section 2(c) (o) of the Act defines the term "literary work" to include computer programmes.
- 21 http://www.wipo.int/sme/en/documents/software_patents.htm-as visited on October 21, 2010.
- 22 The exception is in the case of the rights of fair use for academic purposes, news reporting etc.
- 23 Section 52(AA) of the Act.
- 24 The patent manual of 2008 is based on the practice and procedure followed by Patent Office for processing patent applications in India and is available at the official website of the Indian Patent Office at http://ipindia.nic.in/ipr/patent/DraftPatent_Manual_2008.pdf - visited on Ocotber 22, 2010. This is a draft manual and does not have an effect of law.

26 http://www.sarai.net/research/knowledgeculture/critical-public-legal-resources/whysoftwarepatentsareharmful.pdf- visited on October 21, 2010.

²⁵ *Ibid* at 24.