COPYRIGHT PROTECTION FOR COMPUTER PROGRAMS: WALKING ON ONE LEG?

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I Introduction

COMPLEX TECHNOLOGIES have often relied on changing legal interpretations to suit themselves into the intellectual property framework. These have presented difficulties in determining the nature and extent of rights granted *vis-à-vis* the resolve of keeping intact the doctrinal foundations. Computer programs are inherently born with such difficulties. Much has been written and many pixels have already been burnt over attempts to solve these conceptual and pragmatic difficulties perpetrated by copyright protection for computer programs. Certain questions in the Indian context still remain to be answered. However, this article is not another attempt to add to the existing thoughts in this area, but to ignite fresh thoughts and think differently using well-established norms of logic and legal reasoning.

As computer programs[1] *prima-facie* compose of expressions in terms of written code, they came to be extensively protected under copyright as forming part of the category of literary works. Problems started cropping in after copyright protection available for literal codes could

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1. The computer's operation, which is controlled by a program or software (as it is popularly called), endues a computer to handle and control information flow. Computer program is a set of instructions written by a human in some programming language that the computer "understands" (or can be taught to "understand"). The phrase "computer software" is commonly used to describe computer program and adjunct materials. Many writers have expressed a view that both are synonyms, but in essence there is some appreciable difference. Software is more exhaustive and includes data, documents and ancillary tools that may be required as raw materials for obtaining a specific object of program. This does not represent the program in itself and hence legal equations change. It is more so because data loaded in a computer program may have different treatment in IP protection. In this work computer program/software is used in the pure sense of the term. See generally, Nelson Moskowitz, "The Metamorphosis of Software Related Invention Patentability", 3 *Computer Law Journal*.

be easily defeated because similar programs could be generated by extensive variations in such literal codes. Thus programs came to be judged for non-literal infringement of copyright thereby invoking the traditional doctrine of idea-expression dichotomy.[2] The doctrine simply states that only expressions are protected under copyright and not the idea.[3] This presented difficulties in determining what constituted 'ideas' and 'expressions' in a given program. Any minor possibility of covering functionality of the program would mean covering idea,[4] which the copyright law does not protect. However, after initial slips, the courts in the US and UK have successfully come up with tests that are technically sophisticated and hence the idea/expression dichotomy in the context of computer program protection has been thoughtfully deciphered.[5]

India also recognizes the coherent doctrine of idea/expression dichotomy. In fact, the Supreme Court of India in one of its pronouncement has clearly outlined the tests to be followed in resolving such an inquiry, although not in the context of computer program infringement.[6] Hence, what remains to be seen is the response the Indian courts would offer considering the doctrinal and technical difficulties in computer program infringement analysis. The question is whether the existing test pronounced by the Supreme Court could resolve the difficulties posed by this new technology in determining the non-literal

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2. This was been well elucidated in the context of non-literal infringement in a play by Learned Hand J of United States Court in *Nichols* v. *Universal Pictures*, 45 F.2d 119 (Fed. Cir. 1930). The question was whether a motion picture infringed copyright in an earlier well-known play. The court said: "It is of course essential to any literary property, whether at common law or under the statute, that the right cannot be limited literally to the text, else a plagiarist would escape by immaterial variations." However, despite the similarity of the plots and the fact that the film producer knew the plaintiff's play, the court found no infringement of copyright. Also see, *R.G. Anand* v. *Delux Films Ltd,* PTC (Supp) (1) 802 (SC), which was a similar case of first impression before the Indian Supreme Court.

3. For details, see text accompanying *infra* notes 9-13.

4. Functionality in a computer program is reflective of the program's behaviour. The problem with computer programs is that the codes for which copyright protection extends, represents an inner character of functionality, which is indeed valuable and definitely prone to copying. However, this functionality underlying the program is also assertive of the fact that they represent how the program works and not what the program is. Copyright assures protection for something tangible (the fixation requirement), which is only limited to what the program is *viz.*, for the literary codes. The functionality in a program travels into the domain of abstract ideas and is hence not protected.

5. *Computer Associates International* v. *Altai*, 982 F.2d 693 (Fed. Cir. 1992); *Lotus Development Corporation* v. *Borland International Inc*. 49 F.3d 807 (Fed. Cir. 1995); *Navitaire Inc* v. *EasyJet Airline Co. and another*, 2004 [EWHC] 1725 (Ch).

6. *R. G. Anand* v. *Delux Films and Ors, supra* note 2.

infringement of computer programs? Would it follow the doctrinally coherent and technically sound tests laid down in foreign jurisdictions?

As functionality is not protected under copyright, computer programs which *de-facto* covers functionality must be allowed for analyzing their underlying idea. Considering the fact that object code[7] (which cannot be understood by human beings) is protected through copyright, determining ideas/functions without incurring the guilt of piracy is impossible. Hence the Copyright Act, 1957, itself provides for certain exceptions in the nature of decompilation right and other exclusions.[8] Interoperability of computer programs is a major concern in this area and is, therefore, allowed. However, reverse engineering must also be specifically permissible for generating competing programs (which may not require interoperability) because the functionality/idea, which the copyright scheme does not protect, gets *de-facto* protection. It appears that the current provisions do not explicitly provide for it. Further, a certain interpretation of the current provisions would lead one to wrongly conclude that a contract is *sine qua non* for reverse engineering, in which case, the whole idea of providing such "fair use" exceptions becomes redundant. Therefore, only a thorough examination of the existing reverse engineering provisions will reveal more such flaws, especially in the light of better flexibilities provided in the US and the EU jurisdictions, which presuppose the concerns over growth of their domestic software industry.

II Dichotomy in copyright

The unprotectable nature of an idea is "trait to copyright law", and its distinction from expression is "most difficult to ascertain".[9] The idea-expression dichotomy is at the core of copyright law and it developed as a means for putting limitations over functional claims of copyrighted

7. The electronic computer is a creature of electro-magnetism; hence they are inherently bi-stable. In other words, they can exist only in two modes either as on/off or positive/negative. For this reason the computer can process instructions that are in binary system of 0's and 1's; popularly known as machine language. All the internal arithmetic operations are performed in binary system. See generally, David Bender, *Computer Law*, Volume 1, Lexis-Nexis, New York 2.11. (2002).

8. S. 52(1) (ab) (ac) (ad). For details, see text accompanying *infra* notes 138-147.

9. Stanley Lai, *The Copyright Protection of Computer Software in United Kingdom* 21 (2000). The concept of idea/expression dichotomy basically means that monopoly through copyright can only be provided for original expression of ideas and not for the ideas in itself, how so original it may be. This concept is advantageous in balancing the public interest in free flow of ideas against the need to provide rewards and incentives for creative works.

works. The United States Supreme Court in *Baker* v. *Selden*,[10] as early as in 1879, made this distinction thus: [11]

> The very object of publishing a book on science or the useful arts is to communicate to the world the useful knowledge which it contains. But this object would be frustrated if the knowledge could not be used without incurring the guilt of piracy of the book. And where the art it teaches cannot be used without employing the methods and diagrams used to illustrate the book, or such as are similar to them, such methods and diagrams are to be considered as necessary incidents to the art, and given therewith to the public; not given for the purpose of publication in other works explanatory of the art, but for the purpose of practical application.

Clearly, the court meant that although the book could be copyrighted, there could be no copyright in the art or the idea itself, *i.e*. the bookkeeping system that was described. The decision also postulates the doctrine of merger, wherein if a given idea can be expressed in only one or a few given ways, the expression of the idea and the idea itself 'merge', thereby excluding copyright protection for the merger.

Another doctrine, which finds place in the copyright philosophy, is '*scenes-a -faire*', which states that where there are certain well-known and standard expressions of an idea that reside in the public domain, these are excluded from the realm of copyright.[12] These dichotomies have thus transformed into a considerably acquiescent tool enabling the courts to strike a balance between rewarding and encouraging creative contribution and protecting the interest of the public in using aspects of such contributions in relation to different works, including computer programs.[13]

Determination of non-literal infringement: The occidental coherence

Probably, the thin line between unprotectable ideas and protectable expressions has generated lot of debate like never before among the

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10. 101 US 99 (1879). In this case Selden wrote and registered the copyright for a book explaining how to apply principles of double-entry book keeping. Baker produced some forms using same principle but with different headings. Selden claimed that his copyright in the book was violated.

11. *Id.* at.103.

12. This doctrine has traditionally been used in relation to works with factual or historical themes. See generally, Julian Velasco, "The Copyrightability of Non-Literal Elements of Computer Programs", 94 *Colum L Rev* 254 (1994). Also see, *Hoeling* v. *Universal City Studios*, 618 F.2d 972 (Fed. Cir. 1980).

13. *Supra* note 9.

legal and the industrial circles.[14] For more than a decade, the courts in the US and UK have often confused and contradicted over the appropriate test to determine infringement aspects in a computer program. However, the deliberations seem to have finally culminated with the advent of a more sophisticated and largely appreciated test laid down by the United States Court for the Second Circuit in *Computer Associates International* v. *Altai*.[15] Hence, it would be more enlightening to examine in sufficient detail the tests laid down in the US and UK jurisdictions and then see as to how the Indian courts will appreciate the issue considering the dearth of case law in this field. Interestingly, few of the earlier cases decided by the US courts had to initially answer a broader question as to whether copyright protection should at all be extended to non-literal aspects of a computer program. This was answered in affirmative as a user interface,[16] structure sequence and organization (SSO) of a computer was susceptible of copying.

The *Whelan* rule: One idea in a program?

In *Whelan Associates, Inc.* v. *Jaslow Dental Laboratory, Inc.*,[17] the third circuit became the first among the other circuits to grapple with the issue of whether the underlying structure of a computer program was copyrightable.[18] The court first affirmatively answered that these

14. The reason is precisely because it is very difficult to decide in a case in hand to place an exact demarcation between idea and expression. One can really with great difficulty know from where the idea starts and expression ends and *vice versa*. Learned Hand J indeed expressed this problem with greater clarity in *Nichols* v. *Universal Pictures, supra* note 2.

15. 982 F.2d 693 (Fed. Cir. 1992).

16. User interface is a means by which a user directly interacts with a particular application in a program and is among the most influential factors governing customer's decision to buy. It refers to both the appearance of the screens (*i.e.* the arrangement of text and graphical symbols) and the content and organization of the command set (e.g. the hierarchy of commands in set menus). No wonder the copyright protection of user interfaces is highly litigated. They are known to be 'face and voice' of a program and are notorious for having influenced even the judges in applying the 'look and feel' test. See, *Lotus Development Corp*., v. *Paperback Software International*, 740 F. Supp 37 (D Mass. 1990).

17. 797 F. 2d 1222 (Fed. Cir. 1986).

18. *Ibid.* The dispute concerned two competing programs for the management of dental laboratories called Dentalab and Dentacom. While, the former was created by Whelan and marketed by Jaslow Inc. the latter was created as well as marketed by Whelan. It was shown that the latter program was written in a different language and for a different computer system. Thus the issue was not about literal copying but certain file structures, screen outputs of the programs which were virtually identical. Hence, the issue was simply whether copying of a programs structure, sequence and organization constituted non-literal copying of a program.

non-literal elements were copyrightable.[19] Drawing its inspiration from *Baker* v. *Selden*,[20] the court proceeded to develop a test based on idea-expression dichotomy. It categorically stated that:[21]

> The line between idea and expression may be drawn with reference to the end sought to be achieved by the work in question. In other words, *the purpose or function of a utilitarian work would be the works idea, and everything that is not necessary to that purpose or function would be part of the expression of the idea*... where there are various means of achieving the desired purpose... the particular means is not necessary to the purpose; hence there is expression, not idea.

Thus, the court in this case held that in a computer program, the function or purpose of the program would be idea and everything else was part of expression, which was therefore copyrightable.[22] It is albeit true that the program's purpose is an idea, but this should not mean that rest of the program elements form part of expressions. The *Whelan* decision lacks the sophistication and subtleties needed to answer questions on computer program infringement aspects since it projects a hangover of precedents on non-literal infringement answered in a different context. It is more simplistic as it assumes that only one idea, in copyright law terms, underlies any computer program and once a separable idea can be identified, everything else must be expression.[23] This unrealistic notion of the program's idea has a potential to cover ideas that are present at different levels in a whole program and is thus overprotective.[24] Since whatever is not idea is protectable expression,

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19. *Id*. at 1234. The court gave an illustration by stating that one can violate the copyright of a play or book by copying its plot or plot devices. Also see, *id.* at 1237, where it said that the goal of public policy in promoting useful arts and science compels it to propose a rule which allows copyright protection beyond the literal computer code. It assumed that such a rule would provide proper incentive for programmers by protecting their most valuable efforts, while not giving them an iron grip over development of new computer devices that accomplish the same end.

20. For details, see *supra* note 10.

21. *Supra* note 17 at 1236. (emphasis added).

22. *Id.* at 1238. According to the court, conclusion was that the concept of having a program for managing the dental lab would be the idea, and, therefore, beyond the scope of copyright. The structure of the program would be protected expression.

23. *Supra* note 12 at 261.

24. Randall Davis, "The Nature of Software and its Consequences for Establishing and Evaluating Similarity", 5 *Software Law Journal* 304-305(1992). In any program of sufficient magnitude, the common practice prevailing in the industry is to break down the program into sub-programs or sub-routines. These 'subroutines,' which also called 'procedures' in technical sense, are basis to the concept of program

the court wrongly construed the programs idea even without a slight thought of defining the idea with specificity. The effect in real terms would be that a competing product having same functional attributes would be difficult to create.[25]

The *Paperback* approach: Protection of user interfaces

A different approach to detect infringement in cases of non-literal copying was revealed in *Lotus Development Corp.* v. *Paperback Software International.*[26] The court initially answered in affirmative the question pertaining to user interface being a subject matter of copyright. Following *Whelan,* it decided that computer programs like any other works were susceptible of non-literal copying. The court developed a three-tier test again based on the idea-expression dichotomy. The first step involved the determination of distinction between idea-expression within the program by placing reliance on suggestions of the counsel or on those that the court may conceive, *along the scale from the most generalized conception to the most particularized,* and hence choose some formulation distinguishing idea and expression.[27] The second step involves focusing upon whether an alleged expression of the idea is limited to elements essential to expression of that idea (or is one of the few ways of expressing the idea) or instead includes identifiable elements

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construction. Subroutines are no more than instructions at the lowest level of a large defined problem that work together to bring a certain result. Conveniently, the overall task is broken down in many smaller tasks and hence the notion conveyed is that a program may contain many subprograms, sub-subprograms etc…. However, there is no material difference between them barring the relationship flanked by them, wherein they may be found at the same or different levels of abstraction. That is to say, subprograms are programs; hence programs are built from programs. Thus it makes good technical sense to conclude that a program of sufficient magnitude may contain more than one idea underlying it.

25. *Supra* note 12 at. 261. Some critics also point that the "structure, sequence and organization" are more akin to idea than expression and hence if protected would be overprotective leading to obstacle in competing program development.

26. 740 F. Supp. 37 (D Mass. 1990). Recognizing the market for electronic spreadsheet programs, Lotus developed its own spreadsheet program called 1-2-3, which soon became very successful and thus gained *de-facto* market standard. Paperback developed a "work-alike" called VP-Planner that was compatible to Lotus 1-2-3. The menu command hierarchy was same as that of Lotus 1-2-3. Thus Paperback was sued for infringing the user-interface by Lotus.

27. *Id.* at 60. This step specifically puts forward notions developed by Learned Hand J's formulation in *Nichols* v. *Universal Pictures Corp.*, *supra* note 2, wherein it involves separating the various elements of a program, moving from the general to the particular, for the purpose of distinguishing between general ideas from particularized expression. Also see, *supra* note 2 for other details.

of expression not essential to every expression of that idea.[28] This step incorporates the traditional doctrine of merger and *scenes a faire*, the application of which in the instant case lead to rejection of certain specific two line cursor menus.[29] However, the overall structure was held to be expression since it could be expressed in many other ways.[30] The last and final step focuses on whether there is substantial similarity (not merely in quantum but also in quality) between the copyrighted work and the alleged infringed work.[31]

The main criticism leveled against this decision is on the question of protecting user interface rather than the actual test developed. Arguments based on non-copyrightability of "useful article" doctrine were mercilessly rejected by the court stating that elements of expression even if embodied in useful articles were copyrightable if capable of identification and recognition independently of the functional ideas that makes it so.[32] The court also concluded that the expediency caused by desire to have compatibility could not override the interests of authors and thus also rejected arguments based on *de-facto* standards and interoperability constraints.[33] This case also failed to appreciate the technical concept of programs and thus went all the way to declare that a line has to be drawn between unprotectable ideas and protectable expression, consequently affirming protection of user interfaces. Of course, as compared to *Whelan* this test was more advanced, for it accepted the notion that a program may have many ideas, but it stopped there without stating that such idea-expression dichotomy may be present at each level of abstraction in a program of sufficient magnitude.

The *Altai* sophistication: Towards a new rationality

The deficiency in *Paperback* came to be cured in *Computer Associates International* v. *Altai*,[34] decided by the US Federal Court of

28. *Id.* at 61.
29. *Id.* at 65.
30. *Id.* at.68.
31. *Id.* at 61.
32. *Id.* at 58.
33. *Id.* at 69.
34. 982 F.2d 693 (Fed. Cir. 1992). Computer Associates marketed a CA-SHEDULER (a job scheduling program), and it contained a sub-program called as ADAPTER, that worked as a common system interface which allowed the use of multiple operating systems and to switch between them with the same application software. Altai approached an employee of CA and persuaded him to work for them. The employee knew several aspects of ADAPTER program and thus used around 30% of it in the new program called OSCAR 3.4, developed at Altai. Altai, watchful of a lawsuit by CA dropped the 3.4 version and brought out a new version called OSACR 3.5 wherein it used the clean room procedure.

Second Circuit. Applying the substantial similarity test as a requirement for actual copying the court affirmed that substantial similarity could possibly exist with respect to the non-literal structure of the two programs.[35] The court in this case expressly rejected the *Whelan* rule describing it as conceptually overbroad and simplistic.[36] It said that that the test laid down in *Whelan* was "descriptively inadequate" and "flawed understanding of the program's method of operation", due to conclusions drawn in that case that the program's 'purpose' is the only unprotectable idea and rest, the expression.[37] The court again based on the idea expression-dichotomy and furthering the *Paperback* test, evolved a three-stage test known as 'Abstraction-Filtration-Comparison' (AFC) test.[38]

The abstraction test, developed by Learned Hand J in *Nichols*[39] for detecting non-literal infringement of literary works was applied to computer programs to separate the various elements in an order of increasing generality, moving from object code to source code to more abstract elements to the general outline of the program, in a manner resembling reverse engineering.[40] Secondly, the court proposed a filtration stage, which involves examining the structural components of the programs at each level of abstraction so as to separate protectable expression from non-protectable idea, dictated by the statutory idea-expression dichotomy.[41] It identified few categories of unprotectable elements. Elements dictated by efficiency were not protected since they turn out to be the only way to express a particular idea. Here the merger doctrine is applied because protection of expression cannot be granted

35. *Id.* at 702. Such a conclusion was drawn on the basis of CONTU report (which stated non-literal structure of a literary work could be protected) and the US Congress's subsequent affirmation that computer programs constituted literary work under US Copyright Act.

36. *Id.* at 705-706.

37. *Id.* at 705. It was noted that the ultimate function of a program is the interaction of its subroutine and that each subroutine is a program by itself and may have its own idea.

38. *Id.* at 706-711.

39. See *supra* note 2 &27.

40. *Supra* note 34 at 707. The court stated, "At the lowest level of abstraction, a computer program may be thought of in its entirety as a set of instruction organized into a hierarchy of modules. At a higher level of abstraction, the instructions in the lowest level module may be replaced conceptually by the functions of those modules. At progressively higher levels of abstraction, the functions of higher level modules conceptually replace the implementations of those modules and instructions, until finally one is left with nothing but the ultimate function of the program… A program has a structure at every level of abstraction at which it is viewed. At low levels of abstraction, a program's structure may be quite complex; at the highest level it is trivial." For details on reverse engineering, see part IV of this paper.

41. *Ibid.*

without monopolizing the idea.[42] This means that if some particular way of doing something meets the user's needs in a most efficient manner, than it cannot be protected.[43] Since every programmer must consider efficiency concerns, efficient structuring cannot prove to be an act of copying either.[44] Elements dictated by external factors *viz*. historical facts, factual data etc… are not protected because the doctrine of *scenes-a-faire* stands in the way of protecting them.[45] There were certain requirements external to the program that should be excluded from the scope of protection in that they circumscribe the programmer's liberty of choice.[46] Also excluded from protection are 'expressions' that are already part of the public domain since these are not original and are, therefore, not subject matter of copyright.[47] The final step that involved the substantial similarity test, according to the court requires a comparison as to whether the defendant had copied any remaining expressive parts of the plaintiff's program.[48] These "golden nuggets" (remaining part of expressions after the abstraction and filtration test) are valuable in determining the infringement in case of programs.

The *Altai* decision is important in several respects as it refined the *Paperback* test and for expressly rejecting *Whelan,* which was decided in ignorance of program technology. *Altai* decision has largely been appreciated for its coherent approach in deducing an appropriate infringement test for technically complex program dynamics.[49] What should, however, be noted here is the overly broad criticisms leveled by ultra protectionists against *Altai* being too much narrow in scope to protect programs. Such critics have charged *Altai* for being under protective of programs structure and have dubbed it as a form of *sui-*

42. Josef Drexl, *What is Protected in a Computer Program: Copyright Protection in United States and Europe*, 15 IIC Studies Munich 25 (1994).

43. Arjun Krishnan, "Testing Copyright Protection and Infringement in Non-Literal Elements of Computer Programs" 10 *J Intellec Prop Rights* 12 (2005). In case of computer programs it may involve conceptualizing high powered mathematical computations, which only means that a program containing highly efficient computations are more approximate to ideas involved in a particular aspect of program's structure.

44. *Supra* note 12 at 273.

45. *Ibid.*

46. *Supra* note 34 at 709. The court acknowledged a few of them, *i.e.*, the mechanical specifications of the computer on which a particular program is intended to run, compatibility requirements of other programs with which a program is designed to run in conjunction, computer manufacturer's design standards, demands of the industry being served and widely accepted programming practices within the computer industry.

47. *Supra* note 43 at 13.

48. *Supra* note 34 at 710.

49. *Supra* note 12 at 274-281.

generis copyright.[50] They fear that *Altai's* 'filtration stage' may have all probabilities of undermining and eliminating even the protectable elements and may thus produce wrong inferences in determining infringement.[51] However, this criticism holds no water because the *Altai* test is quite coherent in categorizing tasks into simple steps. In such cases the decision maker rather than the test is at fault. Another criticism, which is unsuccessfully put forth, is that *'efficiency demands of programmers'* are not valid defenses under the copyright scheme.[52] But such notions can hardly be accepted if the doctrine of merger, which has strong traditional basis in the copyright law, is taken in right perspective. Even expediency in the software industry demands that certain elements in a program that are dictated by functional efficiency are ought to be beyond the protective coverage of copyright.[53]

Developments following *Altai*: The rationality prevails

The AFC test of *Altai* was so well defined a test that it ensured technically complex programs an adequate degree of protection equally advocating for a competitive framework. Soon to be seen was *Lotus Development Corporation* v. *Borland International Inc*.,[54] which firmly tested the US position on protection of user interfaces. This was the case of first impression in the first federal circuit. It exhaustively discussed the propositions of idea-expression dichotomy and merger doctrines as pronounced in *Baker* and *Altai*. It came to a conclusion that the Lotus menu command hierarchy was a "method of operation" under section 102(b) of 17 USC.[55] The court noted that even while the expressions of the Lotus menu command structure may be original, it

50. *Supra* note 43 at 13. Opted citation from, Clapes Anthony L (*et. Al.*), "Revenge of the Luddites: A Closer Look at *Computer Associates* v. *Altai*" *Computer Lawyer* 11 (1992).

51. *Ibid.*

52. *Ibid.* Critics point out that "efficiency concerns" have no mandate in the statute and hence they are created exceptions. However, they fail to look at the issue from a doctrinal perspective, which have since long recognized these exceptions as forming fundamental concepts in copyright protection.

53. *Ibid.*

54. 49 F.3d 807 (Fed. Cir. 1995).

55. *Id.* at 813. In the words of the court, "We think that "method of operation" as that term is used in § 102(b), refers to the means by which a person operates something, whether it be a car, a food processor, or a computer. Thus a text describing how to operate something would not extend copyright protection to the method of operation itself; other people would be free to employ that method and to describe it in their own words. Similarly, if a new method of operation is used rather than described, other people would still be free to employ or describe that method".

was not protectable since the defendants would be barred from building on the idea that was expressed in the plaintiff's menu command.[56] In other words, the court applied the merger doctrine as enunciated in prior pronouncements to keep functional user interfaces out of the copyright domain. Ever since then, programmers are exploring other options to protect the valuable functional user interfaces, mainly through patents.

The more sophisticated *Altai* test has found acceptance in many jurisdictions beyond the second circuit in the US.[57] Although several courts choose to follow the dictum of *Altai,* some others choose to follow a combination of *Whelan* and *Altai* and found rationale for doing so till a US Supreme Court's definitive verdict came out.[58] A compilation limb was added, thus modifying the *Altai* test to overcome the critics advocating stronger protection under copyright.[59] But a major alteration to the judiciousness presented by *Altai* is not favored since it may swing the pendulum too far to recall.[60] Moreover, the door for any such judicial fiat appears to be closed given that an equally divided US Supreme Court affirmed the judgment of the United States Court of Appeals for the First Circuit in *Lotus Development Corporation* v. *Borland International Inc.*[61] Moreover, bearing in mind the resounding silence of the US Supreme Court and lack of consensus over this issue for more than fourteen years, it can safely be presumed that industry could live and grow with the AFC test of *Altai*.

Across the Atlantic: Twiddling around *Altai*?

The position in the UK not too long in history, seems to be favouring coherence but for a few successful attempts in camouflaging the celebrated idea-expression dichotomy. Two cases have followed two

56. *Ibid.*

57. See *CMAX/Cleveland, Inc.,* 804 F. Supp. 337 (M.D Ga. 1992); *Autoskill Inc.,* v. *National Educational Support System.,* 793 F. Supp. 1557 (D.N.M 1992). Also followed in *Engineering Dynamics Corp* v. *Structural Software,* 26 F. 3d 1335 (Fed. Cir. 1994); *Apple Computers* v. *Microsoft Corp,* 35 F. 3d. 1435; *Sega* v. *Accolade,* 997 F. 2d 1510 (Fed. Cir. 1993); *Lotus* v. *Borland,* 49 F. 3d 807 (Fed. Cir. 1995).

58. *Gates Rubber Co.* v. *Bando American, Inc.,* 798 F. Supp. 1499 (Fed. Cir. 1993).

59. *Softel* v. *Dragon Medical & Scientific Communications Inc.,* 118 F.3d 955 (Fed. Cir. 1997). Under this approach, a combination of various elements individually unprotectable, after the filtration test of *Altai,* could be protected. See generally *supra* note 12 at 288-289.

60. *Supra* note 12 at 288-289.

61. 116 S. Ct. 804 (1996).

different approaches to the same problem that goes to the roots of copyright law itself. In *John Richardson Computers* v. *Flanders*,[62] the court followed an approach resembling *Altai's* AFC test with some modifications and endorsed its rationality, thanks to the US courts. However, in *Ibcos Computers* v. *Barclays Mercantile Finance*,[63] the court held that the American case law based on idea-expression dichotomy was not akin to the UK copyright system. Even the larger question whether non-literal elements of a computer program are protected under copyright has been answered in affirmative but for a recent decision of the chancellery court in *Navitaire Inc* v. *EasyJet Airline Co. and another*,[64] which expressly rejected copyright protection for functional user interfaces.

In *John Richardson*,[65] the court clearly agreed with the need to work on the nuances of determining idea-expression dichotomy in protecting non-literal elements of the program. The court imported AFC test of *Altai* stating, "…. it would be right to adopt a similar approach in England".[66] The court, however, refused to apply the abstraction stage as suggested in *Altai*.[67] The court without dissecting the program into levels of abstraction asked the question whether the program as a whole is entitled to copyright.[68] It then decided whether any similarity attributable to copying, found in the defendant's program, amounted to substantial copying of plaintiff's program. Reliance was placed on the decision of House of Lords in *Ladbroke (Football) Ltd* v. *William Hill (Football) Ltd*,[69] wherein the concept of protecting works as a whole, if original, was evolved. Further, in determining substantial similarity the 'filtration test' as the one in *Altai's* was proposed. The similarities were categorized into similarities arising out of copying substantial part; similarities as a result of copying but not forming substantial part; similarities which may be result of copying but still did not by themselves formed copying of substantial part of the plaintiff's program; and similarities not as a result of copying.[70] The final stage involved comparing to see whether there had been substantial copying among the identified categories of similarities. Even while this test is not very strict as that of *Altai*, but it has gained the reputation of being the first

62. [1993] FSR 497.
63. [1994] FSR 275.
64. 2004 [EWHC] 1725 (Ch).
65. *Supra* note 62.
66. *Id.* at 527.
67. *Ibid.*
68. *Ibid.*
69. (1964)1 All ER 465.
70 *Supra* note 62 at 558.

case in the UK to put some 'limiting analysis' in determining non-literal infringement of computer programs.[71] However, this case is not eventually free from evils. Critics point out that by refusing to apply the abstraction stage, the court has relied on something like a "look and feel" test. It is feared that such an understanding would lay a wrong precedent as it has a potential to cover ideas at different levels in a program. But as the court specifically circumvented the abstraction stage of *Altai*, only based on the fact and not law, it is expected that future decisions would apply *Altai* full as also partially proposed in this case.[72]

In *Ibcos* case,[73] the court held that not only there was copyright in the individual programs, but also in the compilation as a whole. While the allegation was one of literal copying, the court grabbed an opportunity to make some remarks on the issue of non-literal copying, by way of *obiter*.[74] It further went on to say that the idea-expression dichotomy had not been expressly recognized in the UK as in the US and as such it was not expression that was protected but 'detailed ideas'.[75] This was not the first time where the idea-expression dichotomy was at crossroads. Some English commentators have placed reliance on the CDPA itself, which states that copyright subsists only in original work, and infringement occurs when there is substantial taking of such 'original work'.[76] It thus appears that the meaning attached to the term 'original work' by the UK commentators leans in favor of protecting original ideas, which is an erroneous understanding of copyright's underlying doctrinal principles. These commentators verily conclude that idea patterns and compilations original enough to constitute original works

71. *Supra* note 9 at 33. The test also factually did not apply the *Altai's* filtration stage in full. The full application of filtration stage would have assured that the test adopted here could not lead to overprotection since vital elements *viz.*, efficiency concerns do not form part of substantial similarity and may thus get into the 'golden nuggets of expression' which are ready for comparison. Additional doctrines of merger and *scenes-a-faire* can be a further limitation if the protection is getting extremely overbroad. Thus this case is somewhere near *Altai* endorsing its sophistication and rationality although reflective of a typical English approach.

72. *Ibid.*

73. *Supra* note 63.

74. Daniel J.M. Attridge, "Copyright Protection for Computer Programs" (2000) 22 *EIPR.* 563 at 566.

75. S. 120(b) of the US Copyright Act specifically provides for such a dichotomy. The judge refused to take note of the same presumably because the CDPA 1988 was not explicit of it. The judge said: "As I have said, United Kingdom copyright cannot prevent the copying of a mere general idea but can protect the copying of a detailed idea. See *supra* note 63 at 302.

76. See generally, Hugh Laddie (*et. al.*), *Modern Law of Copyrights and Design and Trademarks* 101 (2000).

are protected as such.[77] Thus, the court in the instant case found all reasons to arrive at different conclusions although it is quite unworthy of being commended as a healthy precedent with any better rationale. The test for 'substantial infringement' called for evidences on "over borrowing" of the skill, labour and judgment that went into the work.[78] The court refused to adopt the *Altai* approach to identify the 'golden nuggets of expression' stating that it would unduly complicate the matters.[79] But such an understanding of the approach towards detecting non-literal infringement is overly broad and vague, especially in cases of determining infringement of computer programs and is thus overprotective.[80] On the issue of merger, the judge opined that copyright would be presumed to subsist in the program and a subsequent subjective test should determine whether there has been substantial copying. This only meant that expressions merged with ideas were protected *ab-initio*, and would be compared for detecting infringement. Critics fear that this is in prejudice to the inquiry that the US case of *Borland* raises.[81] Further, the question whether or not the idea-expression dichotomy is recognized under the English law has diluted considering the express provisions recognizing such a dichotomy in TRIPS and WCT, by acceding to which the English jurisdiction can have no contrary mandate.[82]

In *Cantor Fitzgerald* v. *Tradition*,[83] although approving the *Ibcos* approach, it was held that the measure of substantial similarity used was inappropriate as it carried the risk of applying principles developed in the context of other literary works to the more complex computer programs possessing functional attributes. The court held that there could

77. *Ibid.* It appears that such an understanding of the idea-expression dichotomy occurs when they are both viewed in the same continuum rather than keeping them separately in "*terminus ad quem"*. Although the approach is appreciative of being flexible enough to come at balanced conclusions in a given case, putting them in the same continuum will often lead to cycles of overprotection and under protection. While under protection is favored, a slight mishap in striking the right balance would sound dangerous considering its potential to cover abstract ideas. Also see *supra* note 9.

78. *Supra* note 63 at 302.

79. *Ibid.*

80. *Supra* note 74 at 567.

81. *Id*. at 566.

82. Art. 9(2) of TRIPS Agreement states: "Copyright protection shall extend to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such". Art. 2 of the WIPO Copyright Treaty is also explicit of such a dichotomy.

83. [2000] RPC 95. This was an action for infringement of copyright in certain computer programs that formed part of a bond-broking system and for breach of confidence in relation to those programs.

be no copyright in an idea *per se*, but the *originality of idea could have great bearing in determining infringement as more original the idea was, more it was presumed to be susceptible of copying*. This case sounds dangerous as it proposes to a certain extent that there can be copyright in originality of ideas.[84] The decision will send wrong notions that a highly original idea will be more prone to copying than the less original idea, suggesting that establishing infringement in the former case would often be easier.[85] However, considering the mandate of article 1(2) of the EU Software Copyright Directive,[86] which specifically recognizes the idea/expression dichotomy, the notorious propositions laid down by the *Ibcos* and *Cantor Fitzgerald* decision *would be put in cold box as* being unfit for protecting computer programs in the wake of sound doctrinal coherence needed to ensure growth in the software industry. It should be noted that the *Ibcos and Cantor* cases were decided by applying the unamended provisions of CDPA, which was then not backed by the EU Directive.[87]

UK's newfound friend in *Navitaire*: Unveiling the underlying policy

Quite contrary to above cases which sent quivers in the legal and industrial circles, the case of *Navitaire Inc* v. *EasyJet Airline Co. and Anr*.[88] demonstrates that the appropriation of the appearance and functionality of a computer program cannot amount to infringement of any copyright in that program. This is so even if there is copying of operational commands. It was held that the individual command codes (whether of single letters or longer names) did not have the qualities of a literary work indispensable for copyright

84. *Supra* note 74 at 567.

85. *Ibid*.

86. The European Council adopted a Directive in 1991, which makes it mandatory that all member countries follow certain common minimum standards. See, EU020EN Copyright (Computer Programs), Council Directive, 14/05/1991, no. 91/250. *Available at* www.wipo.org/clea/docs_new/en/eu/eu020en.html (last visited 6-6-2006).

87. *Supra* note 74 at 567. Since the cause of action for infringement occurred prior to the directive and the CDPA Amendment, the court applied the old law which is now not the prevailing practice.

88. *Supra* note 64. The case concerned computer program for an airline booking system for use in ticketless transactions, called OpenRes. EasyJet had taken a license of this program from Navitaire's predecessors-in-title, and was also supplied with a program called 'TakeFlight' that provided the web interface to OpenRes. Subsequently, EasyJet and BulletProof (the second defendant) developed an alternative booking system (eRes) and a web interface 'substantially indistinguishable' from Navitaire's OpenRes system. Navitaire claimed for infringement of its copyright in OpenRes and TakeFlight.

protection.[89] The test to be applied was, "... whether a written artifact is to be accorded the status of a copyright work having regard to the kind of skill and labour expended, the nature of copyright protection and its underlying policy."[90] As regards to the interface display screens, it viewed them as tables and was, therefore, found to be literary in character. However, they were considered to be *merely ideas underlying the interfaces of the computer program*, providing the static framework for the display of the dynamic data, which indeed is the task of the program to produce. As such, they were not protected by copyright.[91] Regarding non-literal infringement, the court stated that since the plaintiff's program elements includes commands which cannot be protected through copyright and hence what remained after such screening of unprotectable elements was the underlying 'business function', for which adequate skill was not shown. The court exhorted that to allow the 'business logic/function' of a program to exert a pull on copyright protection would be an unjustifiable extension of copyright protection.

The broader implication of this decision is on the future of protection of user-interfaces in the UK. The authors of programs who look for enhanced protection will have to either go in for a blanket licensing provision prohibiting the use of user-interface in any manner prejudicial to its interest or find out 'more worthy' options to protect functional user interfaces. This clearly indicates the doctrinal coherence has now taken stronger roots in the UK. Even the EU Directive and subsequent amendments to the CDPA are assertive of the same. It has much more to convey the Indian jurisdiction since the English court has not fallen prey to, or has rather been undutiful, to the erroneous interpretations which conflagrated the efficacy of doctrinally coherent idea-expression dichotomy.

III Statutory protection in India

The Copyright Act, 1957 is the law governing copyright protection

89. *Ibid.* Furthermore, the judge held that the complex command codes did not amount to copyright works. (The complex command codes were those with a number of sub-options or choices, governed by the command codes *per se*. They were merely possible user inputs. Even if the commands were embodied in source code, it would not be possible to infringe copyright-programmed 'syntax').

90. *Ibid.*

91. *Ibid.* In contrast, the exercise of *skill and labour* in the arrangement of the database administrator, graphical user interface screens were considered sufficient for them to qualify as artistic works. As such, and in respect of particular icons used within these screens, which were plainly copyright works and had been exactly copied.

in India.[92] It protects 'original' works, tacitly galvanizing the distinction between idea and expression.[93] It extends protection to computer program under the category of literary works provided they constitute 'original literary works'.[94] The word "computer" and "computer program" have been graciously defined.[95] Section 2(ffc) defines computer program thus:

> Computer programmme" 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;

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92. The 1911 Copyright Act (British), with necessary modifications was extended to India by the Indian Copyright Act, 1914. Post independence the copyright law was reenacted in 1957 and the Copyright Act, 1957 was born.

93. Such a distinction is although not expressly provided in Indian Copyright Act as in case of section 102(b) US Copyright Act. However, India being committed to the TRIPS common minimum standard, it is expected that its copyright law be in consonance with Art. 9(2) of TRIPS that provides for such a dichotomy.

94. S. 2(o) of the Copyright Act, 1957, states that, "literary work" includes computer programs, tables and compilation including computer [databases]; s. 13 states that only "original literary works" are protected but nowhere in the Act has originality being defined. Hence the interpretation of the term "original" is at the mercy of Indian courts. Not surprisingly, in *Burlington Home Shopping Pvt. Ltd.*, v. *Rajnish Chibber & Another*, (1996 Patent and Trademark Reporter, 40), the court failed to develop sound notions on originality and concluded that the "compilation of addresses developed by any one devoting *time, money and skill* though the sources may be commonly situated amounts to literary work wherein the author has copyright". It is the law that compilations that are original are protected under literary works. Facts are not original in the sense of copyright and consequently not protected as they are left open in the public domain for commune availability. In case of compilations copyright, the originality is not on the materials but on the manner of organization as on many occasions a separate copyright may exist for the content of the compilation. The courts failed to see whether those contents in the compilation were original and hence were capable of protection under copyright. It instead relied on the heavily discarded *sweat of brow* theory and concluded that the compilation inclusive of the factual contents was protected. This position has long back been rejected in many foreign jurisdictions and the *Feist* case in USA is a classic, which the court missed to follow. See *Feist Publications* v. *Rural Telephone*, 499 US 340 (1991). For a critical comment of the Indian case on originality, see N. S. Gopalakrishnan, "Intellectual Property Laws", XXXII *ASIL* 283 (1996) at 297-300.

95. Computer is defined as including any electronic or similar device having information processing capabilities [S. 2(ffb)]. The wide version is assertion of the fact that the definition should not be outdated with growing technological changes. The Copyright Act, 1957 was amended in 1983 (Act 23 of 1983), to bring in *interalia*, the definitions of "computer" and "computer program". For a detailed analysis on weakness in the Indian Copyright Act, 1957, prior to such amendment, see generally, P.M. Dhar, "Intellectual property in Computer programs", 28 *JILI* 487 (1986) at 491-496.

Firstly, the fact that computer programs are utilitarian works is well imbibed in the definition by using the words "*a set of instructions"* and "*capable of causing a computer to perform a particular task or achieve a particular result."* Secondly, the word "*expressed*" asserts that even while utilitarian works are given protection, such protection only extends to its expression. Thus, the concept of idea-expression dichotomy is advanced.[96] Thirdly, the use of words, "*form"* and "*medium"* makes fixation a requirement.[97] Next, the terms "*words, codes, schemes, or in any other form"* and "*including a machine readable form"* cover protection for both source code and the object code.[98]

As among any other work, copyright in a computer program is infringed by making without authorization a copy of a program or substantial part thereof.[99] The definition of 'computer program' in India can comfortably deal with situations of literal copying.[100] However, as already seen, there can also be non-literal copying which has its origin in infringement of other works, particularly, plays and stories, where courts have expressly stated that copyright protection does not strictly end only to words.[101] Hence, the statutory protection is not explicit of situations of non-literal infringement of computer programs. Thus, the determination of non-literal infringement in any given case would have

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96. For an explanation on idea/expression dichotomy, see text accompanying *supra* notes 9-13.

97. The definition of computer program in India does not require that a computer program must communicate its expression directly to the user. In United States the ninth circuit, in *Apple Computers Inc.* v. *Formula International, Inc*., 775 F.2d 521 (Fed. Cir. 1984), answered the same in non-affirmative.

98. Thus the question initially faced by the courts in the US as to whether copyright extends protection to object code expressed in a electronic circuitry, will not arise in the Indian context. See, *Apple Computer Inc,* v. *Franklin Computer Corp.,* 714 F.2d 1240 (Fed. Cir. 1983), where it was held that computer programs are protected in machine-readable form even when embodied in a ROM. The question whether 'microcode' can be protected as computer program was answered in affirmative in US in *NEC Corp. v. Intel Corp.,* 645F. Supp. 590 (N.D Cal. 1986) and also in *Myland Inc.* v. *IBM,* 746 F. Supp. 520 (ED Pa. 1990).

99. See s. 14 (b) of the Copyright Act, 1957, which provides exclusive rights in exploitation of the work.

100. *Supra* note 9 at 24-25. Literal copying can also be termed as 'naked piracy'. They amount to copyright violations and there is no much difficulty in the test used to find out such copying. By comparing both the versions of text (comparison of quality and not of quantity), either in source or object code, it is possible to detect infringement. Three major points considered here, if answered in affirmative may lead to infringement unless permitted: i) whether copyright subsists in the plaintiff's work; ii) whether the defendant copied in fact; iii) whether the reproduction, if not whole is substantial.

101. See *Nichols* v. *Universal Pictures, supra* note 2. Also see *R.G. Anand* v. *Delux Films and Ors., supra* note 2.

to heavily rely on judicial understanding of the idea-expression dichotomy.

Position in India: Is the dichotomy in threat?

The position in India is shallow due to a dearth of case law rendered either by the Supreme Court of India or the high courts even after two decades of inclusion of the provisions relating to protection of computer programs under the Copyright Act. However, there are few decisions delivered by the courts with reference to determining non-literal infringement in other class of works. One needs to analyse whether these can be accepted as valid precedents in determining infringement aspects of a computer program. Further, there are all possibilities that the Indian courts will fall in line with its counterpart in the US and UK in affirming the existence of copyright in non-literal elements of a computer program.[102] However, on the question of the approach to be followed in determination of infringement, the pulse of the court is hard to feel considering some recent misadventures in interpreting the very roots of the idea/expression dichotomy test. With all probability, the test may reflect the proposition laid down in the seminal decision of the Supreme Court of India in *R.G. Anand,*[103] where the court evolved a test for determining non-literal infringement in case of plays. However, such an exercise does not stop with this. There are few more interpretations of the same proposition laid down by high courts in different cases, which when applied to situations of determining infringement of computer programs may lead to disastrous consequences.

The *R.G. Anand* fiat: India's triumph towards greater coherence

In *R.G. Anand* v. *Delux Films and Ors.*,[104] the Supreme Court of India by placing reliance on various Indian[105] and foreign authorities[106]

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102. The existence of copyright in non-literal elements has been decided in affirmative in relation to other category of works. See for e.g. *R. G. Anand* v. *Delux Films and Ors, supra* note 2.

103. *R. G. Anand* v. *Delux Films and Ors., supra* note 2.

104. *Ibid*. The fact of the dispute related to the violation of the copyright in the play staged by the appellants by the screening of a cinematographic film based on the same theme. The appellant had produced a play named "Hum Hindustani" based on the theme of 'provincialism". The question was whether a subsequent film could infringe copyright in a dramatic work by copying the theme and other non-literal elements of the play.

105. The Indian authorities that were examined were *N. T Raghunathan* v. *All India Reporter Ltd., Bombay,* AIR 1971 Bom 48; C. *Cinniah and Co.* v. *Balraj and Co.* AIR 1961 Mad 111; *K R. Venugopal Sharma* v. *Sangu Ganesan,* 1972 Cr LJ

came to a conclusion that the idea-expression dichotomy was a well established principle in copyright law. It said in plain words that there could be no protection in ideas and only the expressions were protected. Hence, the Indian courts avoided the contradiction that prevailed in the UK courts regarding the existence of idea-expression dichotomy considering the express recognition of it by the Supreme Court. Even while such a dichotomy is not explicitly worded in the Copyright Act, 1957, the court was cautious enough to examine the philosophical and policy roots of copyright scheme and thereby endorsed such a dichotomy.

The best test in the words of the court to determine whether or not there has been a violation of copyright is "to see if the reader, spectator or the viewer after having read or seen both the works is clearly of the opinion and gets an unmistakable impression that the subsequent work appears to be a copy of the original."[107] A layman's interpretation would suggest that the court is endorsing a type of *'look and feel'* approach when it talks about "*impression*", although it has gone to a large extent to identify that there can be various levels of abstraction. Consider the interpretation to the words "*subsequent work appears to be a copy of the original*"; what the court was referring to was definitely the impression one carries after having seen both the *expressions embodied in the work* and not the *ideas* that lay underneath. The words "*copy of original*" reaffirms this commitment of the court to compare between two works *i.e*. expressions strictly. The next test that the court laid down has large positive upshot in the context of protecting computer program when read in conjunction with the above quoted test. The test reads, "Where the theme is the same but is presented and treated differently so that the subsequent work becomes a completely new work, no question of violation of copyright arises".[108] Incase of computer programs, same themes/ideas may be found at different levels of abstraction and presentation of these by using different expressions surely passes the test. Technically speaking, every program using a different language and which is not a verbatim of the allegedly copied work, in

1098; *Mohendra Chandra Nath Gosh* v. *Emperor,* AIR 1928 Cal 359; *Mohini Mohan Singh* v. *Sita Nath Basak,* AIR 1931 Cal 230; *Ramesh Chowdhry* v. *Kh. Ali Md. Nowsheri,* AIR 1965 J&K 101; *S.K Dutt* v. *Law Book Co.* AIR 1954 All 570; *The Daily Calendar Supplying Bureau, Sivakasi* v. *The United Concern,* AIR 1967 Mad 381.

106. The important foreign judgments referred were, *Donoghue* v. *Allied Newspapers,* (1973) 3 All ER 503; *Ladbroke (football) Ltd* v. *William Bill (football) Ltd,* (1964) 1 All ER 465; *Macmillan &Co. Ltd* v. *K. & J Cooper,* 51 I.A 109; *Tate* v. *Fullbrook* 77 L.J.R 577; *Sheldon* v. *Metro-Golden Pictures Corporation,* 81 F2d 40.

107. *R.G. Anand, supra* note 2 at 823.

108. *Ibid.*

the words of the court '*becomes a completely new work'*. Clearly, this statement is not to be presumed lightly considering the notorious factor of 'look and feel', which has a great disadvantage of appropriating ideas that has to be kept within '*terminus ad quem*'. The avowal that the court was strictly referring to expressions in the earlier test is proved when read in conjunction with this test where it specifically made a distinction between ideas, *i.e.*, "*themes"* and expressions, *i.e.*, *"presented and treated differently"*. Hence, what "*impression"* the court was referring to in the earlier test unequivocally means impression of the 'expressions' and not of the 'ideas/themes'. Such a legitimate interpretation of '*impression*' about the '*expression*' makes us verily conclude that the 'abstraction' test as developed in *Nichols* v. *Universal Pictures,*[109] seems to have been tacitly approved by the judge as he applied them to concomitant facts so as to endorse our understanding of it.[110] This seems to be a relieving facet of the decision, so that it could be free from the evil of 'look and feel' in the context of computer programs.

Other test, which is important in this context is where the court specifically approved some sort of filtration to be done when it said that "there can be no copyright in an idea, themes, plots or historical or legendary facts and violation of copyright is confined to form, manner and arrangement and expression of the idea by the author of the copyright work".[111] Clearly, the court meant that these categories should never be taken in determining infringement as the paper has already ascertained the reasons for such exclusion.[112] It also tacitly postulates the doctrine of merger when it endorses a further view that, "where however a apart from the similarities appearing in the two works there are also material and broad dissimilarities which negative the intention to copy the original and *coincidences appearing in the two works are clearly incidental* no infringement of copyright comes in to existence".[113] Here the court is understood to mean that when some expressions that are incidental (merged with the idea) in the original work if also employed in the subsequent "allegedly copied" work, should not form part of infringement

109. See *supra* note 2 and 27.

110. *R.G. Anand, supra* note 2 at 825-826. The court stated that the central idea of the play was provincialism and parochialism. However, he further identified other instances of themes at various levels *viz.,* marriage between families of different states, the boy's coward nature so as not to speak about it with his parents, both lovers entering into a suicide pact, realization of the mistake by their respective parents, the coming back to the lovers and acceptance of their relation by their parents.

111. *Id.* at 823.

112. See part II of this article.

113. *R.G. Anand, supra* note 2 at 823. (emphasis added).

analysis. Again the court has been emphatic on comparing the similarities and dissimilarities in the mode of expression and not of the ideas. Such an interpretation springs from the understanding of meaning attached to '*work*' in the earlier tests. Hence the term '*work*' used in this test must also be strictly construed to mean expressions and not ideas.

Finally, the court in the later part of the judgment for determining substantial copying has tried to compare similarities and dissimilarities in the two works by listing them individually. Here again the court has directed that the comparison must firmly involve appraisal in *mode of expression* of the two works. The test states, "where the same idea is being developed in a different manner, it is manifest that the source being common, similarities are bound to occur**.** *In such a case the Courts should determine whether or not the similarities are on fundamental or substantial aspects of the mode of expression adopted in the copyrighted work.* If the defendant's work is nothing but a literal imitation of the copyrighted work with some variations here and there it would amount to violation of copyright. In other words, in order to be actionable the copy must be a substantial and material one which at once leads to the conclusion that the defendant is guilty of piracy".[114] Here, apart from the explicit articulation of the court to compare *mode of expression*, the court has also moved further to pronounce that violation should be a "literal imitation" with some minor variation. First, by using the phrase "literal imitation" the idea/expression dichotomy has been strongly invoked and in the context of computer programs infringement they mean that functional interfaces do not form part of this "literal imitation". Second, the degree of similarities of 'literal imitation' should not be more than minor variations.

Although the above may not be an approach as the one laid down in *Altai,* it hardly makes some difference as one's basic concern in the computer program context is that what remains after application of the first two tests are definitely the "golden nuggets", *i.e.*, mode of expressions, which are pure and ready for comparison with the allegedly copied expressions. And that is precisely done when this test in *R.G. Anand* is followed intelligently. Hence, if *R.G. Anand* is the "test case" in deciding matters on non-literal infringement of copyright, the subsequent courts have a constitutional obligation to apply it in the sense the Supreme Court preordained it without diluting the standard tests and its illustrious rationale. This is very much the concern because if the subsequent courts do not do that the whole idea of providing adequate protection to computer program is in danger as it could have huge potential to cover ideas, which is very easily executed by the high courts without judicious application of mind.

114. *Ibid.* (emphasis added).

R.G. Anand meets an ill fate: High courts say they know it better!

In *Sulamangalam R. Jayalaksmi and another* v. *Meta Musicals, Chennai and others*,[115] the Madras High Court relied on *R.G. Anand* dictum and concluded that there must be "*sufficient objective similarity"* to constitute infringement. The court referred to the first three of the *R.G. Anand* tests and made an observation without understanding them in full. It appears that the court deported this rationale by understanding of the 'impression' test in total isolation of the expression.[116] The court could not substantiate its notion of *objective similarity*, this surely without proper justification means 'general similarity'. Such simplistic notions of *generality* can engulf the ideas if applied in copyright infringement analysis. It in fact postulates the 'look and feel' test, when it talks about 'generality'. The court failed to make a fine distinction between idea-expression and thus lost somewhere without following the principles of abstraction. This is surely the effect of 'look and feel' of the ideas and not of the expression. It may in the program infringement situation mean, 'the program in general' or 'the program as a whole'. Hence, without specifying definite levels of abstraction, it has potential to cover ideas at different levels in a single program. Hence, the *R.G. Anand* logic is flawed by not reading the tests cumulatively which is no better than interpreting it for all wrong causes. Did *RG. Anand* have that possibility at all? As seen from the detailed analysis of that test, it is clear that such possibility may exist, it may be submited, only by non-application of judicial mind and interpreting them in a more general way without understanding the fine-tuning it did with reference to idea-expression dichotomy in case of non-literal infringement.

In *Raja Pocket Books* v. *Radha Pocket Books*,[117] the Delhi High Court debarred the defendant from use of similar word that titled the comic series. The court repeatedly said that there could be no copyright in ideas but reached wrong conclusions by mixing up trademark philosophy within the copyright scheme. It quoted the decision in *R.G. Anand* and came to a conclusion by applying the 'impression' (of the idea) test. In the words of the court, "not only the theme is the same, though presented slightly and somewhat differently, but the central idea

115. 2000 (20) PTC 681. The dispute related to infringement of copyright in musical work and lyrics that constituted literary work.

116. *Id.* at 692. In the words of the court, "On comparison through display, it is clear that the listener after having listened to both the works would be of the opinion and unmistakable impression that the infringement work appear to be the copyrighted work".

117. 1997 (17) PTC 84. The case involved alleged infringement of the copyright in the plaintiff's comic series "NAGRAJ" by the defendant through another comic series, namely "NAGESH".

remains the same".[118] This is a blatant violation of all healthy interpretations of the *R.G. Anand* test inasmuch as the court has proclaimed that there could be copyright in ideas. How could it at all happen even considering that the court could have misinterpreted the *R.G. Anand ratio*? This court wrongly imported the trademark criterion into the copyright infringement analysis. It viewed that the similarities should be examined from the 'point of ordinary spectator'. It further said that the question has to be approached by applying the 'doctrine of fading memory', *i.e.*, from the point of view of average intelligence having imperfect recollection.[119] Accordingly, the court introduced the trademark concept of deceptive similarity in the copyright paradigm. This proposition sounds dangerous considering the fact that development of competing programs always involves the copying of functional attributes of different programs. Functional attributes are no better than ideas, hence the concept of 'deceptive or confusing similarity' will thoroughly confuse the judge in applying the analogy in program infringement analysis and if so applied will be of disastrous consequences on development of competing programs which always have a potential of being deceptive in its structure sequence and organisation (SOS). This decision if at all be considered as having its roots in *R.G. Anand*, than, it is submitted, it is a wholesome distortion of the precedential value of that decision. Discarding its proposition as lacking copyright's doctrinal coherence would be the only way out to overcome the damage already done.

The most dangerous of all propositions was laid down again by the Delhi High Court in *Anil Gupta and another* v. *Kunal Dasgupta and another*,[120] because it hints that there is copyright in originality of ideas. The court said that in modern days of small screens, the *idea/ concept/script* has a wider potentiality of capitalizing revenue and if it was not protected then in the given case plaintiff could not taste success. The court was hinting that an *idea fledged in adequate detail* is capable

118. *Id*. at 89. The court accepted the plaintiff's argument suggesting that the defendant had copied the theme and concept of the title. The court said that the *central idea* in both the names remains the same.

119. *Ibid.*

120. 2002 (25) PTC 1. The facts revolved around the defendant's alleged appropriation of a concept relating to a reality TV show, with matchmaking as the central theme. The plaintiff's had originally conceived the idea and got it registered as a literary work by adequately putting it in a script format. The defendant knew about the idea of the proposed show under a confidentiality agreement and hence it was alleged that defendant's proposed TV show with the same central theme was in violation of the agreement and amounting to copyright infringement. However, at the same time such information was shared with Doordarshan without any confidentiality agreement. Hence this suit for non-literal infringement came up for hearing.

of registration under the copyright Act.[121] While the court recognized that there exists no copyright in concept *per se*, it failed to apply it in the instant case. As the concept of originality in copyright is on the expression of the concept and not on the concept *per se*, fixation in any medium is an essential requirement, which the plaintiff in this case failed to carry out. Hence, such information could not be protected under copyright and the plaintiff had remedy under different modes of IP protection including confidentiality, the difference that the court failed to appreciate.[122] It also rejected the defendant's argument that there can be no confidential agreement on the concept since such ideas always exist in the public domain for everyone to appropriate.[123] In the instant case, the plaintiff had failed to keep the information in secret and hence, the court by stating that by copyright registration the concept as such was protected from public domain has thoroughly bewildered the doctrinal foundations of copyright with that of confidential information.[124] One of the objective of the copyright law is to bring the information in public domain and not to keep it in secrecy.[125] The facts reveal that defendant in this case had not violated the confidentiality agreement, as the plaintiff himself did not keep information in secret. The underlying economic reasoning has become very visible since the court said that the *defendant cannot be permitted to reap the fruit of labour put in by the plaintiff* because it mattered who went to show up first on the TV.[126] The court was of the view that in such situations *special disability in the field of competition* was needed to ensure that the defendant does not get an unfair start. It stated that the idea of the matchmaking TV show was never in the public domain and hence the defendants could not appropriate the central theme of the show. The *raison d'être* demonstrates the court's impatience in giving the plaintiff

121. *Id.* at 15. It took into consideration that the 'novelty' in the concept of the plaintiff resides in combining the reality T.V show with a subject like match making for the purpose of marriage.

122. N.S Gopalakrishnan, "Intellectual Property Laws", XXXVIII *ASIL* 475 (2002) at 484.

123. *Supra* note 120 at 22-23.

124. This is amply proved by the nature of relief provided by the court. See *supra* note 122 at 485.

125. *Ibid.*

126. *Supra* note 120 at 19. The court said, "the concept developed and evolved by the plaintiff is the result of the work done by the plaintiff upon material which may be available for the use of anybody but what makes it confidential is the fact that the plaintiff has used his brain and thus produced a result in the shape of a concept and if the defendant is allowed to show their own reality show based on the concept originally conceived by the plaintiff, it will be allowing the defendant to use that concept and to reap the fruit of labour of the plaintiff".

a competitive edge without providing justifications under copyright law or law on confidentiality.[127] Even while relying expressly on one of the test laid in the celebrated idea-expression dichotomy decision of *R.G. Anand*, the court failed to gather proper interpretation, and in fact applied it wrongly without any regards to the wordings used, because it meant it to mean similarities in the concepts and not in the mode of expression (even while the *R.G. Anand* test expressly states to mean 'expression'). This sort of reasoning if applied to program infringement analysis will lead to express prohibition on development of competing computer programs as it envisages covering idea behind any work to ensure *special disability in the field of competition.* Hence, any program that is of the same central theme as the one already present would effortlessly be violative. The idea of the TV show is at the most general level, but in case of computer programs there are similar ideas at different levels of a program of sufficient magnitude and the danger of jacketing ideas at different levels is indisputably an outcome. This decision has distorted the application of *R.G. Anand*. Such misadventure attempted has according to the court's own notion of 'originality in concept' no place in any copyright systems of the world. This decision is not just misfit to be applied in program infringement analysis but should be wholesomely discarded for determining infringement of any other category of copyright works. The judgment is *per incurium.*

Finally, nowhere has the situation to filter certain elements being suggested in any of the above precedents except by some reading of *R.G. Anand*. The filtration is the most important of all measures to ensure adequate protection to computer programs. However, the subsequent cases (*i.e.* after *R.G. Anand*) examined in this paper show no direction towards finding out elements to be discerned. Hence, what is realized after detailed examination of the above is that the high court case analogies are not suitable in the light of program complexities. The major cause for concern is that the idea-expression dichotomy has largely remained unchallenged in India, which would have clarified the *R.G. Anand* rationale by the Supreme Court itself. Moreover, there is no case coming from the high court in which the abstraction stage has been explicitly applied. The 'look and feel' approach, which is tacitly applied in major decisions, seems to overshadow. In such a situation one is afraid that the *Altai* rationality of AFC is difficult to be candidly acknowledged considering the habitual hangover in these decisions detecting non-literal infringement in other class of works and also because of the problems caused by erroneously applying *R.G. Anand*. However, considering the fact that the idea-expression has deeper roots in the

127. *Supra* note 122 at 485.

Indian copyright scheme unlike in the UK, there may be little resistance for the application of the *Altai* test if *R.G. Anand* is approved as discussed above. It is more so because it remains "the test" for having an advantage of being more organized, detailed and comprehensive than the other tests for delineating the protectable elements in a computer program.

Hence, it is necessary to look at the issue from a prescriptive angle rather than succumbing and being dutiful to the misguided conclusions arrived at by several high courts, without due application of judicious mind. In other words, irrespective of the earlier treatment of cases relating to non-literal infringement, the court should understand the complexities of the program, the fine sense of balance between competition and protection and should arrive at beneficial conclusions based on the enshrined doctrinal coherence governing the copyright law.

IV Reverse engineering: A case for growth of software industry

The need and its techniques: Why the ultra-protectionists shy away?

Computer programs, which are commercially distributed in object codes (machine readable form), contain ideas embodied in the program. Generally, to maximize the profitability and gain monopoly, a programmer may not be willing to part with such valuable ideas by which he could ensure that a substitute or a better product is not available in the market. By distributing programs in machine-readable form, *de-facto* secrecy could thus be maintained, with a parallel copyright cover protecting such codes. Competitors would then be placed at a disadvantage in knowing ideas underlying the program. Thus, programmers seeking copyright protection must not be allowed to keep the information in secret, as it would destroy the delicate balance underlying the copyright law. A considerable emphasis has hence been placed in the recent years on the extent to which users may gain access to the underlying code of a program through a process called 'reverse engineering'.[128] The laws regarding reverse engineering derive from

128. K.M. Gopakumar, "The Scope of Reverse Engineering of Computer Software Under the Copyright (Amendment) Act, 1999: A Critique" 6 *J Intellec Prop Rights*, 94 (2001) at 95. Reverse engineering prevails in all fields of technology and in the context of computer programs they mean, the process of understanding the functions of a program. It essentially involves starting with a known product and working backward to understand the process that aided in its development. Generally, reverse engineering in the computer industry is performed for the following purposes: 1) to obtain interface specifications necessary for the development of a compatible product (technically called as achieving interoperatibility); 2) to obtain interface specification for developing competing products; 3) to obtain information about the capacity and

trade secret laws, which traditionally allowed competitors to start with the known product and work backward to determine the process used to develop or manufacture the product.[129] In this regard, the Indian Copyright Act, 1957 provides for certain important provisions expressly permitting reverse engineering within a defined ambit.[130] Reverse engineering exceptions are provided for granting access to certain elements, which because of the nature of legal protection would result into infringement unless specifically provided. Through a process called as decompilation/disassembly, the programmer can transform the object code of a program into human-readable form.[131] This involves making of intermediate copies that brings in determination of questions on infringement. Reverse engineering *via* studying available manuals and documents does not pose any copyright problems as such.[132] However, the more "intermediate" techniques involve the reproduction and adaptation rights, and are subject to authorization.[133] Ultra protectionists try to shy away from this and argue that such 'backdoor' techniques do more harm than good because it permits a second comer to create a market substitute and reap the benefits of successful programs after others have incurred the risk and expense of its development.[134] Reverse engineering also reveals a vital fact that innovation in the programming industry is typically incremental thus

performance features of a particular program; 4) to debug and adopt the program for users own environment; 5) to obtain specifications a original owner may reverse engineer a program in cases where the source code is not available directly due to lack/loss of documentation or because the developer of the program being unavailable.

129. S. Carran Daughtrey, "Reverse Engineering of Software for Interoperatibility and Analysis" 47 *Vanderbilt Law Review* 145 (1994) at156.

130. See, s.52 (1) (ab) (ac) (ad) of Copyright Act, 1957.

131. *Supra* note 129 at 151. However, not all techniques of reverse engineering involve decompilation or disassembly. Decompilation is quite opposite to compilation of code. It involves the translation of object code into higher-level language. Disassembly is also same as decompilation but the translation is done from object code to assembly language.

132. *Supra* note 9 at 231. Another method that runs short of infringement problems is reverse engineering through "clean room process". The procedure involves two groups of programmers. The first group reverse engineers the original program by any of the methods (also involving making of intermediate copying) and thus extracts specifications (functions ideas and interfaces) and transmits the specifications (and not the code obtained) to another group. The second group attempts to produce a competing program having similar functional attributes. This two-pronged strategy ensures impossibility of literal copying of the code and creates good legal inference that the final product is not a result of copying.

133. *Supra* note 128 at 97.

134. See generally, Arthur R Miller, "Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?" 106 *Harv L Rev* 978 (1993) at 1026.

strongly advocating for limited exclusive monopoly. Programmers often rely on techniques like these to gain access to the ideas underlying the program and thus further contribute for a cumulative innovation process. The legal framework in the US and the UK jurisdiction have two common views on this: the narrow view is that such "fair use" is "an equitable rule of reason" – a privilege used to excuse a technical violation of the exclusive right of an author.[135] The broader view is that fair use exemption in copyright is for the purpose of safeguarding the public policy of ensuring access to information that actually exists outside the realm of copyright.[136]

Reverse engineering in India: Could we ask for a little more?

Even while Indian Copyright Act, 1957 afforded protection to computer programs way back in 1980, extensive amendments to the Act were made in 1994, which were aimed to provide some concrete form of copyright protection to computer programs considering the initial phases of development in the Indian software industry. However, without appreciating the type and level of protection needed for the growth of industry, the legislature hurried to provide strong coverage devoid of specific reverse engineering provisions.[137] What the Copyright Act visibly ignored was that such rights, which were even enjoyed by industry giants in the US and the EU, were not available to the Indian programming fraternity. Hence it denied the domestic players a chance to familiarize with the latest in technology and impeded growth in competing products.[138] This lacuna came to be cured by the 1999 amendment which aims to dilute the stringent provisions brought by the

135. *Supra* note 129 at 160.

136. *Supra* note 128 at 101.

137. While the category of computer programs were excluded from the plain fair use provisions available for other category of works (under s. 52(1)(a)), a provision (s. 52(1)(aa)), allowing making of copies and adaptation by a lawful possessor for utilizing and making temporary back-up copies for the purpose which it was supplied was exempted as fair use. Hence the 1994 amendment failed to provide any form of specific reverse engineering provisions that were much needed considering the access dimension and the public policy of ensuring industrial growth. For details, see Copyright Act, 1957 prior to the amendment in 1999.

138. *Supra* note 128 at 98. By failing to provide the right to reverse engineer, the 1994 amendment was antithesis to the doctrinal underpinnings governing copyright policy and law. This consequently meant departure from the original purpose of copyright protection to a market oriented interpretation, *i.e.* guarantee the return of investment made for creating the work, instead of guaranteeing the accessibility which holds a broader policy and legal dimension of promoting the growth of industry as a whole.

earlier amendment. But all is not as perfect even with the 1999 amendment.

The 1999 Amendment provides for the following in section 52(1).

> (ab) *doing of 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*;
>
> (ac) *the 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 the functions for which computer program was supplied;*
>
> (ad) *the making of copies or adaptation of the computer program from a personally legally obtained copy for non- commercial personal use.*

Section 52(1) (ab), perhaps will be the highly contentious and hard talked as case law on infringement will develop in the near future. As the provision does not exclude any specific method of reverse engineering, the more contentious decompilation and other dynamic methods are arguably allowed under the Act. While this is a welcome move, the tightening of the space follows as this freedom is only with reference to achieving interoperability. It means reverse engineering for the purpose of bringing out a competing program having same functional attributes is not permissible by any wide reading of the provision. Now, if copyright has to provide protection for the expression and not for the idea, such a provision denying access for functional attributes even in the case of developing competing programs, is highly unacceptable. The question as to how ideas could be accessed in conditioning the development of competing programs (where interoperability is not a criterion) is not answered by a good reading of the provision. Further, what type of information may be obtained for achieving interoperability is left open. It only means that even pure expressions that underlie the program can be essentially appropriated within the purpose provided. The case against access for developing competing programs through recognized reverse engineering practices is affirmed when the provision makes it mandatory that even such interoperability can be achieved only for independently created programs. In terms of larger economics, this distancing of the Act to provide a platform for developing competing programs only reveals the ultra-protectionist attitude of the legislature without considering the dynamics of the technology, concept of fair use and economic underpinnings of the Indian software industry. Again, the

scope of reverse engineering is restricted only for operating interoperability with other programs, but one has to achieve interoperability not only with other programs but also with the hardware aspects.[139] While the requirement that such reverse engineering (even considering the narrow domain of interoperability) has to be done only by a lawful possessor is acceptable to a certain degree, this should not have been a criterion for individual developers and for educational purpose. The last striking feature in the provision is the one that makes it mandatory that such reverse engineering, of whatsoever nature and scope it may be, is acceptable as fair use only where the information needed is 'not readily available'. This is capable of various interpretations including that it may be presumed that it makes it *sine qua non* that the owner of the copyright must be first approached for permission for reverse engineering and only in cases of refusal can the provision be invoked. However, this is not the correct interpretation considering the scheme of reverse engineering provisions. It becomes highly inconsistent that the Parliament could have intended it to mean that the person seeking to build interoperable programs must negotiate a contract. Further, the effect of such a negotiation is always futile as the copyright holder may not be willing to part away with such valuable ideas without payment of a royalty by the programmer seeking interoperatibility. Hence, the correct interpretation of the words 'not readily available' is that the information is previously not readily available. Thus, if any such consent procedure is imputed to be the intention of the section, (which may involve negotiating through a contract and definitely involving payment of huge royalties) it may frustrate the very object of reverse engineering.

The European Council's Directive on Legal Protection of Computer Programs,[140] in article 6(1) has specifically stated that the lawful possessor of a copy of computer program and persons holding right under him need not get any authorization from the right holder in case of decompilation.[141] It means that the lawful possessor (licensee) of a

139. *Id.* at 102.

140. *Supra* note 86.

141. *Ibid.* Art. 6(1) states that "The authorization of the right holder shall not be required where reproduction of the code and translation of its form within the meaning of Art. 4 (a) and (b) are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that the following conditions are met: (a) these acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to so;

(b) the information necessary to achieve interoperability has not previously been readily available to the persons referred to in subparagraph (a); and

(c) these acts are confined to the parts of the original program which are necessary to achieve interoperability"

copy need not tell the purpose for which he has purchased it and as such the decompilation right is within the right of the licensee to use the program. In other words, the EU interpretation does not anticipate a specific contract for consent in such cases. The term 'information not readily available' that has been specifically mentioned in the directive is only to attribute that if such information is not previously readily available to the lawful possessor of a copy. It does not mean that the lawful possessor has to compulsorily engage in a contract first to see whether the information is readily available.

There may be other variety of cases where permission (if the inconsistent interpretation is taken into consideration) through a payment of license fee may be granted and still insufficient information about the functionality may be given. Such situation could be exploited by the advantageous party to discourage competitors from decompiling useful programs by using the threat of litigation. Thus, in the event of insufficiency of information available through licensing, the licensee cannot invoke the reverse engineering provision. Logically, why would any company pay to get a license when it is available free incase of rejection of consent? Hence the Parliament could never have caused such inconsistency considering the scheme of "fair use" and also for the reason that reverse engineering is an important factor for the growth of industry through competition. Such erroneous notions have sprung up due to missing wording in the Indian provision and an amendment should be expedited on the lines of the EU Directive. In fact the EU Directive has gone still further to provide in its article 9(1) that any contractual provisions contrary to statutory exceptions to restricted acts and decompilation shall be null and void. However, this should no more be a cause of concern considering the fact that section 52 (1) specifically provides that the acts provided thereunder "*shall not constitute infringement*", which asserts that even with a contrary provision in the contract, the programmers can resort to reverse engineering within the interpretation of the Act. Moreover, considering the first principles of contract law as provided in sections 10 and 28 of the Indian Contract Act, 1872, it is clear that a contrary provision prohibiting reverse engineering in the contractual agreement would be void.[142]

142. S. 10 of the Indian Contract Act, 1872, provides for what agreements are contract wherein it specifically states that contract stand only when they have not been expressly declared to be void thereunder. In addition to this s. 28 specifically declares void an agreement brought in restraint of legal proceedings. Thus, first principles of contracts prevail over any contrary provisions in the contractual agreement.

Another phrase that creates some amount of ambiguity is '*any act*'.[143] Even considering that all acts of reverse engineering are permitted only for the purpose of interoperability, what is excluded is other less controversial techniques of reverse engineering, *i.e.*, which do not involve making of intermediate copy for purposes other than interoperability. This means that reverse engineering through clean room process[144] can also be stated as violating the Act if the purpose of reverse engineering is not for achieving interoperability but for developing competing programs. Such a position is not clarified even considering the next provision which explicitly permits other modes of reverse engineering for performing acts necessary for functions for which the program was supplied. To the contrary, the situation is more confusing as it has a potential to exclude methods that are technically not straightforward methods of copying.

Section 52(1)(ac) is also not coherent as it is a limiting factor for reverse engineering of programs for the purpose other than for which it was supplied. Moreover the words *'in order to determine the ideas and principles which underline any elements of the program'* could mean that expression of copyrighted program could not be used. The presence of a strict provision like the one is not appreciable considering the narrow scope for which it can be applied. Another aspect is the interpretation of this provision when the information is readily available. In other words, could the provision be invoked for achieving interoperability in the presence of ready information?[145] These questions remain unanswered. The more logical and legally acceptable position would be the recognition of more controversial methods of reverse engineering, which involves making of intermediate copies for the purpose of developing competent programs. This is different from the earlier provision, which was made applicable only in cases of seeking interoperability, where even 'expressions' could be copied. The instant provision allows to employ all methods of reverse engineering with a caution that the "*observation, study or test of functioning of the computer programme in order to determine the ideas and principles which underline the elements of the programme"*. This certainly means that there cannot be blatant copying of expressions incase of developing competing programs which is a 'safe harbour' for the owner. But what is more important is the exact interpretation of the words "*acts necessary for which the computer programme was supplied"*. In plain sense a program that is supplied will not be definitely for building a competent program, unless specifically contracted through a license, which is

143. Indian Copyright Act, 1957, s. 52(1) (ab).
144. For details, see *supra* note 132.
145. *Supra* note 128 at 103.

altogether a different situation. But if it is so, it brings in all inconsistencies considering the fact as to why a person would like to observe, study or test a program unless he has an intention to develop a competent program? Further, consider the reason for specific exclusion of computer programs in section 52(1) (a) from other general categories of literary, dramatic, musical or artistic work for the purpose of private use including research and for the purposes of criticism or review. It means that this provision is provided to compensate the earlier situation of exclusion, which surely means that a programmer can privately use and do research (within the frame work provided) for developing a competent program. The absence of any restriction regarding different methods of reverse engineering is not surprising and fully consistent with the legislative intention which has provided for a 'purpose limitation' as any such mode would not cause deterrence inasmuch as it is only limited to determining ideas and principles underlying a program.

Section 52(1) (ad) has some distinction as being carved out not for the purpose of reverse engineering but rather as a fair use provision. However, the phrase *'non-commercial personal use'* can be interpreted too broadly or narrowly. The broad interpretation could be an expansive meaning of *'non-commercial personal use'*, which may embody free distribution or circulation within a closed group of users. The narrow interpretation can be to the extent of making only back-up copies which is already covered in provision 52(1) (aa) (ii).[146] Hence, in the event of such narrow interpretation being already provided elsewhere, the interpretation of the instant provision can only be broad and expansive which appears to be the intention of the Parliament.

The Americas: Setting confusing precedents

Position in the US on validity of reverse engineering of computer programs is different considering the fact that there is no explicit reverse engineering provision in the US Copyright Act. However, two doctrines are usually invoked to undo the harm done by non-inclusion of an express reverse engineering provision.[147] The "fair use" doctrine is based on the dimension of granting access to ideas underlying the program. "Adaptation rights" are granted to the owner of a copy to make a copy of a work and also adaptations for user's own environment. But as programs are licensed and not sold, hence, the adaptation rights doctrine

146. *Supra* note 143, s. 52 (1) (aa) (ii) allows the making of copies or adaptation of a computer program by the lawful possessor of a copy of such computer program from such copy to make back-up copies purely as a temporary protection against loss or damage in order only to utilize the computer program for the purpose for which it was supplied.

147. *Supra* note 128 at 97.

in such situations may seem to be futile.[148]

The legal validity of decompilation was tested in *Sega* v. *Accolade*[149] and *Atari* v. *Nintendo of America.*[150] In *Sega,*[151] the court based its reasoning on the fair use provision under section 107 of the US Copyright Act.[152] Analyzing the section, the court was of the view that the defendant's identification of functional requirements for compatibility has increased the possibilities for growth of creative expressions. It further held that the fundamental object of the copyright scheme was to ensure the growth of creative expressions based on the dissemination of other creative works and the unprotected ideas contained in those works.[153] The court justified the action of decompiling by placing reliance on the functional characteristics of a program, which could not be accessed as in case of other works readily available for human eye. Thus, it feared that copyright protection without any "fair use" exceptions would be a cause for *de facto* monopoly over the functional aspects. The court said that copying in the instant case was minimal, even while the whole of program was decompiled because the defendants only used the needed elements.[154]

In *Atari,*[155] the court endorsed the view that Copyright Act permitted the rightful possessor of a copy to undertake necessary efforts to understand ideas, process and *modus operandi*. It held that reverse engineering of computer program and making of intermediate copies

148. *Ibid.*

149. 997 F 2d. 1510 (Fed. Cir. 1992).

150. 975 F. 2d 832 (Fed. Cir. 1992).

151. *Supra* note 149. The plaintiff in this case made a computer game system comprising a console and a large number of game cartridges. Each cartridge contained an access code that was checked by the console before the game could operate. The defendant decompiled these lockout mechanisms and produced game cartridges, which were compatible to the console. Both cartridges contained common piece of code. The defendant added this to its program, so as to get access to the plaintiff's console.

152. S. 107 of the US Copyright Act enumerates four factors for the court to consider when determining whether a use of copyrighted material is a fair one. i) the purpose and character of use, including whether such use is of a commercial nature or is for non profit educational purpose; ii) the nature of the copyrighted work; iii) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and iv) the effect of the use upon the potential market for a value of the copyrighted work.

153. *Supra* note 149 at 1523.

154. *Id.* at.1526. In the words of the court, "where disassembly is the only way to gain access to the ideas and functional elements embedded in a copyrighted program and where there is a legitimate reason for seeking such access, disassembly is a fair use of copyrighted work as a matter of law".

155. *Supra* note 150.

were "fair use" and not copyright infringement.[156] However, the court put a limitation stating that it must not be more than what is necessary to understand the unprotected elements of the work.[157] While critics fear that such decisions would undermine the rights of reproduction, adaptation and translation rights of the authors, such an argument is without appreciating the copyright fundamental doctrine of protecting the expression and not the idea in itself.[158]

The effect of the above decisions appears to be ephemeral in the light of certain recent developments that have enhanced the ability of copyright holders to place restrictions on reverse engineering through contracts and licenses. In *Bowers* v. *Baystate Tech. Inc*.,[159] the issue was whether the copyright law preempted the prohibition of reverse engineering through shrink-wrap licenses. The court held that Copyright Act did not preempt the plaintiff's contract claim. It found that reverse engineering was an extra claim that the parties were free to negotiate through a contract.[160] It appears that the court was too much emphatic about freedom of parties to contract. It went on to muster support for its reasoning from some earlier case developments.[161] In one of the cases the court had stated that the federal copyright law did not preempt the state trade secret law since the additional elements of proof required in trade secret law were enough to make a claim qualitatively different from the copyright claim.[162] The court in the instant case thus took shelter to uphold contractual claims that prohibited reverse engineering. The court also placed reliance on a different circuit court judgment, a similar case of "contractual reverse engineering restrictions", in which

156. *Id.* at 844.

157. *Id.* at 843.

158. *Supra* note 129 at 96.

159. 320 F.3d 1317, 1323 (Fed. Cir. 2003). The plaintiff created a template to improve a computer aided design ("CAD") software named Cadjet, for which he received a patent exclusive of the prevailing automatic copyright protection. As he continued to work on his software, he also obtained an exclusive license to utilize Geodraft software. This greatly enhanced his product, Cadjet, by allowing the user to insert technical tolerances into the program. He sold this combined product of Geodraft and Cadjet with a shrink-wrap license that prohibited any reverse engineering. Meanwhile, the defendant developed and marketed other tools for a competent product CADKEY. The plaintiff offered to establish a formal relationship with the defendant, but the defendant, believing that they had the in-house capability to develop their engineering the plaintiff's software developed a product, Draft-Pak version 3, which directly competed with it. Thus a suit for infringement came up.

160. *Id.* at 1325.

161. *Ibid.* (relying on *Data Gen. Corp.* v. *Grumman Sys. Support Corp*., 36 F.3d 1147 (1st Cir. 1994); *ProCD, Inc.* v. *Zeidenberg*, 86 F.3d 1447 (7th Cir.1996)).

162. *Data Gen. Corp.* v. *Grumman Sys. Support Corp*., *id.* at 1165.

it was held that a simple two-party contract was not "equivalent to any of the exclusive rights within the general scope of copyright" and was, therefore, not preempted by federal copyright law.[163] In that case, it was also noted that "copyright is right against the world" while contracts were only between "contracting parties".[164]

Rather contrary to the above is the case of *Valut Corporation* v. *Quaid Software Ltd.*,[165] wherein the legality of loading a program for the purpose of reverse engineering (except for decompilation) was held valid, even in the presence of a provision contrary to this in the licensing agreement. It was noted that the Federal Copyright Act preempted a state law prohibiting all copying of a computer program.[166] Since, *Vault Corp.*, unlike *Bowers*, did not involve a private contract, the *Bower* court attempted to place some distinction. It reasoned that a private contractual agreement supported by mutual assent and consideration is different from the situation in *Vault*, where a state law prohibited all copying.[167] The *Bower* court also distinguished *Atari*, stating that the instant case dealt with a private contract with additional elements restricting reverse engineering, which was not the case in *Atari*. It would not be surprising to note that such a distinction is superficial as the court was trying to differentiate between scientific computerized techniques used for prohibiting reverse engineering and a specific private contract restricting any sort of reverse engineering. If this analogy were to be applied, it would not be then difficult for companies to prohibit reverse engineering through contracts, thus jolting the foundations of disclosure and dissemination of ideas involved in copyrighted works. This case also throws light upon the court's own understanding of jurisprudence and doctrinal coherence governing the illustrious dichotomy of trade secret law *vis-à-vis* copyright law, consequently leading to strong undue monopoly, not akin to any healthy economic system.

A further strong legal endorsement comes from the new Digital Millennium Copyright Act (DMCA), which provides an explicit exception to circumvention of technological protection measures of a lawfully obtained computer program in order to achieve interoperability.[168] Thus,

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163. *ProCD, Inc.* v. *Zeidenberg, supra* note 161.

164. *Id.* at 1454.

165. 847 F. 2d. 255 (Fed. Cir. 1988).

166. *Id.* at 270.

167. *Supra* note 159 at 1325. The court also stated that private parties are free to contractually forego the limited ability to reverse engineer a software product under the exemption of the Copyright Act.

168. For details see, Digital Millennium Copyright Act, 17 U.S.C. § 1201(f)(2) (2000) and subsequent provisions. The exception states: "Notwithstanding the provisions of subsection (a)(1)(A), a person who has lawfully obtained the right to

the *Bower* court also failed to take into account the congressional intention, which indeed is the last stand on legal exceptions specifically provided for reverse engineering through the DMCA, thus making *Bower* bad in law. The judgment, without any further arguments should be regarded as *per-incurium.*

This reveals that the situation in the US has often traded ascendancy between competition concerns and valor of the federal circuits to give the copyright holder a competitive edge. But such enthusiasm should have been well grounded considering the doctrinal, legal and policy dimensions of copyright law as reflected in the judgments of *Sega, Atari* and *Valut.*

The position in the EU seems to be quite crystal considering the explicit reverse engineering provisions as provided for in the European Council Directive on Computer programs in 1991.[169] However, it also poses its own problems with reference to development of competent programs. Article 5 permits the lawful user of the program to reverse engineer the program using all methods of reverse engineering.[170] As noted above, article 6 deals with the most contentious of all reverse engineering methods, *i.e*., the decompilation method. Even this provision, like its Indian counterpart, restricts decompilation only to achieve interoperatibility and not to build competing programs. Some concerns are also valid in other respect wherein the provision restricts interoperatibility only for software interfaces and not for hardware.[171] However, considering the clarification in the preamble of the directive that, "interconnection and interaction is required to permit all elements of software and hardware", it is well presumed that decompilation can be carried for achieving hardware interface.[172] The ambiguity on such a vital aspect in the Indian scenario is surprising. However, the decompilation prong in the EU is very narrow in scope as it expressly

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use a copy of a computer program may circumvent a technological measure that effectively controls access to a particular portion of that program for the sole purpose of identifying and analyzing those elements of the program that are necessary to achieve interoperability of an independently created computer program with other programs, and that have not previously been readily available to the person engaging in the circumvention, to the extent any such acts of identification and analysis do not constitute infringement under this title."

169. *Supra* note 86.

170. *Ibid.* Art. 5 vests in a person the right to use a computer program to "observe, study or test the functioning of the program of the program in order to determine the ideas and principles which underlie any element of the program if he does so while performing any of the acts of loading, displaying, running transmitting or storing the program".

171. *Supra* note 128 at 99.

172. *Supra* note 86.

puts conditions for achieving interoperability.[173] As compared to the US approach, the EU approach is narrow as it restricts decompilation only to achieve interoperability.[174] In *Sega* and *Atari*, the courts permitted decompilation wherever necessary, to get access to unprotected ideas if it is the only way to get access and is coupled with a legitimate reason.[175] However, considering the widened scope of black-box reverse engineering and express prohibitions on contrary license agreements negating reverse engineering, the EU Directive is more firm in advancing the cause of reverse engineering.

India has taken line largely based on the combination of EU and US approach. But as noted earlier, certain flexibilities that are available in other jurisdictions are not available to programmers in India. Broad scope of reverse engineering would only promote competition and growth in the Indian software industry and enhance its contribution in world markets.

V Conclusion

The conclusions that could be drawn in this context are enormous and insightful. First, that the AFC test of *Altai* which has gained popularity for being the most coherent among all shall with all probability be accepted by the Indian courts. This trust is reposed in the judiciary due to the prevailing deeper roots of doctrinal wisdom underlying the copyright law, reflective through the Supreme Court's edict in *R.G. Anand*. However, there are doubts whether the high courts will be in a position to accept this fine-tuning considering its repeated failure to understand the *R.G. Anand* cliché. The time is now ripe for the high courts to gear up to the challenge posed by new generation technologies. This definitely involves a good understanding of *R.G. Anand*, the solitary decision of the Indian Supreme Court, in its letter and spirit. Second, some coherent wording in the crucial reverse engineering provisions is needed. The nuances may involve providing space for developing

173. *Ibid.* Under Art. 6(2) the conditions are that, the information should not be used for goals other than to achieve interoperability of the independently created computer programs and it should be neither given to others, except when necessary for the interoperability of the independently created computer program nor be used for the development, production or marketing of a computer production or marketing of computer program substantially similar in its expression, or for any other act which infringes copyright.

174. *Supra* note 128 at 100

175. *Ibid.* Also see text accompanying *supra* notes 149 and 150. In *Atari* the court explained the term "legitimate reason" as thus: "the Copyright Act permits an individual in rightful possession of a copy of a work to undertake necessary efforts to understand the work's ideas, process and methods of operation".

competent programs through reverse engineering, allowing interoperability with other interfaces, clearing off the haze surrounding the erroneous interpretation that a prior informed consent for reverse engineering is mandatory and providing for "fair use" of a legally obtained copy among a closed user group representing non-commercial use etc.