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MICROCHIP SOFTWARE PROTECTION: DON'T GET "BURNED"

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The advent of "smart chips" has made it difficult to know where software ends and where hardware begins. Traditional forms of machine readable instructions have been transformed in recent years from tape, to disk, and then to patterns etched into the glass of silicon chips. As the technology embodying those instructions has developed, the issue concerning which manifestations of those instructions constitute software capable of protection under Canadian copyright law has remained unresolved. However, the recent decision of the Supreme Court of Canada in *Apple Computer Inc. v. Mackintosh Computers Ltd.*,[1] has clarified this issue and provided necessary direction to both the creators of software and the manufacturers of hardware, including clones.

In that case, Mackintosh had manufactured clones of Apple's "Apple II" computers. However, in order for those clones to run Apple software, they needed Apple's operating system programs, or their equivalent, commercially known, and registered by Apple, as "Autostart ROM" and "Applesoft." The hexadecimal code of that operating software was etched into the glass of a silicon chip, which was in turn included in Apple's hardware.

Mackintosh "burned" Apple's Autostart ROM and Applesoft operating programs that were embedded in Apple's microchips into

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1. Apple Computer, Inc. v. Mackintosh Computers Ltd., 71 D.L.R.4th 95 (Can. June 21, 1990).

the microchips that Mackintosh would include in their clones. Apple, a company that has strived to maintain tight control over its industry innovations and intellectual property, sued Mackintosh for copyright infringement because Apple's operating software had been reproduced and embodied in Mackintosh's silicon chips.[2]

The issue before the Supreme Court of Canada was whether software which originates as a written text continues to be protected by copyright when it is replicated in the circuitry of a silicon chip, and thereby, converted into its electrical code version for operation in a device designed to replicate that computer program.[3]

Although Mackintosh admitted that the written assembly language versions of the software were copyrightable and that Apple owned the copyright to that software, they argued that since they had copied only the silicon chip, and not the assembly program itself, they had not infringed Apple's copyright. Mackintosh also relied on *Computer Edge Party Ltd. v. Apple Computer, Inc.*,[4] a 1986 decision from the High Court of Australia which involved almost identical facts. In *Computer Edge*, the High Court held that the etching of machine readable instructions onto a silicon chip constituted a "sequence of electrical impulses" that could not be the subject of copyright, and which merely took the form of a mechanical contrivance rather than that of computer software.[5]

In determining the case in favor of Apple, the Supreme Court of Canada upheld the decisions of both lower courts and focused on the fact that software is essentially a set of instructions in machine readable form which are designed to move information and perform other specified tasks.[6] Thus, it was irrelevant to the Court what physical manifestations those instructions took since it was possible to trace their translation and exact reproduction without any breach of continuity, from a written, and copyrightable format through to their ultimate physical manifestation. In this regard, the Court held that the programs embedded in Mackintosh's silicon chips were a reproduction of Apple's assembly language programs, and as such, were protected.by Canadian copyright law.[7] The Court expressly refused to follow Australian precedent and held that,

the silicon chip should be viewed as a static object encoded with

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2. *Id.* at 96.

3. *Id.* at 95.

4. Computer Edge Pty. Ltd. v. Apple Computer, Inc. 65 A.L.R. 33 (Austl. 1986).

5. *Id.*

6. Apple Computer, Inc. v. Mackintosh Computers Ltd., 71 D.L.R.4th 95, 99 (Can. June 21, 1990).

7. *Id.*

written instructions rather than as constituting a dynamic in-
terchange of electrical impulses. It follows that the program em-
bodied in the silicon chip is properly subject to protection by
copyright and the unauthorized copying of that program consti-
tutes a violation of copyright.[8]

The *Mackintosh* decision is of particular importance to cre-
ators of computer software and manufacturers of hardware because
of the Supreme Court's articulation of a rational principle that can
be applied to future questions of when software may assume a phys-
ical manifestation that is entitled to copyright protection. In this
regard, future technological innovation will be governed by the
principle that computer software, which is translated and repro-
duced from its original instructional code and format into another
technological manifestation where the instructions to move infor-
mation and perform specified tasks continue to be the same, is, ar-
guably, subject to copyright protection. Following the Supreme
Court of Canada's determination in this case, the beginning point
for such analysis is the existence of the written and copyrightable
form that the software originally takes. Then an assessment must
be undertaken as to whether one can trace the continuity of the
translation and reproduction of that software's various incarna-
tions, regardless of the physical form or nature of that software's
ultimate expression.

Furthermore, it should be noted that at trial the Federal
Court: (1) issued an injunction restraining Mackintosh from selling
and distributing computers and computer components which con-
tained a copy of Apple's "Autostart ROM" or "Applesoft"
software;[9] (2) ordered the return to Apple of all silicon chips that
had been sold by Mackintosh which contained copies of Apple's
software;[10] and, (3) ordered that Mackintosh repay to Apple all
profits that Mackintosh had received from the sale of all such
clones.[11] With regard to the latter, the trial court determined that
"profits" should be calculated as the difference between the price
paid by Mackintosh for the component parts and the actual sales
price of the clones to Mackintosh's customers.[12] In reaching its de-
termination of Mackintosh's accountability to Apple for its profits,
the trial court, per J. Reed stated that,

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8. *Id.*
9. Apple Computer, Inc. v. Mackintosh Computers Ltd., 1 F.C. 173, 212 (1987).
10. *Id.*
11. *Id.* at 213.
12. *See id.* at 212-13.

It is clear that the profit made by selling the 'Apple compatible' computers derived principally from the fact that the plaintiff's program was contained therein. There is nothing to make me think that the computers without the ROM chips could have been sold for much more than the cost price paid by the defendants for the component parts. In my view, the profit arising from the sale of the computers as a whole derived mainly from the fact that they were 'Apple compatible' and inclusive of the copied programs therein.[13]

The effect of those orders on Mackintosh and subsequent purchasers of those clones has not yet been determined. Nevertheless, the logistics of removing the infringing microchips alone will have significant complications for the users of the Mackintosh clones. Certainly, this is a case where the rights of software creators have been both strongly enforced and clarified in a way that will protect and preserve proprietary rights to software as it is applied to future technology.

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13. *Id.*