

DATA ACCESS CORPORATION

v.

POWERFLEX SERVICES PTY LTD & ORS

[1999] HCA 49

30 September 1999

Of great legal and economic significance to the information technology industry is a recent decision of the High Court which has affirmed the way for software companies to reverse engineer¹ the unprotected forms of expression in software programs of others.

The High Court has affirmed that individual words do not constitute a “computer program” for the purposes of s10 (1) of the *Copyright Act* (1968) (the “Act”).

The Appeal

This was an appeal against the decision of the Full Court of the Federal Court which held that copyright as original literary works did not subsist in commands in the Data Access computer language thereby reversing the decision of the trial judge, Jenkinson J².

The Dataflex System

Data Access owned the copyright in a system of computer programs known as “Dataflex”, which had been published in 1981 following 2 years of research and development. The system allowed a software programmer or developer to develop

¹ In relation to software programs it is a process to examine and fractionate a program in order to develop a new program that performs the same function.

tailored databases and provided a method to write, edit, compile and run programs which were being developed.

It included a computer program language known as the “Dataflex language” in which the source code for all Dataflex programs was written or generated. The system also provided a program that translated the Dataflex source code programs written in the Dataflex language into an internal format required to run the applications.

The Infringing Words

Each word in a computer language is an instruction to the computer calling up lower level processes. These words generally suggest the process to be invoked.

There were 254 words in the Dataflex language listed in the Dataflex encyclopedia. Of those, 29 words, which were related to graphics, were not used in the Powerflex language. Of the remaining 225 words, 192 were used in the Powerflex language.

Although the reasons of Jenkinson J suggest that copyright subsisted in these 192 words³, the restraining order refers to 169 of the common words.⁴ Consequently, the High Court was confined to consider the 169 words in which Data Access claimed that copyright

² *Data Access Corporation v Powerflex Services Pty Ltd* (1996) 63 FCR 336.

³ *Ibid* at p339;

⁴ Data Access may have conceded that copyright did not subsist in some words, which included “SHOW” and “ENTRY”.

subsisted.⁵ Of the remaining words many were ordinary English words⁶, but 55 were unique to the Dataflex language.

The Powerflex System

The Third Respondent, Dr David Bennett, (“Dr Bennett”), had some years before the action familiarised himself with the Dataflex system and decided to create an application development system which was compatible with the Dataflex language. Existing Dataflex users would be able to use his product being already familiar with the Dataflex language.

Dr Bennett by a process of reverse engineering and study of the Dataflex documentation created a system of computer programs, which were initially named “Powerflex” and later known as PFXplus. Dr Bennett intended that the Reserved Words and the Macros which were used as commands in the Dataflex system would similarly be so used in his PFXplus system.

The source code (which is not dissimilar to ordinary language) in which Dataflex was written was quite different from the source code of the PFXplus system and there was not necessarily any similarity between the object code used in each system.

⁵ The High Court divided the 169 words into 2 categories, 166 common words were the “Reserved Words” and 3 words were Macros.

⁶ For example “BOX”, “CHART”, “RETAIN”; others were English words and used in computer programs, such as “DIRECTORY”, “SAVE”.

The Issues

Data Access claimed the respondents through PFXplus infringed copyright in:

- (a) the Reserved Words as computer programs;
- (b) the Macros as computer programs; and
- (c) The Dataflex Huffman compression table.

The Reserved Words

Section 10(1) of the Act relevantly provides:

“ ‘computer program’ means an expression, in any language, code or notation, of a set of instructions (whether with or without related information) intended, either directly or after either or both of the following:

- (a) conversion to another language, code or notation;
- (b) reproduction in a different material form;

to cause a device having digital information processing capabilities to perform a particular function.”⁷

The Court said that to be a “computer program” each Reserved Word must be an “expression...of a set of instructions... intendedto cause a device having digital information processing capabilities to perform a particular function”.⁸

The trial judge held each Reserved Word was of itself a computer program because in his opinion each of the words was “an expression of a set of instructions intended to cause a

⁷ The Copyright Amendment Act 1984 (Cth) introduced the definition of “computer program” into s10 (1).

⁸ [1999] HCA 49 at par [28].

device having digital information processing capabilities to perform a particular function.”⁹

Jenkinson J found that the set of instructions intended to cause the performance of a particular function, were based on linking certain letters of the alphabet together. The fact that those words were English may have assisted an English-speaking user but nonetheless each linking of letters to make each word was an expression of a set of instructions.

The Full Court took the opposite view. The Court said that each word was just a command. The set of instructions, were the underlying program which directed the computer when that command was given. The word was just a trigger.

The High Court said that none of the Reserved Words satisfied the definition of “computer program”.¹⁰ Although they were undoubtedly in “code or notation” (the Dataflex language), each word was ultimately only a single word and none could be said to be a set of instructions in the Dataflex language.

Further, none of the Reserved Words intended to express, directly or indirectly, a logical relationship between the function desired to be performed, and the physical capabilities of a “device having digital information processing capabilities”.

⁹ (1996) 63 FCR 336 at 339.

¹⁰ [1999] HCA 49 at par [28].

Autodesk Inc v Dyason

The Court referred to judgement of Gaudron J in *Autodesk Inc v Dyason* [No 2]¹¹, which emphasised that it was the set of instructions in their entirety which was the computer program. The Court emphasised that writing programs becomes unmanageable unless the set of instructions was at a high level of abstraction in order to express millions of logical operations in terms of a manageable number of more complex instructions.

For example, at the highest level “PRINT” is an expression of an instruction intended to cause a device to perform a particular function. However, Data Access had to show that *each* Reserved Word was an expression of a set of instructions to cause a device having digital information processing capabilities to perform the particular function.

It was relevant that other words or string of characters could have replaced the words of the Dataflex language. Relevantly, the same function would still have been performed.

The Court concluded:

“In our opinion this shows that the particular characters of a Reserved Word in the Dataflex language, considered alone, do not intend to express a logical or algorithmic relationship between the function it intends to cause the computer to perform and the physical capabilities of the computer.”

The High Court attributed the difficulties to two differing views as to what a “computer program” was for the purpose of s10 (1) of the Act. These arose from the effect of the

¹¹ (1993) 176 CLR 300 at 329.

words “in any language, code or notation”, and “either directly or after conversion to another language, code or notation”.¹²

On one view the definition was satisfied if language A was not an expression under the section but after conversion to language B it was. On the second view the requirement of the expression of a set of instructions must be considered separately for each language. The High Court approved the second view.¹³ The Court said the definition began with the words “an expression...”, and that the word “an” related to a singular expression. It was the Court’s opinion therefore that the question would be considered separately for each language in which the item in question was said to be a computer program.

The Court considered the history of the 1984 amendment and said that the amendment departed from traditional principles as it introduced a “new species” of literary work. It was no longer the mere expression of a set of instructions that were a literary work but that the expression was intended to cause a device to perform a particular function.¹⁴

Is the collocation of the Reserved Words a “computer program”?

The appellant also argued copyright subsisted in the collocation. The Court rejected that argument saying that the simple listing together of the Reserved Words without more did not cause a computer to perform an identifiable function. The words were intended to perform a function for the author, that is to provide familiar prompts.

¹² [1999] HCA 49 at par [48].

¹³ [1999] HCA 49 at par [52].

The definition of “computer program” however required that the words perform a function for the computer. The collocation was therefore not a computer program.¹⁵

Substantial Reproduction

The Court then considered what constituted a “substantial reproduction.” The appellant contended that even if the collocation was not a literary work, it constituted a substantial part of the work. The copyright owner has the right to reproduce a literary work, which is infringed if the another person reproduces a “substantial part” of the work.¹⁶

The “substantial part” however does not relate to the quantity of what is reproduced but rather the quality.¹⁷ This being the case reproduction of mere data, which is irrelevant to the structure, or choice of commands of the program is unlikely to be a reproduction of a substantial part of the computer program.

The Reserved Words are irrelevant to the structure as they appear in the source code.

They are simply “literal strings” from which the computers focus can change by any other literal string. Evidence to support this was a consideration of many of the Reserved Words, which suggested the function that would be performed.¹⁸

¹⁴ [1999] HCA 49 at par [25].

¹⁵ [1999] HCA 49 at par [73].

¹⁶ Section 31(1)(a)(i) and section 36 (1) of the Act.

¹⁷ the Court referred to the dissenting judgement of Mason CJ in *Autodesk No. 2* who cited the case of *Ladbroke (Football) Ltd v William Hill (Football) Ltd* (1993) 176 CLR 300 at 305 as support for the proposition that the quality of what was reproduced was the key consideration for determining “substantial reproduction” rather than quantity.

¹⁸ Such as BOX”, “CHART”, “CLEAR”, “CHECK”, “INDICATOR”, “INSERT”.

In the Court's opinion, even when the Reserved Words are considered as a group or collocation, they did not possess sufficient originality as data to constitute a substantial part of the computer program, which was the Dataflex system.

The Court was unable to agree with the approach to "substantiality" taken by the majority in *Autodesk No. 1* and *Autodesk No. 2*.¹⁹ In those cases it was held that the look up table was a critical part of the instructions in that the other parts made reference to it.²⁰

The High Court said that in the two *Autodesk* cases the reasoning that the look up table was essential and critical in nature to the running of the program approached a "but for" analysis. That is, but for the look up table, the AutoCAD program would not execute and so the table was a "substantial" part.²¹

The High Court preferred the dissenting view of Mason CJ to determine whether something was a reproduction of a substantial part of a computer program. To be a reproduction of a substantial part, the Court said, "the essential or material features [of the computer program] should be ascertained by considering the originality of the part allegedly taken."²²

The Macros

¹⁹ [1999] HCA 49 at par [87].

²⁰ (1993) 176 CLR 300 at 330.

²¹ [1999] HCA 49 at par [80].

²² (1993) 176 CLR 300 at 305.

The appellant contended that each of the Macro commands was a “computer program” and so copyright subsisted in them. The three particular commands were “REPORT”, “ENTERGROUP” and “ENTER”. These words were called “Macros” because they caused the performance of a much more complex function. Once again the Court distinguished the actual word from the function it triggered. The Macros were not in themselves “a set of instructions” as required by the definition of “computer program” in the Act.

The Court said that as a practical matter the source code underlying each Macro was a small fragment of the Dataflex computer program. The Court said that the Full Court had determined that the relevant portion was some 229 lines. The Full Court also said that whether a component part of a computer program was itself a computer program was a question of fact²³ and that if a set of instructions were functionally separate from the entire program it might by itself stand as a literary work separate from the rest of the program.²⁴

The Full Court however did not consider the Macros as performing a separate function. It said that:

²³ (1997) 75 FCR 108 at 126-127.

²⁴ (1997) 75 FCR 108 at 127.

*“the relevant program to be considered here would not be that small fragment of program which causes the macro command to perform its function (some 229 lines), but the Dataflex compiler program itself”.*²⁵

The Full Court used *Autodesk No. 2* as the example. The lock program in Widget C had the function of preventing the use of the software unless the correct key was inserted. This was not one of the functions performed by the larger computer program.²⁶ The Full Court concluded that the Macro functions were not separate but rather part of the functions performed by the larger program.

The High Court did not need to consider this question because it said that even if the Macros were a computer program there was no reproduction nor adaptation of that work.

It was clear that Dr Bennett studied the Dataflex program to make sure the commands in question performed the same function as the Dataflex commands. The expression of the source program was written by Dr Bennett and was an original expression. The High Court considered that the term “adaptation” must necessarily involve the process of copying.²⁷

²⁵ (1997) 75 FCR 108 at 127.

²⁶ (1997) 75 FCR 108 at 127.

²⁷ Paragraph 14 of the Explanatory Memorandum, Copyright Amendment Bill 1984 that states that to be an adaptation the “final product is clearly derived from the original.”

The term “adaptation” in terms of computer programs, is a “version of the work (whether or not in the language, code or notation in which the work was originally expressed) not being a reproduction of the work.”²⁸

As Dr Bennett devised a separate source code to perform the same function as was performed in some other source code, this did not involve creating a version from the original source code, consequently there was no adaptation.

The Dataflex Huffman Compression Table

The Full Court had found that the respondents had infringed copyright in the Huffman compression table implanted in the Dataflex program. The table is a method of reducing the amount of memory space taken up by data files. This method stores in memory as bit strings.

Where a character is common it has a shorter bit string. An infrequently used character will have a longer bit string. For example the letter “e” converts from a bit string encoded as “01100101” to “101” which takes up 62.5% less space when compressed.

In approximately 1992, Mr Cory Casanave, Executive Vice-President of Data Access created the Dataflex Huffman compression table by writing a program, which applied the Huffman algorithm to a database file known as SERIAL.DAT. This permitted compression within individual files rather than on the frequency of occurrence within the file SERIAL.DAT.

²⁸ Section 10 (1) of the Act.

Dr Bennett wanted to compress and decompress Dataflex files. Necessarily this meant duplication exactly of the Dataflex Huffman compression table. The Court considered the definition of “literary work” in the Act, which includes:

“a table, or compilation, expressed in words, figures or symbols (whether or not in a visible form)”.

Considering the Explanatory Memorandum²⁹ which removed the requirement that a table be in visible form, the Court was of the opinion that the Dataflex Huffman table was clearly data stored in a table. It made no difference that Dr Bennett devised an ingenious method of determining the bit string attributed to each character, the overall result was a reproduction.

Conclusion

One of the key findings of the High Court in *Autodesk No. 2* was that reproduction of a part of a computer program which was essential to the operation of the whole program is necessarily a reproduction of a substantial part of that program. In the joint judgement of Gleeson CJ, McHugh, Gummow and Hayne JJ the test of substantiality was determined when “something which appears in a computer program is a substantial part of it.”³⁰

The High Court re-opened the Court’s view in this area and preferred the dissenting judgement of Mason CJ to the majority in *Autodesk*.

²⁹ At par 26.

³⁰ Her Honour Gaudron J differed only on this point from their Honours. It was her Honour’s opinion that in *Autodesk Inc v Dyason* (1992) 173 CLR 330 and *Autodesk Inc v Dyason [No. 2]* (1993) 176 CLR 300 the look-up table was not simply “data” or “information” but an integral part of the set of instructions. That however did not help the appellant in this case.

Supporters of open systems who would like to see reverse engineering legalised will be pleased with the result. The High Court recognised the continuing struggle of the Act to deal within the implications of computer technology.³¹ The 1984 Amendments recognised the metamorphosis where literary work also performed a function. “Function” has been the traditional area of Patent law, was now a part of copyright law.³²

In this decision the High Court has put paid to a look and feel comparison of the completed programs and affirms the fundamental principal of copyright that it is the expression of the work that is protected from copying not the ideas.

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³¹ [1999] HCA 49 at par [25].

³² *Data Access Corporation v Powerflex Services Pty Ltd* [1999] HCA 49 at [20] and [21].