

**THE VANISHING AUTHOR IN
COMPUTER-GENERATED WORKS:
A CRITICAL ANALYSIS OF
RECENT AUSTRALIAN CASE LAW**

JANI MCCUTCHEON*

[The use of software is ubiquitous in the creation of many copyright works, yet the requirement in copyright law that every work have a human author who engages in independent intellectual effort means that its use may prevent copyright subsistence. Several recent Australian cases have refocused attention on authorship as an essential criterion of copyright subsistence, and these cases suggest that much computer-produced output may be authorless and thus lack copyright protection. This article, the first in a two-part series, analyses how each case deals with the question of authorship of computer-produced works and why the use of software diminishes copyright protection for a significant number of computer-generated works. The article critiques the application of conventional notions of human authorship developed in the pre-computer age to modern productions and suggests alternative approaches to authorship that satisfy both the major objectives of copyright policy and the need to adapt to the computer age. The article argues that, without a broader judicial approach to authorship of computer-generated works, Parliament must remedy the lacuna in protection for these 'authorless' works. Possible solutions for reform are suggested. In a forthcoming article, the author comprehensively examines those reform proposals.]

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* BA (Hons), LLB (Monash), LLM (UWA); Associate Professor, The University of Western Australia. The author is very grateful to the anonymous referees, whose perceptive suggestions were extremely helpful.

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I INTRODUCTION

In 1998, the Australian Copyright Law Review Committee ('CLRC') expressed concern about:

the extent to which the current legislation accommodates the increasing, indeed almost ubiquitous, use of computers in the creation of copyright subject matter. The [*Copyright Act 1968* (Cth)] currently requires the identification of a human as the 'author' of a Part III work. While a majority of the Committee recognises there is an ongoing need for copyright legislation to connect a work with a human, it is concerned that the current requirement of 'authorship' may preclude the grant of protection to material that is deserving of protection, simply because the extent to which a computer was utilised in its creation exceeds a particular (currently uncertain) level.¹

Those concerns have now been realised. Several recent Australian cases demonstrate the tension between computerised methods of producing works and the requirement that a copyright work have a human author.

In response to a refocus on authorship in *IceTV Pty Ltd v Nine Network Australia Pty Ltd* ('IceTV'),² both *Telstra Corporation Ltd v Phone Directories Co Pty Ltd* ('Phone Directories')³ and *Acohs Pty Ltd v Ucorp Pty Ltd* ('Acohs')⁴ have pronounced certain computer-produced output as authorless.

This article scrutinises and explains the authorship tests developed in these cases and, focusing on *Phone Directories*, applies them to different software applications. The article questions whether the authorship tests were correctly applied in *Phone Directories*, explores whether persons selecting software to perform a designated task could be authors, and considers whether a more

¹ CLRC, Parliament of Australia, *Simplification of the Copyright Act 1968 — Part 2: Categorisation of Subject Matter and Exclusive Rights, and Other Issues* (1999) 47–8 [5.10].

² (2009) 239 CLR 458.

³ (2010) 264 ALR 617, affd (2010) 194 FCR 142 ('*Phone Directories (Appeal)*').

⁴ (2010) 86 IPR 492, affd (2012) 201 FCR 173 ('*Acohs (Appeal)*').

liberal formulation of Australian authorship law could extend to software-created output.

These cases throw up 'new challenges in relation to the paradigm of an individual author'⁵ and seriously diminish copyright protection for output that is effectively shaped by software. These challenges most starkly affect large, complex productions that necessarily employ software in their creation, including resource-intensive, computer-generated productions like large databases and compilations.⁶ Such productions raise equally complex authorship issues because of the number of people involved in their creation and the multifarious roles they play.⁷ The contributions may be joint⁸ or separate, and they may be human-authored or computer-generated. Further, it is often impossible to identify the particular (human) authors responsible for expressing or compiling part of the work,⁹ and/or the portion of the work created or compiled by them.

The same case law has, following a radical review of existing jurisprudence in *IceTV*, also questioned the originality of many such fact-based works, providing another critically important basis for impugning copyright subsistence.¹⁰ The lack of authorship in respect of some, perhaps many, complex

⁵ *IceTV* (2009) 239 CLR 458, 470 [23] (French CJ, Crennan and Kiefel JJ).

⁶ For example, real estate auction results, transport timetables, TV guides and directories.

⁷ Such roles could range from data collection, creation and entry; designing and compiling the production; deciding what content is collected and how it is stored and arranged; to creating, choosing or customising the software universally used in relation to the production. While beyond the scope of this article, the constantly shifting nature of the content and form of many electronic productions, such as relational databases, also cause real difficulties in identifying such alleged copyright works. Difficult ownership issues are thrown up by third-party contributions to the creation of complex productions.

⁸ A comprehensive consideration of the vexed issue of whether complex, multi-authored productions meet the rather narrow definition of a 'work of joint authorship' in s 10(1) of the *Copyright Act 1968* (Cth) is beyond the scope of this article, though clearly closely related to its theme where those putative joint authors employ software to create the production.

⁹ Aspects of Gordon J's judgment in *Phone Directories* suggest that proof is required of the *exact identity* of all authors: see (2010) 264 ALR 617, 628–9 [32]–[35], 657 [167], 658 [169]. On appeal, however, the Full Federal Court clarified that this is not necessary. All that is necessary is to establish that there is an author: *Phone Directories (Appeal)* (2010) 194 FCR 142, 162 [57] (Keane CJ), 181 [127] (Perram J).

¹⁰ See, eg, Jani McCutcheon, 'When Sweat Turns to Ice: The Originality Threshold for Compilations Following *IceTV* and *Phone Directories*' (2011) 22 *Australian Intellectual Property Journal* 87; Mark Davison, 'Copyright Protection for Compilations: Australia Does a U-Turn' (2010) 32 *European Intellectual Property Review* 457. Notwithstanding a lack of both originality and authorship, the considerable investment made in many large compilations and databases arguably merits some form of *sui generis* protection comparable to the European Database Directive: *Directive 96/9/EC of the European Parliament and of the Council of 11*

productions may therefore be inconsequential if they would otherwise lack originality, which is now more likely.¹¹ However, where such complex productions would have, but for a lack of authorship, obtained copyright protection,¹² the loss of protection is significant, since it leaves the considerable resources, time and effort invested in such productions seemingly unprotected at law.¹³

Significantly, the cases have a broader reach than just computer-produced compilations, many of which may in any event be unoriginal. Software is also increasingly used to create or modify what might otherwise be regarded as

March 1996 on the Legal Protection of Databases [1996] OJ L 77/20, briefly mentioned as a reform option below in Part VIIIID and discussed further in the author's article in the next issue of the *Review*: Jani McCutcheon, 'Curing the Authorless Void — Protecting Computer-Generated Works Following *IceTV* and *Phone Directories*' (2013) 37 *Melbourne University Law Review* (forthcoming).

¹¹ Furthermore, productions such as electronic databases may not be regarded as a 'work'. See, eg, *Acohs* (2010) 86 IPR 492, 520 [81] (Jessup J):

I have difficulty with the concept that a database, as such, might be regarded as a literary work. The problem is not so much whether the database represents a compilation (in the sense of being otherwise disparate elements of data drawn together and organised according to certain rules), but whether a body of data is capable of being regarded as a work in any sense unless and until it has taken a material form.

¹² This, of course, assumes that all copyright subsistence criteria are satisfied, including that the output at issue is a 'work', is original, is in material form and has some connecting factor to Australia: *Copyright Act 1968* (Cth) ss 10(1) (definition of 'work'), 22, 32.

¹³ Notably, in *Phone Directories (Appeal)*, Perram J had 'no doubt' that, had the directories 'been generated by humans' and had their compilation 'been attended to manually' then 'an original work would have ensued': (2010) 194 FCR 142, 177 [113]. It is arguable whether an original work would have ensued, although clearly it would have been authored. The joint judgment of French CJ, Crennan and Kiefel JJ in *IceTV* suggests that the originality threshold in the context of copyright subsistence is low, and the only real requirement is that the work originates from the independent efforts of the author: (2009) 239 CLR 458, 479 [48]. However, the originality threshold in the context of copyright infringement is much higher since, in contrast to the outcome in *Telstra Corporation Ltd v Desktop Marketing Systems Pty Ltd* (2001) 181 ALR 134 (*Desktop*), affd *Desktop Marketing Systems Pty Ltd v Telstra Corporation Ltd* (2002) 119 FCR 491 (*Desktop (Appeal)*), mere 'sweat of the brow' is no longer a substitute for originality of selection or arrangement of the unoriginal contents of the directories (the only possible source of originality in a compilation of facts). Hence, even if the directories were compiled manually, the result was likely to be a manually created unoriginal compilation, rather than an automated unoriginal compilation: see generally McCutcheon, 'When Sweat Turns to Ice', above n 10. It is submitted that Yates J in *Phone Directories (Appeal)* was more accurate when he pointed out that '[w]hen carried out by individuals' the activities resulting in the compilation of the phone directories 'undoubtedly would have been of an *authorial* nature': (2010) 194 FCR 142, 190 [167] (emphasis added). Notably, Yates J does not repeat Perram J's claim that an *original* authored work would ensue.

'high authorship'¹⁴ musical, artistic and literary works, but its use to create such material may also prevent authorship of it, thus preventing copyright subsistence.

Where computer-produced output would, but for the lack of human authorship, be a copyright work, the question arises whether the use of software should in and of itself exclude the copyright reward. The article considers whether and how conferring copyright on computer-produced output is consistent with copyright policy. The case is made that, on balance, copyright protection for computer-produced output has a more benign than malign policy effect and better accommodates the realities of the computer age. The article concludes that, in the absence of a more liberal judicial approach to authorship, Parliament should intervene to fill the lacuna in protection for these 'authorless' productions. Some possible avenues of reform warranting deeper exploration are suggested.¹⁵

II THE CASES:

DESKTOP, ICETV, PHONE DIRECTORIES AND ACOHS

The following section outlines the facts and findings of the four major cases in recent Australian jurisprudence that most directly impact on the question of authorship in a computerised context.

A Desktop

A brief mention of the 2002 decision of *Desktop Marketing Systems Pty Ltd v Telstra Corporation Ltd* ('*Desktop (Appeal)*')¹⁶ is necessary because of the significance of its effective reversal in *IceTV* and its factual similarity to *Phone Directories*.

In *Desktop (Appeal)*, the Full Court of the Federal Court found that copyright subsisted in Telstra's White and Yellow Pages telephone directories, with the sheer industrious collection of facts substituting for the lack of any

¹⁴ See Jane C Ginsburg, 'Creation and Commercial Value: Copyright Protection of Works of Information' (1990) 90 *Columbia Law Review* 1865, 1870, where 'high authorship' works such as novels, where copyright protects the authorial presence, are contrasted with 'low authorship' works such as directories, where copyright protects the labour expended in the production of the work.

¹⁵ As mentioned, these reform proposals are comprehensively explored in McCutcheon, 'Curing the Authorless Void', above n 10.

¹⁶ (2002) 119 FCR 491.

originality in selection or arrangement of those facts. However, authorship of the directories was not a contested issue in the appeal.¹⁷ Despite Finkelstein J at first instance questioning whether the assumption of authorship of the directories was correct,¹⁸ the issue both at first instance and on appeal was whether the directories were original compilations based merely on the producer's 'sweat of the brow' in gathering the facts.¹⁹

B *IceTV*

In *IceTV*, broadcaster the Nine Network ('Nine') alleged that IceTV had infringed the copyright in Nine's television program schedules. IceTV conceded that these schedules were a compilation copyright work but argued it had not reproduced a substantial part of them.

IceTV produced the 'Ice Guide', an electronic program guide largely compiled by IceTV employees who watched the programs and wrote down what they saw. IceTV then predicted the forthcoming programs for each week based on previous programming. To incorporate late programming changes, IceTV used the information in Nine's schedules to correct errors in the times and titles of programs in the Ice Guide.²⁰

Nine alleged that this was copyright infringement and that the titles and times of the corrected programs were substantial parts of its weekly schedule. While successful in the Full Court of the Federal Court,²¹ Nine lost that argument at first instance²² and in the High Court. In two joint judgments, the High Court held that the times and titles of the programs were not substantial parts of the schedule because the titles were mere unoriginal facts, and the chronological arrangement of them in Nine's schedule was too prosaic to be sufficiently original. The skill and effort in the selection of the particular programs, while commercially vital, was irrelevant because it was not directed to the material expression of the schedule.²³ Importantly for the parties in

¹⁷ Desktop had conceded all elements of copyright subsistence other than originality: *ibid* 557 [273] (Sackville J).

¹⁸ *Desktop* (2001) 181 ALR 134, 136 [4].

¹⁹ *Ibid* 136 [8]–[10]; *Desktop (Appeal)* (2002) 119 FCR 491, 557 [272]–[273] (Sackville J).

²⁰ *IceTV* (2009) 239 CLR 458, 466 [4]–[6] (French CJ, Crennan and Kiefel JJ).

²¹ *Nine Network Australia Pty Ltd v IceTV Pty Ltd* (2008) 168 FCR 14, 41–2 [113] (Black CJ, Lindgren and Sackville JJ).

²² *Nine Network Australia Pty Ltd v IceTV Pty Ltd* (2007) 73 IPR 99, 149 [212] (Bennett J).

²³ *IceTV* (2009) 239 CLR 458, 477 [44], 481 [54] (French CJ, Crennan and Kiefel JJ), 503 [132], 512 [170] (Gummow, Hayne and Heydon JJ).

Phone Directories, the High Court in robust obiter effectively reversed *Desktop (Appeal)* on issues of originality, impugning it as mistakenly holding that ‘background’ skill and labour per se, undirected to the expression of a work, could constitute original expression.²⁴ The High Court also strongly restated the importance of authorship. French CJ, Crennan and Kiefel JJ (‘the French judgment’) noted that authors ‘and the concept of “authorship”²⁵ are central to copyright protection, that the overall scheme of the *Copyright Act 1968* (Cth) (‘the Act’) was about ‘rewarding authors’,²⁶ but that ‘[t]he technological developments of today throw up new challenges in relation to the paradigm of an individual author.’²⁷ Gummow, Hayne and Heydon JJ (‘the Gummow judgment’) emphasised the ‘fundamental principle’ concerning the ‘significance of authorship’ and insisted that ‘the essential source of original works remains the activities of authors ... original works emanate from authors.’²⁸

Prior to *Phone Directories*, the potential for software to diminish authorship was not directly considered by an Australian court. However, the review of authorship commencing in *IceTV* stems from *Desktop* at first instance, in which Finkelstein J pointedly questioned the possibility of authorship of the phone directory at issue:

There are literally hundreds of appropriately trained or qualified employees who make some contribution towards the production of a telephone directory. When the nature of the work they do is described, there arise three relevant questions to the subsistence of copyright: (a) Must a copyright work have an author? (b) Does a telephone directory have an author? (c) Is every employee who contributes to the final product a joint author of the directory? These are difficult questions for which there are no ready answers. These matters will not be elucidated by this judgment. Although I raised these issues during argument, the case was contested on the apparent assumption that it was either unnecessary for Telstra to establish that a telephone directory has an author, or that those involved in its preparation are joint authors. I will proceed as if these assumptions are correct. *But they may not be.*²⁹

²⁴ Ibid 480 [52] (French CJ, Crennan and Kiefel JJ), 503 [133]–[134], 509 [157], 516 [187]–[188] (Gummow, Hayne and Heydon JJ).

²⁵ Ibid 470 [22] (French CJ, Crennan and Kiefel JJ).

²⁶ Ibid 471 [24].

²⁷ Ibid 470 [23].

²⁸ Ibid 493–4 [95]–[96].

²⁹ *Desktop* (2001) 181 ALR 134, 136 [4] (emphasis added).

The Gummow judgment regarded Finkelstein J's comments as a 'reason to treat [*Desktop*] with care',³⁰ noted that it was 'significant'³¹ Australia had no equivalent to the European Database Directive,³² and noted the lack of a provision equivalent to s 9(3) of the *Copyright, Designs and Patents Act 1988* (UK) c 48 ('the UK Act'),³³ which deems the author of a computer-generated work to be 'the person by whom the arrangements necessary for the creation of the work are undertaken'.³⁴ The Gummow judgment looked more closely at the process of creation of the schedule. It explained how the programming decisions had been entered into a computerised database, from which the schedule was generated, and regarded the absence of evidence as to 'how the Nine Database operated to select, arrange and present that [programming] information into the "Excel" and "text" format of the Weekly Schedule ... or who was responsible for designing the Nine Database so as to achieve that function' as a 'significant' evidentiary gap.³⁵ The Gummow judgment concluded that '[i]n the absence of evidence as to matters of this kind and of any provision in the Act akin to s 9[(3)] of the [UK Act]; the author of the schedule 'was unknown'.³⁶

The Gummow judgment also regarded as relevant an argument against authorship of databases, namely that because their arrangement occurs 'automatically as a consequence of the operation of the computer program that manipulates the data, the supposed author of the database has not in fact authored it'.³⁷ In their judgment, Gummow, Hayne and Heydon JJ seemed

³⁰ *IceTV* (2009) 239 CLR 458, 503 [134].

³¹ *Ibid* 504 [135].

³² Which gives a *sui generis* right to the maker of a database who has substantially invested in either the obtaining, verification or presentation of the contents of a database to prevent the extraction and/or reutilisation of the whole or of a substantial part of the database, subject to certain exceptions and lawful uses: *Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the Legal Protection of Databases* [1996] OJ L 77/20, arts 7(1), 8–9.

³³ *IceTV* (2009) 239 CLR 458, 494 [98], 508 [151].

³⁴ Note also that s 178 provides that "'computer-generated", in relation to a work, means that the work is generated by computer in circumstances such that there is no human author of the work".

³⁵ *IceTV* (2009) 239 CLR 458, 507 [149].

³⁶ *Ibid* 508 [151].

³⁷ *Ibid* 507 [151], quoting Mark J Davison, *The Legal Protection of Databases* (Cambridge University Press, 2003) 21.

almost irritated that, due to concessions of copyright subsistence, the question of authorship was never examined or resolved in *IceTV*.³⁸

Despite the obiter status of the High Court's statements on issues of copyright subsistence, and although the Court did not expressly consider the issue of computer-produced works, the courts in both *Phone Directories* and *Phone Directories (Appeal)* engaged with the authorship issue left unexamined in *Desktop* and ventilated in *IceTV*.

C *Phone Directories*

1 *At First Instance*

In *Phone Directories*, the question was whether copyright subsisted in the published versions³⁹ of the telephone directories published by Telstra's subsidiary, Sensis Ltd. While that question was seemingly resolved in *Desktop (Appeal)*, the High Court's forceful obiter criticism of that decision in *IceTV* and the concessions made on copyright subsistence in *Desktop (Appeal)* have weakened the value of that apparent finding.

Justice Gordon held at first instance that copyright did not subsist in the directories, primarily because Telstra could not 'identify who provided the necessary authorial contribution to each Work',⁴⁰ and also because much of the production of the directories 'was not the result of human authorship but was computer generated'.⁴¹ Echoing *IceTV*, her Honour stated that 'authorship is central to the determination of whether copyright subsists'.⁴²

³⁸ *IceTV* (2009) 239 CLR 458, 493 [95], 496 [105].

³⁹ The Court did not consider whether there was copyright in the database from which the directories were originally derived: *Phone Directories (Appeal)* (2010) 194 FCR 142, 162 [56] (Keane CJ).

⁴⁰ *Phone Directories* (2010) 264 ALR 617, 621 [5]. For the same reasons, Stone J recently held that no copyright subsisted in multi-authored but largely anonymous medical records, inter alia because the authors could not be identified: see *Primary Health Care Ltd v Federal Commissioner of Taxation* (2010) 186 FCR 301, 333 [125].

⁴¹ *Phone Directories* (2010) 264 ALR 617, 621 [5]. Note that Gordon J also held against copyright subsistence on the ground that the directories lacked originality, saying that much of the contribution to each directory was not 'independent intellectual effort' or 'sufficient effort of a literary nature' for the contributors to be considered authors of *original* works: at 684 [340]. Further, her Honour questioned whether there was sufficient collaboration between the contributors for the directory to fall within the s 10(1) definition of a 'work of joint authorship': at 684 [337].

⁴² *Ibid* 628 [35].

Justice Gordon scrupulously detailed the semi-automated process of creation of the phone directories and the operation of the software systems, the reference tables and ‘the Rules’ applicable to content entry and verification. Relying on the Gummow judgment in *IceTV*, her Honour held against copyright subsistence, including because the directory ‘was not the result of human authorship but was computer generated’,⁴³ and because ‘[a] majority of the creation process of the [directories] was heavily automated.’⁴⁴ Her Honour found that ‘the Rules’ in the computer systems governing significant aspects of the creation and modification of the directories in truth stipulated the expression of the directories’ form and content. While conceding that the process of producing the directories ‘does include the use of human agents’, Gordon J denied them authorship status because ‘their activities [were] inextricably linked to and ultimately governed by the computer systems used’ and any ‘instances of so-called “discretion” [were not] a true discretion but one to be used *in accordance with the Rules*.’⁴⁵ Thus, the human agents did ‘not exercise either “independent intellectual effort” or “sufficient effort of a literary nature” to be considered an author within the meaning of the *Copyright Act*.’⁴⁶ Their work was not ‘relevant intellectual effort’, including because it was directed to the maintenance and operation of computer systems.⁴⁷ The Rules prescribed the particular form of expression and controlled the choice of, and prohibited, certain content of the directories.⁴⁸ The end result was that ‘[t]he Rules prescribe, presume and prohibit the actions of the contributors. What choice there is, is the choice given by the Rules, not by any person or persons.’⁴⁹

2 *Phone Directories (Appeal)*

In *Phone Directories (Appeal)*, all members of the Full Court of the Federal Court considered the automated generation of the directories to be fatal to copyright subsistence. Chief Justice Keane said ‘copyright in a literary work can subsist only if it originates from an individual. This case highlights the

⁴³ Ibid 621 [5], 658 [169], 683–4 [335].

⁴⁴ Ibid 684 [338].

⁴⁵ Ibid 649 [123] (emphasis in original).

⁴⁶ Ibid 657 [162].

⁴⁷ Ibid 657 [165].

⁴⁸ Ibid 657 [163].

⁴⁹ Ibid 657 [164].

difficulty confronting a claim to copyright in a literary work which is compiled by an automated process.⁵⁰

His Honour held that the directories were not compiled by individuals but by the automated processes of the Genesis Computer System or its predecessors, and ‘none of the individuals who contributed to the production of the directories had any conception of the actual form in which they were finally expressed.’⁵¹ The work of a person who merely ‘engages the mechanical processes to produce the compilation’⁵² is not authorial.

Justice Yates held that the processes of compilation carried out by the computer systems were not mere tools used to effect the selection and arrangement of the directories, but were ‘transformative steps ... that resulted in each compilation taking the form that it did.’⁵³

Justice Perram held that where

the person operating a program is not controlling the nature of the material form produced by it ... the performance by a computer of functions ordinarily performed by human authors will mean that copyright does not subsist in the work thus created.⁵⁴

His Honour conceded that ‘it is natural to think that the author of a work generated by a computer program will ordinarily be the person in control of that program.’⁵⁵ However, he said:

care must be taken to ensure that the efforts of that person can be seen as being directed to the reduction of a work into a material form. Software comes in a variety of forms and the tasks performed by it range from the trivial to the substantial. So long as the person controlling the program can be seen as directing or fashioning the material form of the work there is no particular danger in viewing that person as the work’s author. But there will be cases where the person operating a program is not controlling the nature of the material form produced by it and in those cases that person will not contribute sufficient independent intellectual effort or sufficient effort of a literary nature to the creation

⁵⁰ *Phone Directories (Appeal)* (2010) 194 FCR 142, 144 [1].

⁵¹ *Ibid* 171 [89].

⁵² *Ibid* 163 [59].

⁵³ *Ibid* 190 [167].

⁵⁴ *Ibid* 178–9 [118].

⁵⁵ *Ibid* 178 [118].

of that form to constitute that person as its author: a plane with its autopilot engaged is flying itself.⁵⁶

In other words, control of the *software* does not necessarily equate to control of the *form*. And merely causing the materialisation of the work by operating the software is insufficient absent some independent intellectual effort directed to the shape of that material form.

3 *Application for Special Leave to Appeal*

In its (unsuccessful) application for special leave to appeal to the High Court, Telstra argued that the human authorial contributions in the entire continuum of production should be considered, not just the human involvement at the final point of materialisation. The question was

[whether the work can] be regarded as one that has originated with human intellectual effort and ... to answer that question you need to take account of selection and arrangement ... collection, formulation of the entries, the allocation of headings, the customising and control of the computer program, the devising of rules by which it should operate, all those matters come into the mix ... the authorial contribution needs to be assessed across that wider spectrum.⁵⁷

Unfortunately, the High Court did not specifically respond to this argument (or indeed any). They simply found that there had been no error of law by the Court below, and suggested that a database directive was required to assist Telstra.⁵⁸ Thus the Full Federal Court's decision in *Phone Directories (Appeal)* remains the law in Australia in respect to authorship of computer-produced material.

D *Acohs*

Acohs concerned, inter alia, copyright in the source code⁵⁹ for electronic safety data sheets. *Acohs* maintained a large relational database, which stored all the

⁵⁶ Ibid 178–9 [118].

⁵⁷ Transcript of Proceedings, *Telstra Corporation Ltd v Phone Directories Co Pty Ltd* [2011] HCATrans 248 (2 September 2011) 236–44, 253–4 (N J Young QC).

⁵⁸ Ibid 578–81, 266–7 (Gummow J).

⁵⁹ Source code is the text of a computer program written in one of the human readable computer programming languages. The code is comprised of instructions that tell the program how to function. Source code must be converted to object code or machine language by a compiler before a computer can read or execute the program. See generally Phillip A Covington, *Computers, the Plain English Guide* (QNS, 1988) 41, 43.

data required to generate a particular safety sheet. When access to a particular safety sheet was required, the Acohs software called up the necessary components from this database and assembled them in a way that was represented on the user's screen as the requisite safety sheet.⁶⁰ In this process, the software actually generated HTML source code⁶¹ and sent that code to the user's computer where the safety data sheet then appeared in its assembled form on screen.⁶² Acohs claimed that copyright subsisted in this HTML source code, and that Ucorp infringed it.

At first instance, Jessup J held that no copyright subsisted in the source code because it was 'not written by any single human author. It was generated by a computer program.'⁶³ He stated that 'as a general proposition the need for a work to spring from the original efforts of a single human author is a fundamental requirement of copyright law.'⁶⁴

Justice Jessup held that the point when the author needed to be identified was when the work first took material form. This was when the safety data sheets were assembled in their completed form on the user's screen. However, the HTML source code lacked a human author because it was generated automatically by computer 'routines'. His Honour held that the author of the source code for each safety data sheet could not be the person who undertook the task of 'calling up' the safety data sheet, because:

he or she did not write the code, either in a traditional way or using a computer. Rather, the author ... was, at least for the most part, engaged in the task of entering data into the [central database], it being the routine in the Infosafe system which gathered together the elements needed for the source code in question. As Acohs put it, the source code was 'generated' by the system.⁶⁵

Justice Jessup rejected the argument that the 'authors' were simply using the software as a tool to write the code:

It was not as though the authors ... having in mind the source code they desired to write, used the computer to that end. They were not computer pro-

⁶⁰ *Acohs* (2010) 86 IPR 492, 502 [21] (Jessup J).

⁶¹ HTML stands for Hypertext Markup Language, which is the human-readable computer language for creating electronic (hypertext) documents for the web: BusinessDictionary.com, *Hypertext Markup Language (HTML)* (2013) <<http://www.businessdictionary.com>>.

⁶² *Acohs* (2010) 86 IPR 492, 502 [24] (Jessup J).

⁶³ *Ibid* 512 [50].

⁶⁴ *Ibid* 511 [48].

⁶⁵ *Ibid* 511–12 [50].

grammers, and there is no suggestion that they either understood source code or ever had a perception of the body of source code which was relevant to the MSDSs on which they worked.⁶⁶

On appeal, the Full Court of the Federal Court concurred: the software 'did not emanate from authors. It was not an original work in the copyright sense.'⁶⁷

III APPLYING THE *PHONE DIRECTORIES* FORMULA TO VARIOUS COMPUTER-PRODUCED MATERIAL

It is pertinent to now apply the principles that can be distilled in particular from *Phone Directories (Appeal)* to material produced with the assistance of, or by, computers.

The mere use of software will not always prevent authorship. There is a continuum between, at one extreme, 'computer-assisted' works, and at the other extreme, autonomously-generated works. The centre of the continuum is broad and includes methods of production with varying degrees of human intervention affecting the form. Depending on the degree of human intervention, the form of the output may be minimally, significantly, or substantially determined by software. Applying the *Phone Directories* formula to most parts of the continuum raises many questions relating to authorship and copyright subsistence.

A Computer-Assisted Works

Computer-assisted works will generally be authored works, since software is used merely as a tool to produce the work. The software does the user's bidding and the user is largely responsible for the form of the work. An obvious example is word processing software used to compose literary works. These works are uncontentious.

B Autonomously Computer-Generated Works

At the other extreme of the continuum is autonomously-generated output. Here, the software determines the particular form of the output. The significance of these methods of production is that while the programmer sets the

⁶⁶ Ibid 512 [52].

⁶⁷ *Acohs (Appeal)* (2012) 201 FCR 173, 184 [57] (Jacobson, Nicholas and Yates JJ).

rules and parameters in which the software operates, the actual form of the output is unpredictable. A banal example is the automated production of lists of numbers or other identifiers, such as sudoku puzzles or crosswords. Another example is the capture of raw data by computers located in satellites, and the automated processing of the data to produce images showing the contours of the Earth, weather formations, the movements of planets or the structure of galaxies.

More interesting is the growing movement of so-called 'generative art', a concise definition of which is problematic,⁶⁸ but which one expert in the field defines as:

any art practice where the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, which is set into motion with *some degree of autonomy* contributing to or resulting in a completed work of art.⁶⁹

Examples include David Cope's Experiments in Musical Intelligence software, which writes new musical works in the style of famous composers.⁷⁰ Similarly, Stephen Thaler's Creativity Machine makes automated music⁷¹ and Harold Cohen's AARON software makes drawings, some of which have been displayed at the Tate Gallery.⁷² Software can even autonomously produce poems

⁶⁸ See Philip Galanter, 'What Is Generative Art? Complexity Theory as a Context for Art Theory' (Paper presented at Generative Art International Conference, Generative Design Lab, Milan, 2003) <<http://www.philipgalanter.com/research>>.

⁶⁹ Ibid 4 (emphasis added). See also Margaret A Boden and Ernest A Edmonds, 'What Is Generative Art?' (2009) 20 *Digital Creativity* 21, 26; Celestino Soddu, *Generative Art* (1998) <<http://www.generativeart.com>>. Another practitioner of generative art describes it as 'a system oriented art practice where the common denominator is the use of systems as a production method. To meet the definition of generative art, an artwork must be self-contained and operate with some degree of autonomy': see Eric Filion, *Generative Art*, Nokami <<http://www.nokami.com/generative-art>>.

⁷⁰ See Dominic McIver Lopes, *A Philosophy of Computer Art* (Routledge, 2010) 12.

⁷¹ See Imagination Engines Inc, *Musical Creativity Machines* (2012) <http://imagination-engines.com/iei_musical_composition.php>. Perhaps tellingly, the patent for this invention was described as a '[d]evice for the Autonomous Generation of Useful Information': Imagination Engines Inc, *Highlights of the IEI Intellectual Property Suite* (2012) <http://imagination-engines.com/iei_ip_overview.php> (emphasis added). For articles on Thaler's work see Tina Hesman, *Stephen Thaler's Computer Creativity Machine Simulates the Human Brain* (24 January 2004) <<http://www.mindfully.org/Technology/2004/Creativity-Machine-Thaler24jan04.htm>>; Ralph D Clifford, 'Intellectual Property in the Era of the Creative Computer Program: Will the True Creator Please Stand Up?' (1997) 71 *Tulane Law Review* 1675.

⁷² See Lopes, above n 70, 12.

and novels, such as Raymond Kurzweil's Cybernetic Poet software,⁷³ or 'read-alike' novels like Scott French's computer-generated novel *Just This Once* in the style of Jacqueline Susann.⁷⁴

It is doubtful whether such autonomously-generated outputs are authored works under the *Phone Directories* formula, because the computer user is not 'directing or fashioning the material form of the work'⁷⁵ except in the broadest sense of producing a desired output such as 'music', 'art' or 'literature', or even a list of random numbers. The user is responsible for the existence of the output and its general form, but not its particular form, and is really comparable to a human 'on' switch for random acts of creation.

Such conduct arguably warrants copyright protection, and the arguments for ascribing or deeming authorship to such creations are discussed below.

C Partly Computer-Generated Works

The midway point on the continuum between computer-assisted output and computer-generated output is particularly problematic, essentially because both the software and humans make significant contributions to the particular form of the output. For example, software may modify a simple melody by introducing harmonies, bass and rhythms,⁷⁶ or roughly translate a novel into another language. Other examples of these 'intermediate' works are specialised accounting systems, builders' estimating systems, and expert and

⁷³ See Kurzweil CyberArt Technologies Inc, *Ray Kurzweil's Cybernetic Poet* (2001) <http://www.kurzweilcyberart.com/poetry/rkcp_overview.php>.

⁷⁴ See John Boudreau, 'A Romance Novel with Byte: Author Teams Up with Computer to Write Book in Steamy Style of Jacqueline Susann', *Los Angeles Times* (online), 11 August 1993 <http://articles.latimes.com/1993-08-11/news/vw-22645_1_jacqueline-susann>. See also William T Ralston, 'Copyright in Computer-Composed Music: Hal Meets Handel' (2005) 52 *Journal of the Copyright Society of the USA* 281, 283; Noam Cohen, 'He Wrote 200 000 Books (but Computers Did Some of the Work)', *The New York Times* (New York), 14 April 2008; Marius Watz, *Computer-Generated Texts* (7 January 1997) Evolution Zone <http://www.evolutionzone.com/kulturezone/c-g.writing/index_body.html>; Andrej Bauer, *Gallery*, Random Art <<http://www.random-art.org>>. Other examples of generative art are discussed in Annemarie Bridy, 'Coding Creativity: Copyright and the Artificially Intelligent Author' [2012] *Stanford Technology Law Review* 5, 15–18 [36]–[40].

⁷⁵ *Phone Directories (Appeal)* (2010) 194 FCR 142, 178 [118] (Perram).

⁷⁶ See, eg, *Band-in-a-Box*, PG Music <<http://www.pgmusic.com>>, the website for 'band-in-a-box' software that directs users to

[j]ust type in the chords for any song using standard chord symbols (like C, Fm7, or C13b9), choose the style you'd like, and Band-in-a-Box does the rest ... Band-in-a-Box automatically generates a complete professional-quality arrangement of piano, bass, drums, guitar, and strings or horns.

decision-support systems where humans input particular data that is then processed by software to produce accounts, estimates and reports.⁷⁷ At times, the degree of human involvement is so attenuated that these works may well be classified as wholly computer-generated works.⁷⁸

These examples are not ‘computer-assisted’ works because the software is not a mere tool, but significantly fashions the material form of the output. Nor are they generative works because the entire output is not unpredictable. However, the degree of randomness may vary. For example, the combination of harmonies, bass and rhythms that could be added to the musical melody may be myriad. In contrast, the form of the rough translation is broadly predictable. Although many different possible words may be used in a translation, resulting in the *particular* translation being impossible to foresee, the overall structure and meaning of the translation will remain similar to the source work, due to the user directing a translated output of certain words. Similarly, a builder’s computer-generated estimate will employ a suite of databases (for example, of standard prices, building regulations and standards) as well as software from which the estimate is generated, but humans will also contribute intellectual effort, for example, by deciding what data is input, replacing standard pricing with custom pricing and setting other parameters to obtain a realistic estimate. Thus the broad format of the output, if not particular content, is reasonably predictable.

In each of these cases, is there an author of the modified output? Where existing material is subjected to modifying software, this may depend on whether the user of the software was the author of the source work. If software is applied to a work not authored by the user, where is the original intellectual effort of the user if the final shape of the work is effected by software?⁷⁹ It seems strained to argue that this is at the same time a compilation, an arrangement of the source work and the software-modified elements.⁸⁰

⁷⁷ For a detailed discussion of these systems, see CLRC, Parliament of Australia, *Report on Computer Software Protection* (1995) 245 [13.12], 246 [13.15]. See also David Bainbridge, *Introduction to Information Technology Law* (Pearson, 6th ed, 2007) 93–6.

⁷⁸ See, eg, the discussion of reports generated by ‘expert systems’ in CLRC, *Computer Software Protection*, above n 77, 245 [13.12], 246 [13.15].

⁷⁹ This should also be the case if the source author applied software to modify a copy of their completed work, since again the source material is unoriginal.

⁸⁰ Of course, if the user then further ‘manually’ modifies the computer-generated output, then they may have invested sufficient independent intellectual effort to be regarded as the author of the further modified output, even if its foundation was computer-generated. Or, if the user simply employs software to make modifications conceived and intended by the user, then this is simply an example of computer-assisted modification and the user would be an author. In both cases, this would equate to the copyright awarded to a person who has taken unoriginal

The outcome may also depend on whether there is a completed source 'work' that is modified. If a source author applies software to simply finish their work, then they are not working on a mere copy of a work and their intellectual effort is detectable in the ultimate output. Since both the software and the source work author are responsible for the ultimate expression 'taking the form that it did',⁸¹ the question is whether the source author has invested sufficient intellectual effort to be regarded as an author.⁸² When considering the quantity of finished form attributable to the software, *Phone Directories* clarifies that authorship will be impossible if 'much of the contribution'⁸³ to the form of the output is due to the software, or if the output is 'essentially computer-generated',⁸⁴ 'almost entirely automated'⁸⁵ or 'overwhelmingly the work' of the software.⁸⁶ On a qualitative assessment, the relevant questions are whether the source author was 'controlling the nature of the material form produced by'⁸⁷ the software, and whether the software was the 'transformative' step, 'obviously fundamental',⁸⁸ of 'central importance'⁸⁹ or of 'such overwhelming significance'⁹⁰ to the form. Or conversely, whether the user made

material and sufficiently modified it to produce a discrete new work: *A-One Accessory Imports Pty Ltd v Off Road Imports Pty Ltd* (1996) 65 FCR 478, 487–8 (Drummond J).

⁸¹ *Phone Directories (Appeal)* (2010) 194 FCR 142, 190 [167] (Yates J).

⁸² One cannot resolve the issue by regarding the output as a work of joint authorship between the source author and the software. A work of joint authorship is defined in s 10(1) of the Act as 'a work that has been produced by the collaboration of two or more authors and in which the contribution of each author is not separate from the contribution of the other author or the contributions of the other authors.' Clearly this definition cannot apply here. Software of course cannot be regarded as an author, and in any event the contributions of the software on the one hand and the source author on the other are separable. Even if the partly computer-generated work is not a copyright work, it may still be possible to rely on copyright in the source work, even if it is an unfinished 'draft', provided there is copyright in the draft as a discrete work. In that case any infringement of the computer-moderated work may constitute an infringement of the draft source work.

⁸³ *Phone Directories (Appeal)* (2010) 194 FCR 142, 181 [130] (Yates J) (emphasis added).

⁸⁴ *Ibid* 191 [169] (emphasis added).

⁸⁵ *Ibid* 177 [114] (Perram J) (emphasis added).

⁸⁶ *Ibid* 171 [89] (Keane CJ) (emphasis added).

⁸⁷ *Ibid* 178 [118] (Perram J).

⁸⁸ *Ibid* 190 [167] (Yates J).

⁸⁹ *Ibid* 170 [88] (Keane CJ).

⁹⁰ *Ibid* 191 [169] (Yates J).

‘no substantive input’,⁹¹ or whether the work ‘can be properly characterised, *overall*, as a work that originates from an author or authors’.⁹²

Whether partly computer-generated works meet the quantitative or qualitative thresholds discussed above will clearly always be a question of fact and degree. However, the source author’s responsibility for the source material means that the final result is not ‘*essentially* computer-generated’⁹³ and this should be enough to regard them as the author of the modified output. Support for this outcome is found in *Phone Directories (Appeal)*, where Keane CJ said: ‘Indeed, none of the individuals who contributed to the production of the directories had *any conception of the actual form* in which they were *finally* expressed.’⁹⁴ Here, the source author clearly has some conception of the final form, since the software application will not supplant the form of the foundation work but will modify it. In that case, it seems artificial to just consider the ‘top layer’ of computer-generated input as that which is *substantially* responsible for the particular form of the output, simply because it was the final step in materialising the form. However, attributing authorship to the software user in the case of ‘partly computer-generated’ works may still sit uneasily with existing jurisprudence on authorship, discussed below.

IV EXPLORING THE CONCEPT OF AUTHORSHIP

A *Authorship and Originality*

While the above cases emphasise the importance of an author,⁹⁵ *what* an author is remains undefined in the Act⁹⁶ and is relatively unexplored in case law.

At minimum, an author is ‘the person who brings the copyright work into existence in its material form’.⁹⁷ If the person materialising the information

⁹¹ Ibid 172 [101] (Perram J).

⁹² Ibid 191 [169] (Yates J) (emphasis added).

⁹³ Ibid (emphasis added).

⁹⁴ Ibid 171 [89] (Keane CJ) (emphasis added).

⁹⁵ Authorship is also critical because copyright ownership generally flows from authorship: *Copyright Act 1968* (Cth) s 35(2); the author may provide the necessary territorial nexus with Australia: at s 32; and the author may determine duration of copyright: at s 33.

⁹⁶ Save for a reference to authors of photographs in s 10(1) (definition of ‘author’).

⁹⁷ *IceTV* (2009) 239 CLR 458, 494 [98] (Gummow, Hayne and Heydon JJ), quoting Hugh Laddie, Peter Prescott and Mary Vitoria, *The Modern Law of Copyright* (Butterworths, 1980) 243 [6.6]; *IceTV* (2009) 239 CLR 494, 474 [33] (French CJ, Crennan and Kiefel JJ): authors

does so at the direction of another person supplying the intellectual skill and effort, then he is a ‘mere amanuensis’ of the latter.⁹⁸ In *IceTV*, the Gummow judgment insists that copyright subsists ‘by reason of the relevant fixation of the original work of the author in a material form.’⁹⁹ If authorship only required fixation, then most computer-produced output would be ‘authored’, since a person has, through the software, materialised it.

However, the author is most importantly the source of originality, a cornerstone of copyright subsistence.¹⁰⁰ Indeed, one cannot discuss authorship in isolation, since the requirement of originality is correlative:

the two expressions ‘author’ and ‘original work’ have always been correlative; *the one connotes the other* ... Indeed, the circumstance of reciprocal connotation is the key to the meaning of the [*Copyright Act 1912* (Cth)] ... ‘author’ [is] ‘the person who originates or gives existence to anything’ ...

I pass to another branch of the contention, namely, that the Act itself by its own words requires the double condition ‘author’ and ‘original work.’ The scheme of protection, as I read the Act, is this: All literary works are protected if ‘original.’ That is the only condition ... *The word ‘original’ connotes the ‘authorship’* ...¹⁰¹

‘bring into existence’ copyright works. See also *Donoghue v Allied Newspapers Ltd* [1938] 1 Ch 106, 109 (Farwell J): ‘the person who has clothed the idea in form’.

⁹⁸ *Donoghue v Allied Newspapers Ltd* [1938] 1 Ch 106, 109 (Farwell J).

⁹⁹ *IceTV* (2009) 239 CLR 458, 496 [105]. See also at 493–4 [96], where Gummow, Hayne and Heydon JJ said ‘the essential source of original works remains the activities of authors’; original works ‘emanate from authors’.

¹⁰⁰ See Jane C Ginsburg, ‘The Concept of Authorship in Comparative Copyright Law’ (2003) 52 *DePaul Law Review* 1063, 1077: ‘in most copyright/authors’ rights jurisdictions, originality is the overarching standard of authorship.’

¹⁰¹ *Sands & McDougall Pty Ltd v Robinson* (1917) 23 CLR 49, 55, 57 (Isaacs J) (emphasis added). See also *IceTV* (2009) 239 CLR 458, 474 [34] (French CJ, Crennan and Kiefel JJ): ‘There has been a long held assumption in copyright law that “authorship” and “original work” are correlatives; the legislation does not impose double conditions.’ There, the judges further stated at 479 [48] that

[i]t may be that too much has been made, in the context of subsistence, of the kind of skill and labour which must be expended by an author for a work to be an ‘original’ work. The requirement of the Act is only that the work originates with an author or joint authors from some independent intellectual effort.

See also *Victoria Park Racing & Recreation Grounds Co Ltd v Taylor* (1937) 58 CLR 479, 511 (Dixon J): ‘some original result must be produced. This does not mean that new or inventive ideas must be contributed. The work need show no literary or other skill or judgment. But it must originate with the author and be more than a copy of other material’; *Ladbroke (Football) Ltd v William Hill (Football) Ltd* [1964] 1 WLR 273, 289 (Lord Devlin): ‘The require-

The French judgment in *IceTV* stipulates that originality:

requires that the literary work in question originated with the author and that it was not merely copied from another work. It is the author or joint authors who bring into existence the work protected by the Act. In that context, originality means that the creation (ie the production) of the work required some independent intellectual effort ...¹⁰²

The first sentence suggests that two elements are required — origination of something and an absence of copying. In this respect, software-generated output is authored. It has originated in the sense of being brought into existence,¹⁰³ and no pre-existing expression is copied in the application of software.¹⁰⁴ However, the last sentence imposes a qualifying condition — that the origination occurs through *intellectual* effort. Software raises critical issues with respect to the degree, the direction and the source of mental effort.

1 *Degree of Mental Effort*

The degree of mental effort required to satisfy the originality criterion is necessarily uncertain, since it is always ‘a question of fact and degree’.¹⁰⁵ It is generally accepted that the originality threshold, while impossible to define, is low. In particular, the French judgment in *IceTV* stated that the Act requires ‘*only* that the work originates with an author or joint authors from some independent intellectual effort.’¹⁰⁶ Originality requires neither novelty nor

ment of originality means that the product must originate from the author in the sense that it is the result of a substantial degree of skill, industry or experience employed by him.’

¹⁰² *IceTV* (2009) 239 CLR 458, 474 [33] (emphasis altered) (citations omitted). See also the Gummow judgment, which requires an author to exercise ‘sufficient effort of a literary nature’ in expressing a (presumably literary) work: at 494 [99]. See also *Phone Directories (Appeal)* (2010) 194 FCR 142, 163 [58], where Keane CJ required ‘some intellectual effort of the author.’

¹⁰³ See Susan Butler (ed), *Macquarie Dictionary* (5th ed, 2009) 1179, which defines ‘originate’ as ‘to take its origin or rise; arise; spring’ or ‘to give origin or rise to; initiate; invent.’

¹⁰⁴ Assuming it is not being used as a tool to copy.

¹⁰⁵ *G A Cramp & Sons Ltd v Frank Smythson Ltd* [1944] 1 AC 329, 335 (Viscount Simon LC). See also *Macmillan & Co Ltd v K & J Cooper* (1923) 93 LR PC 113; *Dynamic Supplies Pty Ltd v Tonnex International Pty Ltd* (2011) 91 IPR 488, 505 [84] (Yates J), citing *Ladbroke (Football) Ltd v William Hill (Football) Ltd* [1964] 1 WLR 273, 277–8, 282, 285, 292: ‘The cases make clear that originality, for copyright purposes, is a matter of degree depending on the amount of skill, judgment or labour that has been involved in making the compilation’.

¹⁰⁶ *IceTV* (2009) 239 CLR 458, 479 [48] (emphasis added).

mental ingenuity,¹⁰⁷ and the same copyright protection is given to both a simple song and a great opera.

If the ‘intellectual effort’ of merely clicking a digital camera is an act of authorship, then arguably the mental effort involved in selecting, setting up and running software should also be. However, while the originality threshold is low, it is questionable whether the intellectual effort involved in software-produced material is sufficient. As discussed above, there is a stronger argument for sufficient mental effort in the case of partly computer-generated works if the source material was independently authored. In the case of wholly or substantially computer-generated works, there may be sufficient mental effort in selecting software to perform a preconceived design (discussed further below), although there is negligible mental effort in simply running software to achieve another’s design. Where content is generated by software, then the only discernible mental effort may be in *deciding* to produce some intended work (but of unknown content) and selecting¹⁰⁸ the requisite software. In the case of generative art, it could be argued that the intellectual effort of the creator is the calculated devolution of responsibility for the particular form to the software, since the autonomously shaped work is the *very point* of generative art, although that seems more like a mere *decision to create* than acceptable ‘intellectual effort’.

2 Direction of Mental Effort

The Gummow judgment in *IceTV* also stipulated that the author’s intellectual effort must be ‘directed to the particular form of expression’.¹⁰⁹ This excludes intellectual effort that is too ‘anterior’ to the material expression of the work.¹¹⁰ This may be significant in the context of large, complex productions such as phone directories, since considerable amounts of effort and skill, by a diverse range of players, may be involved in the ‘background’ work that is indirectly related to setting up the software systems. It probably also excludes the intellectual effort of the software programmer. The requirement that the

¹⁰⁷ *Victoria Park Racing & Recreation Grounds Co Ltd v Taylor* (1937) 58 CLR 479, 511 (Dixon J).

¹⁰⁸ Selecting the software may in fact involve some degree of judgment, assuming the quality and efficacy of generative software differs.

¹⁰⁹ *IceTV* (2009) 239 CLR 458, 481 [54]. The French judgment also stated that ‘there can be no doubt that copyright is given in respect of “the particular form of expression in which an author convey[s] ideas or information to the world”’: at 471 [26], citing *Hollinrake v Truswell* [1894] 3 Ch 420, 424 (Lord Herschell LC).

¹¹⁰ McCutcheon, ‘When Sweat Turns to Ice’, above n 10, 89–91.

effort be directed to particular expression also raises issues with software which autonomously determines the expression.

3 *The Source of Mental Effort: Does the Author Need to Personally Engage in Mental Effort?*

The critical obstacle to copyright subsistence in substantially computer-generated material is the lack of mental effort by the author. We can detect human mental effort in this process, but it is that of the programmer, manifest in the software. It is clear that an author need not supply both the mental and fixation effort. Under the amanuensis doctrine, an author can rely on another person or machine to supply the fixation effort, provided the author's mind directs and shapes the output.¹¹¹ Certain cases have even accorded joint authorship status to substantial intellectual contributions that partly shape the output, even if the contributor was not 'pushing the pen'.¹¹² Notably, in both these scenarios, some degree of mental effort is present, shaping the ultimate form of the output. If the jurisprudence on authorship can accommodate this 'outsourcing' of fixation effort, can it accommodate a user relying on the intellectual effort of the *software programmer* to supply the mental effort? It seems unlikely. *IceTV* suggests the programmer's effort would not be sufficiently directed to¹¹³ the output at issue, but to another work — the software itself. Can we then regard the software itself as a source of intellectual effort? This too seems unlikely given that software does not 'think' using a 'mind' in the requisite sense.

The Act itself only requires that a work be 'original'¹¹⁴ and that there be an 'author'.¹¹⁵ According to the case law, originality requires, in essence, origination through mental effort without copying. Although the point has never been expressly considered, the assumption in the jurisprudence on the author–originality correlation is that the author must supply their own mental

¹¹¹ *Donoghue v Allied Newspapers Ltd* [1938] 1 Ch 106, 109 (Farwell J).

¹¹² See *Cala Homes (South) Ltd v Alfred McAlpine Homes East Ltd [No 1]* [1995] FSR 818, 835 (Laddie J) (High Court of Justice of England and Wales, Chancery Division): 'In my view, to have regard merely to who pushed the pen is too narrow a view of authorship.' See also *Najma Heptulla v Orient Longman Ltd* [1989] 1 FSR 598, 609 (Kirpal J) (High Court of Delhi): 'if there is intellectual contribution by two or more persons, pursuant to a pre-concerted joint design, to the composition of a literary work then those persons have to be regarded as joint authors'; *Milwell Pty Ltd v Olympic Amusements Pty Ltd* (1999) 85 FCR 436, 446–7 [32]–[41] (Lee, von Doussa and Heerey JJ).

¹¹³ *IceTV* (2009) 239 CLR 458, 471 [26] (French CJ, Crennan and Kiefel JJ).

¹¹⁴ *Copyright Act 1968* (Cth) s 32.

¹¹⁵ *Ibid* ss 32–3, 35.

effort and cannot rely on the artificial intelligence of software or the intellect of another human agent.¹¹⁶ When referring to the type of effort that is required for an original work, the French judgment in *IceTV* referred to ‘the mental processes of an author’ and ‘original productive thought’.¹¹⁷ This suggests strongly that the mental effort must be that of *the author* and must involve *thought*, not just processing.

Other judgments are more ambiguous. One High Court judge has said that it was the ‘personal, that is, independent, intellectual effort’ of the author that conferred originality.¹¹⁸ The requirement of ‘personal’ effort could indicate that the intellectual effort must be supplied by the author, however, the qualification, ‘that is, independent’, probably means that Isaacs J was referring to the prohibition on copying implied in the independence criterion.

The statement in *IceTV* that originality requires ‘that the literary work in question *originated with the author* and that it was not merely copied from another work’¹¹⁹ derives from *Victoria Park Racing & Recreation Grounds Co Ltd v Taylor*, where Dixon J said that a work ‘must originate with the author and be more than a copy of other material’.¹²⁰ The conjunction ‘and’ suggests that the phrase ‘originate with the author’ must mean something more than merely not copying, otherwise the phrase ‘more than a copy of other material’ would be tautological and the conjunction unnecessary. However, ‘originate’ could simply have its dictionary definition of bringing into existence or materialising.¹²¹ Thus the entire phrase could simply mean ‘bring something into being without copying’.

In *Acohs (Appeal)*, the Court held that the code was not an original work because it ‘did not emanate from authors’.¹²² ‘Emanate’, however, has the same meaning as ‘originate’.¹²³ Again, this does not necessarily require that the fixer

¹¹⁶ Although clearly under the amanuensis doctrine, the author can outsource the *fixation* effort. The assumption is implicit also in the treatment of creations by independent contractors. When creation is outsourced in that manner the other contracting party has no claim to the copyright (although in that case both the fixation and mental effort have been outsourced).

¹¹⁷ *IceTV* (2009) 239 CLR 458, 478–9 [47].

¹¹⁸ *Sands & McDougall Pty Ltd v Robinson* (1917) 23 CLR 49, 52 (Isaacs J).

¹¹⁹ *IceTV* (2009) 239 CLR 458, 474 [33] (French CJ, Crennan and Kiefel JJ) (emphasis altered).

¹²⁰ (1937) 58 CLR 479, 511.

¹²¹ See above n 103.

¹²² *Acohs (Appeal)* (2012) 201 FCR 173, 184 [57] (Jacobson, Nicholas and Yates JJ).

¹²³ The *Macquarie Dictionary* defines ‘emanate’ as ‘to flow out, issue, or proceed as from a source or origin; come forth; originate’: Butler, above n 103.

be the source of mental effort. This simply restates the origination requirement of authorship.

In *Acohs*, Jessup J stated that a fundamental requirement of copyright law is that a work ‘spring from the original efforts of a single human author’.¹²⁴ However, there is no indication that this statement requires that material fixation and original mental effort emanate from the same person.¹²⁵

If an author must supply both the mental and fixation effort, and if software, rather than the mental effort of the author, substantially shapes the work, then its use will always prevent copyright subsistence. The originality criteria can only be satisfied if the authorship model could accommodate a source of supply of the mental effort that is *external* to the fixer, with software replacing the author’s intellectual effort.¹²⁶ In other words, the author represents the point where the fixation and the mental effort meet, even if both do not come from a single human. This, however, seems unlikely following the strong restatement of conventional authorship principles in *IceTV*.

B Conclusions: Authorship Jurisprudence

In summary, the Australian jurisprudence on the authorship–originality correlation clarifies that:

- 1 there must be authorship, in the sense of materialising the work;
- 2 the author must personally engage in a minimum degree of intellectual effort;
- 3 that effort must be directed to the particular expression of the material output; and

¹²⁴ *Acohs* (2010) 86 IPR 492, 511 [48].

¹²⁵ Indeed, the reference is curious given that original works can emanate from the original efforts of joint authors.

¹²⁶ Note that a relational distance between the ‘creator’ and the fixer is accommodated in some jurisdictions. For example, s 3 of the UK Act permits a third party to fix the work of an author. Section 3(2) provides that copyright does not subsist in a work until it is recorded in writing or otherwise, however, s 3(3) clarifies that ‘[i]t is immaterial for the purposes of subsection (2) whether the work is recorded by or with the permission of the author’. Presumably this would include instances where the ‘author’ had no knowledge of the recording — they would still be the author. Further, US copyright legislation accommodates fixation ‘by or under the authority of the author’: *Copyrights*, 17 USC § 101 (2012). These approaches recognise that the acts of ‘creation’ and fixation of a work may be different processes: see generally Elizabeth Adeney, ‘Authorship and Fixation in Copyright Law: A Comparative Comment’ (2011) 35 *Melbourne University Law Review* 677.

4 that effort must be independent in the sense that the work must originate from the author and not be copied.

The above discussion demonstrates that these authorship criteria mesh awkwardly with modern computer production methods, as acknowledged in *IceTV*.¹²⁷

V ASCRIBING AUTHORSHIP TO SOFTWARE SELECTORS

A *The Argument*

This section argues that a potential source of mental effort of software selectors may have been overlooked in *Phone Directories* and examines the problems associated with attributing authorship to selectors.

The human users of the software in *Phone Directories* were not authors because the software, rather than the users, essentially dictated the material form of the output. However, if the material form of a work is dictated by the computer software employed to create it, the obvious inclination is to accredit authorship to the humans responsible for selecting that software.¹²⁸

This is recognised in Professor Davison's rejoinders to the argument against authorship of databases, which are:

Even though the final result is produced by the 'work' of a computer in arranging the material in this way, human thought went into the scheme of the database and the conception of how the material would look to the external user ...

The second response ... is based on the proposition that the authors of databases can claim authorship by virtue of having considered the possible outcomes of their input into the database. They have chosen the software used in the database and therefore chosen the operations that it can carry out on the data included.¹²⁹

According authorship to software selectors recognises that judgment may be employed in the *selection* of particular software over other alternatives in

¹²⁷ (2009) 239 CLR 458, 471 [23] (French CJ, Crennan and Kiefel JJ): 'Undoubtedly, the classical notion of an individual author was linked to the invention of printing ... The technological developments of today throw up new challenges in relation to [this] paradigm'.

¹²⁸ And/or customising it to achieve the preconceived design. This would exclude the selection of generative software that autonomously determines the form of the output, since the software is not selected to achieve a preconceived design of the user.

¹²⁹ Mark J Davison, *The Legal Protection of Databases* (Cambridge University Press, 2003) 22–3, quoted in *IceTV* (2009) 239 CLR 458, 507–8 [151] (Gummow, Hayne and Heydon JJ) without further comment.

order to give effect to a certain desired form over other possible forms, similar to the judgment involved in selecting extracts for a compilation and rejecting others.¹³⁰ The skill and effort of selection alone (as opposed to both selection *and* arrangement of the selected material) has been recognised as conferring originality on copyright compilations.¹³¹ In *Sands & McDougall Pty Ltd v Robinson*, it was recognised that the ‘exercise of *judgment and discrimination*’ was sufficient to confer originality.¹³² Furthermore, the Gummow judgment in *IceTV* suggests that selection and arrangement can be considered separate authorial acts, the authors of a compilation being those ‘who select, order or arrange its fixation in material form’.¹³³

The French judgment in *IceTV* suggests that both selection *and* arrangement are required,¹³⁴ as does Keane CJ in *Phone Directories (Appeal)*.¹³⁵ However, the question of whether both selection and arrangement were required for compilation originality was not considered by either the High Court in *IceTV* or the Full Federal Court in *Phone Directories*. Therefore the use of the conjunctive expression ‘and’ should not be considered determinative of the issue, particularly against a backdrop of jurisprudence suggesting either selection or arrangement will suffice.

Recognising selection of software as a source of originality also acknowledges the practical reality that complex productions do not just create or arrange their own material form. It is irresistible that humans must have some overarching control over the particular form of works created by computers,

¹³⁰ Similar, though not identical. A compiler selects elements of content. A software selector selects a set of instructions that *produces* or *modifies* content.

¹³¹ See David Lindsay, ‘Copyright Protection of Broadcast Program Schedules: *IceTV* before the High Court’ (2008) 19 *Australian Intellectual Property Journal* 196, 221–3; *Dynamic Supplies Pty Ltd v Tonnex International Pty Ltd* (2011) 91 IPR 488, 504–5 [77]–[79] (Yates J).

¹³² (1917) 23 CLR 49, 52 (Isaacs J), cited in *IceTV* (2009) 239 CLR 458, 474 [33] (French CJ, Crennan and Kiefel JJ): ‘He had unquestionably prepared it by taking the common stock of information in Australia and, by applying to it personal, that is, independent, intellectual effort in the exercise of judgment and discrimination, had produced a map that was new’.

¹³³ *IceTV* (2009) 239 CLR 458, 494–5 [99].

¹³⁴ *Ibid* 472 [28] (citations omitted): ‘Copyright protects the particular form of expression of the information ... and the selection and arrangement of that information.’ The judges further note, at 478–9 [47]:

A complex compilation or a narrative history will almost certainly require considerable skill and labour, which involve both ‘industrious collection’ and ‘creativity’, in the sense of requiring original productive thought to produce the expression, including selection and arrangement, of the material.

¹³⁵ (2010) 194 FCR 142, 171 [90]: ‘Their activities are not part of the activity of compilation: they do not select, arrange and present that data in the form in which it is published.’

and that where software determines this form it must be humans who have caused that by selecting that software.

B *Consideration of the Argument in IceTV and Phone Directories*

In *IceTV*, only the Gummow judgment alluded to the argument, when it suggested that the lack of evidence of ‘who was responsible for designing the Nine Database’ so as to achieve the function of generating the schedule in its final form may indicate that the author ‘was unknown’.¹³⁶ This suggests that had that person been identified, their conduct in designing the database may be authorial.

The argument was not directly considered in the *Phone Directories* cases.¹³⁷ This was apparently because ‘[t]he evidence did not establish who had created or customised, in whole or in part, the computer systems’.¹³⁸ It is clear that this heavy evidentiary burden will very often be difficult, if not impossible, to discharge and significantly contributes to the problems examined in this article.

The argument was most overtly raised in Telstra’s application for special leave to appeal to the High Court. Telstra argued that there was ‘human intellectual effort in choosing, customising, setting out specifications and formulating rules as to the operation of a computer system which effected the selection and arrangement in material form’,¹³⁹ and that

the actual selection and arrangement, albeit done by a computer program, is a computer program that has been chosen and customised and then operated ac-

¹³⁶ *IceTV* (2009) 239 CLR 458, 507 [149].

¹³⁷ At first instance, Gordon J noted that Sensis’ employees were seldom responsible for designing or creating the software requirements, even though they were ‘often responsible for prescribing and overseeing implementation of the [software] requirements’: *Phone Directories* (2010) 264 ALR 617, 639–40 [72]–[81], 641 [87]. The major difficulty for Sensis was that much of the computer system was constructed by a third-party contractor, and individual elements were often inherited with no clear understanding of who created them. For example, it was ‘by no means clear’ who created ‘the Rules’, which so prescriptively governed the form of the directory listings: at 648 [119]. Assuming that the originality of the Yellow and White Pages lies in its selection or arrangement (rather than the factual contents), the other difficulty Sensis would be facing is establishing when the first manifestation of that formed arrangement occurred. If the arrangement has not changed much over time, Sensis would have struggled to identify the relevant point in time of creation of that work, who had created it and how.

¹³⁸ *Phone Directories (Appeal)* (2010) 194 FCR 142, 151 [29] (Keane CJ).

¹³⁹ Transcript of Proceedings, *Telstra Corporation Ltd v Phone Directories Co Pty Ltd* [2011] HCATrans 248 (2 September 2011) 5–8 (N J Young QC).

ording to rules devised by human intellectual effort of a specific purpose of creating these published literary works.¹⁴⁰

This conduct of ‘choosing’, ‘customising’ and ‘operating’, not to mention ‘setting out specifications and formulating rules’ may be broader than the more targeted task of selecting software to achieve a preconceived design. However, some of that conduct is clearly relevant. In any event, as mentioned above,¹⁴¹ in the special leave hearing, the High Court unfortunately did not address Telstra’s arguments in respect of any of this conduct, simply finding that there had been no error of law by the Court below.

In *Phone Directories (Appeal)*, Keane CJ and Perram J concentrated on the individuals running the software that extracted the relevant data from the database to create the ‘book extract’, being the first material formation of the directories in their final compiled form.¹⁴² As discussed above, the Court dismissed this conduct as non-authorial because the extraction was done by software controlled, but not created, by these individuals and ‘the form of the compilation [does not] originate with the individual who engages the mechanical processes to produce the compilation.’¹⁴³

This begs the question: what humans were responsible for determining what the directories would look like in their final form and for choosing the software that would achieve that form? In principle, conceiving a design or choosing software to achieve that particular design should ascribe authorship to the designers/selectors.

In this regard, Perram J’s metaphor in *Phone Directories (Appeal)* of an autopiloted plane ‘flying itself’ is perhaps unconvincing. Whether piloted by human or software, the plane is still flying to the designated destination, as directed. The question is: who set the coordinates? If we equate the plane’s destination coordinates with the material form of the production, the pilot has ‘fashioned the material form’ of the journey but has outsourced the work of flying to the software. The autopilot is thus a mere labour-saving device. The end result — the destination — remains the same whether autopilot or manual control are applied. The difficulty faced by Telstra in *Phone Directories*

¹⁴⁰ Ibid 156–60.

¹⁴¹ See above Part IIC3.

¹⁴² *Phone Directories (Appeal)* (2010) 194 FCR 142, 171 [89] (Keane CJ), 178 [117] (Perram J).

¹⁴³ Ibid 163 [59] (Keane CJ). The facts showed ‘that the activities of individuals are organised to provide input to the computerised processes which produce each directory, and to make more or less mechanical refinements to that product’: at 154 [34].

was that the computer operators did not set the coordinates, and there was no evidence from those who did.¹⁴⁴

In *Phone Directories*, the true designers of the material form were likely to be the ‘ultimate’ designers responsible for coordinating and directing all of the activities that, in combination, gave effect to the final form of the production. While it is compelling to claim that a work of such sophistication must have emanated ultimately from a human coordinator and ask a court, in the absence of direct evidence, to *infer* the existence of such an individual, for reasons explored below this may still not suffice to establish that person as an author.¹⁴⁵

C Problems Ascribing Authorship to Software Selectors

1 Tenuous Causal Chain

Even if evidence from the ‘ultimate selectors’ had been presented to the *Phone Directories* Court, that conduct may not be authorial. Justice Yates in *Phone Directories (Appeal)* most overtly responded to (but rejected) the argument that humans selecting the computer software systems could be authors:

it is not to the point that the second appellant’s employees were also involved ... in selecting, customising, maintaining and operating the computer systems that were deployed in the production of the directories ... Those activities are akin to educating, training or instructing individuals, and maintaining a sufficient number of them, to carry out the discrete activities of selecting, ordering and arranging material to create the individual compilations. However, the two bodies of activity should not be confused for one another.¹⁴⁶

This implies that the selection and customisation of the software systems used to compile the directories is too removed from the actual compilation through the *application* of those systems to be authorial. The software

¹⁴⁴ Ibid 179 [119] (Perram J). The applicants apparently relied on establishing that the input of individuals in making manual modifications and verifications was enough to inject authorship, or that the work was a work of joint authorship between all of the combined contributors to the directory, or that authorship could be presumed under ss 128 and 129 of the Act. However, it is more likely that the evidence of the true designers was missing simply because they could not be identified, located or interrogated.

¹⁴⁵ Further, in order to prove ownership and thus standing, it may also be critically important to establish that whoever this person was, they were an employee (*Copyright Act 1968* (Cth) s 35(6)), or an assignor of any ownership interest, and a qualified person (at s 32) at the relevant time of creation.

¹⁴⁶ *Phone Directories (Appeal)* (2010) 194 FCR 142, 190–1 [168].

selectors are merely responsible for ‘setting up’ or ‘teaching’ the conditions for the production of the compilation. They are decision-makers, organisers and trainers, but they are not authors.

However, it is not clear why this should be the case. If the persons running the software are effectively scribes of the software selectors (being ‘educated, trained or instructed’ by the selectors to perform a task), then, contrary to Yates J’s assertion, the selectors’ decisions relating to the software and what it does are very much ‘to the point’, since those decisions ultimately form the compilation. That others (the operators) were trained to effect the design of the selectors should be immaterial.

Nevertheless, the evidence may fail to demonstrate a true line of direction from an ultimate selector to the material fixers. The massive, complex and fragmented nature of many large productions may simply make it impossible for the authorial voice of an ultimate selector to reach the final fixers sufficiently undiluted. If the individuals running the software also contribute independent skill and effort that affects the particular form of the compilation, or if third parties step in and modify the original software design, are they then joint authors with the ultimate selector? It is difficult to fit this kind of relationship within the statutory definition of a work of joint authorship¹⁴⁷ (as interpreted by the courts).¹⁴⁸ The joint authorship claims in *Phone Directories* were rejected,¹⁴⁹ though not comprehensively considered.¹⁵⁰

Further, the ultimate selectors will most likely perform a discrete design task, at some temporal¹⁵¹ and practical distance from the downstream extractors.¹⁵² An author must expend some kind of skill or effort directed to

¹⁴⁷ See above n 82 for the definition of ‘work of joint authorship’ in the Act.

¹⁴⁸ See, eg, *Fairfax Media Publications Pty Ltd v Reed International Books Australia Pty Ltd* (2010) 189 FCR 109, 131 [85]–[89] (Bennett J); *Milwell Pty Ltd v Olympic Amusements Pty Ltd* (1999) 85 FCR 436, 446–7 [32]–[41] (Lee, von Doussa and Heerey JJ); *Dynamic Supplies Pty Ltd v Tonnex International Pty Ltd* (2011) 91 IPR 488, 501 [53]–[55], 502 [65], 504 [74]–[75] (Yates J); *Primary Health Care Ltd v Federal Commissioner of Taxation* (2010) 186 FCR 301, 313 [41], 332–3 [121]–[122] (Stone J).

¹⁴⁹ *Phone Directories* (2010) 264 ALR 617, 684 [337] (Gordon J); *Phone Directories (Appeal)* (2010) 194 FCR 142, 171 [92] (Keane CJ).

¹⁵⁰ *Phone Directories* (2010) 264 ALR 617, 684 [337] (Gordon J): ‘given the simple and undeniable fact that the Applicants have failed to prove the identity of the authors who contributed to the Works, it is unnecessary to consider [the issue of joint authorship] further.’

¹⁵¹ There may be a significant time lag between the work of selecting and customising the software and the materialisation of its output. In the case of the White Pages, essentially the same software may be used to create several editions of directories over many years.

¹⁵² Often as independent contractors.

the originality of the expression of the work, even if that is through a scribe,¹⁵³ however, the ultimate selectors generally do not 'direct' the operation of the software to produce the production. Does there need to be a more proximate relationship between the ultimate selector and the downstream fixer? Or is it enough that the selector knows and intends that someone, at some time, will run the software and produce the designed form? In short, merely 'setting up' the conditions for some unknown person to later generate a contemplated work may fall short of the requisite 'direction'.

In this respect, the ultimate designers are perhaps more analogous to the authors of the selected software, who are also distant from the output created by their code. In *Acohs*, it was argued that the authors of the generated code were the programmers who wrote the software that caused its generation, since they understood what the source code would look like. However, Jessup J rejected this argument, for reasons that may equally apply to the ultimate selectors of software:

it would be artificial to regard the programmers as involved in the task of writing the source code for thousands of [safety data sheets] yet to take a material form merely because they wrote, and amended, the program which, when prompted, would put together a selection of the fragments of source code which they did write with other fragments later contributed by the authors.¹⁵⁴

2 *Insufficient Control over Particular Expression*

As author, the ultimate selector must also be responsible for the particular expression of the output.¹⁵⁵ This highlights the indistinct region between computer-assisted and computer-generated material, discussed above. If the designers select software parameters that only shape the broad 'idea' of the work, then those fleshing out the detail would seem to be the true authors.¹⁵⁶ If the software takes a completed work and embellishes or modifies it, then, as discussed above, the degree to which the software dictates the particular expression may vary. If software autonomously fleshes out most or all of the detail, then can there be an author responsible for that 'particular' expression?

Phone Directories concerned a compilation, authorship of which related to the arrangement or selection of the compiled material, rather than any

¹⁵³ *IceTV* (2009) 239 CLR 458, 479 [49] (French CJ, Crennan and Kiefel JJ).

¹⁵⁴ *Acohs* (2010) 86 IPR 492, 512–13 [53], affd (2012) 201 FCR 173, 187 [73] (Jacobson, Nicholas and Yates JJ).

¹⁵⁵ *IceTV* (2009) 239 CLR 458, 471 [26] (French CJ, Crennan and Kiefel JJ).

¹⁵⁶ Or joint authors with either the production designer or software author.

unoriginal elements populating the compilation. Therefore, it should have been immaterial that the ultimate designers of the phone directory could not foresee the actual details of the millions of subscribers entered by the data entrants. Provided that the selection or arrangement is not determined by the software, but predetermined by the software selector, then the selector sufficiently particularises the form to be an author of that compilation.

Things such as randomised crosswords, sudoku puzzles, lists of numbers, or the processed data from satellites may raise different issues. In respect of crosswords, sudoku puzzles, and lists of numbers, the only *particular* expression governed by the software selector is the largely unoriginal framework of each. The *particular* content can never be forecast (being autonomously determined by the software), but the software designer intends to, and does, create a form that looks like a crossword, sudoku puzzle or list of numbers. The processed satellite data is similar — humans set up procedures to capture the data and process it with the intention of creating images of weather patterns, contours of the Earth and galaxies, but no human would ever foretell the exact shapes produced. In each case, is that ‘particular’ enough?

There seemed to be no issue with a lack of control over particular expression in *Express Newspapers plc v Liverpool Daily Post & Echo plc*,¹⁵⁷ where numerous quantities of sequences of five letters and grids containing 25 letters in rows of five were generated by software for a lottery competition.¹⁵⁸ Justice Whitford rejected the argument that the grids were not authored by a human and were therefore not copyright works, holding that:

The computer was no more than the tool by which the varying grids of five-letter sequences were produced to the instructions, via the computer programmes, of Mr Ertel. It is as unrealistic as it would be to suggest that, if you write your work with a pen, it is the pen which is the author of the work rather than the person who drives the pen.¹⁵⁹

Justice Whitford’s analogy between the computer and the pen has been described as ‘unconvincing’,¹⁶⁰ and it is clearly strained in that the particular

¹⁵⁷ [1985] 1 WLR 1089.

¹⁵⁸ See also *Mirror Newspapers Ltd v Queensland Newspapers Pty Ltd* [1982] Qd R 305, where there was no problem with the number sequences in the bingo games generated randomly by ‘blowers’, despite the ‘mechanical means’ by which the numbers were drawn: at 309 (Conolly J).

¹⁵⁹ *Express Newspapers plc v Liverpool Daily Post & Echo plc* [1985] 1 WLR 1089, 1093.

¹⁶⁰ *Acohs* (2010) 86 IPR 492, 512 [52] (Jessup J); *Roland Corporation v Lorenzo & Sons Pty Ltd* (1991) 33 FCR 111, 117 (Pincus J): ‘[a] computer reasons and calculates, tasks which are beyond a pen.’

form of the lists of numbers was not determined by the mind of Mr Ertel, but by his software. However, there is some basis to the analogy in that Mr Ertel intended to, and did, create lists of numbers.

After *Phone Directories* and *IceTV*, would *Express Newspapers* be followed in Australia? This seems doubtful, because the software generating the grids does not sufficiently 'particularise' the material form for authorship to be attributed to the software selector.

3 *Multiple Selectors*

Attributing authorship to software selectors also assumes there is a single ultimate selector, or a number of ultimate selectors clearly meeting the statutory definition of joint authors, directing the work of numerous individuals to bring the complex production into the cohesive material whole conceived by that one selector (or joint selectors). In fact, there may be many discrete 'ultimate selectors' responsible for the particular form of the separate elements of the compilation, rather than a lineal chain of command from an ultimate selector or joint selectors to the extractors. While it may be reasonable to assume a single selector in the sense that someone needs to approve the whole, in fact, that person may more accurately be called an organiser of selectors who devolves responsibility for the form to them. If there is no single person responsible for deciding what elements should be extracted from the database to form the compilation, then we again encounter problems of joint authorship¹⁶¹ among the various selectors.

VI POLICY CONSIDERATIONS

The above discussion indicates that the degree and relevance of mental effort directed to computer-produced output ranges from the negligible to the substantial, depending on the extent to which human thought shapes the output. Where there is sufficient mental effort directed to the form of the output, authorship should follow. However, it will be difficult ascribing authorial status to any individual where software substantially determines the shape of a work. If no 'principal' selector is causally responsible for the particular form of the work, or sufficiently proximate to it, then the material fixer of the work is simply running software in an authorless void. And because the fixer is not an author due to a lack of independent intellectual

¹⁶¹ See above Part VC1.

skill and effort, much computer-generated output will be authorless and thus unprotected by copyright.

Where such output would, but for the lack of conventional authorship, obtain copyright protection, this will result in a clear division between protected works and unprotected output that may otherwise appear identical. Arguably, this is an undesirable outcome, depending on the normative perspective one adopts and the various policy rationales for copyright protection.

The policy foundations for copyright have been described as ‘legion’¹⁶² and are strongly contested.¹⁶³ This article will not resolve the contest. However, it has been argued that most existing copyright laws are based upon the following:

- 1 The ‘principle of natural justice’, according to which the creator of a work is entitled to the fruits of his or her labour;
- 2 The ‘economic argument’, which seeks to provide an incentive to individuals who make creative works available to the public, by giving them a reasonable expectation of recouping their investments and making a reasonable profit;
- 3 The ‘cultural argument’, under which the public interest may encourage creativity with the view of developing the national culture; and
- 4 The ‘social argument’, which asserts that social cohesion is made easier through the dissemination of ideas and works to a wide public and through the links forged between social, racial and age groups.¹⁶⁴

The Australian jurisprudence on copyright policy is not expansive, but focuses on copyright as a reward in return for creating works. For example, the French judgment in *IceTV* stated:

In assessing the centrality of an author and authorship to the overall scheme of the Act, it is worth recollecting the longstanding theoretical underpinnings of

¹⁶² J A L Sterling, ‘Philosophical and Legal Challenges in the Context of Copyright and Digital Technology’ (2000) 31 *International Review of Intellectual Property and Competition Law* 508, 516: ‘Theories concerning justification for the granting of copyright are legion: they include arguments relating to natural justice, creative incentive, general public interest, social contract, and moral considerations.’

¹⁶³ See *IceTV* (2009) 239 CLR 458, 470 [24], where French CJ, Crennan and Kiefel JJ referred to the ‘competing policy considerations’ of copyright law.

¹⁶⁴ Stephen M Stewart, *International Copyright and Neighbouring Rights* (Butterworths, 2nd ed, 1989) 3–4.

copyright legislation. Copyright legislation strikes a balance of competing interests and competing policy considerations. Relevantly, *it is concerned with rewarding authors of original literary works with commercial benefits having regard to the fact that literary works in turn benefit the reading public.*¹⁶⁵

How the ‘reading public’¹⁶⁶ will be benefited is not articulated expressly, however, clearly the inference is that works will be made available to the public (which depends on the copyright owner exercising their right to publish), and the information in the published work will be beneficial, either by sharing knowledge, by entertaining, or both.

The French judgment in *IceTV* also stated that ‘[t]he “social contract” ... still underlying the present Act, was that an author could obtain a monopoly, limited in time, *in return for making a work available to the reading public.*’¹⁶⁷

In *EMI Songs Australia Pty Ltd v Larrikin Music Publishing Pty Ltd*, Emmett J relied on *IceTV* as support for the following proposition:

The purpose of copyright law is to balance the public interest in promoting the encouragement of musical and other works by providing a just reward for the creator with the public interest in maintaining a robust public domain in which further works are produced.¹⁶⁸

This combination of policy goals of incentive to create, dissemination of the created material, and advancement of knowledge by the disseminated material, is recognised in the ongoing Law Reform Commission Inquiry into the Digital Economy. The Commission is required to inquire and report on the matter of whether the exceptions and statutory licences in the Act are adequate and appropriate in the digital environment. In doing so, the Commission is to have regard to, inter alia:

- the objective of copyright law in providing an incentive to create and disseminate original copyright materials; and
- the general interest of Australians to access, use and interact with content in the advancement of education, research and culture.¹⁶⁹

¹⁶⁵ *IceTV* (2009) 239 CLR 458, 471 [24] (emphasis added) (citations omitted).

¹⁶⁶ *Ibid.* Presumably the Court includes by inference all the human senses, since the public will also enjoy not only literary and dramatic works, but also musical works, artistic works and pt IV subject matter films, broadcasts and recordings.

¹⁶⁷ *Ibid.* 471 [25] (emphasis added).

¹⁶⁸ (2011) 191 FCR 444, 457 [56] (Emmett J).

¹⁶⁹ Australian Law Reform Commission, *Copyright and the Digital Economy*, Issues Paper No 42 (2012) 3.

Copyright as an incentive to create has been questioned, and clearly countless works, including computer-generated works, have been and will be produced, regardless of any economic reward or beneficial social or cultural outcome.¹⁷⁰ However, while the copyright reward may not explain the creation of a work, this applies to all copyright works.

Further, while the incentive of copyright may be irrelevant to a novelist compelled to write their opus, it may well explain why an expensive computer-generated production is made. Without that reward, the work may not be made, or made as well, or disseminated; or its dissemination may be limited by technological or contractual locks, thus counteracting the policy objective of 'making a work available to the reading public'.¹⁷¹ Copyright as an incentive may also explain why a publisher may be prepared to publish the novelist's opus. Without copyright, there would be little legal basis to restrain copying. Thus where the putative authors of computer-generated works are motivated by the desire to gain economic reward, or achieve some social or cultural good, protecting those works accords with the incentive theory.

In any event, *IceTV* demonstrates that copyright rewards the fact of creation, irrespective of the motive for creation, because of the social benefits that the copyright work confers.¹⁷² It is also clear that copyright regimes have been introduced notwithstanding that works were, and would be, generated without them.

The policy goal of promoting access to information and knowledge may also not explain the creation of many computer-produced works, and certainly does not guarantee that a work will be useful or even made available. However, this also applies equally to conventional works.

¹⁷⁰ One need only consider the millions of works created prior to the introduction of any copyright framework as support for this proposition. Roberta Kwall has also pointed out that the compulsion to create can itself explain the production of copyright works: see Roberta Rosenthal Kwall, *The Soul of Creativity: Forging a Moral Rights Law for the United States* (Stanford University Press, 2010). See also Diane Leenheer Zimmerman, 'Copyrights as Incentives: Did We Just Imagine That?' (2011) 12 *Theoretical Inquiries in Law* 29, which challenges the assumption that economic reward explains copyright creation. Rebecca Tushnet also reminds us that copyright cannot of itself ensure authors any income from their works: see Rebecca Tushnet, 'Economies of Desire: Fair Use and Marketplace Assumptions' (2009) 51 *William and Mary Law Review* 513, 517–18.

¹⁷¹ *IceTV* (2009) 239 CLR 458, 471 [25] (French CJ, Crennan and Kiefel JJ).

¹⁷² Of course the 'reward for social benefit' theory does not explain why copyright should be awarded to a private letter, which will probably never be 'made available to the public'. Clearly copyright can never be all things to all works.

All of the questions surrounding the ‘competing policy considerations’¹⁷³ and controversies apply equally to both computer-generated and conventionally produced material. Since computer-produced works can confer the same social benefits as conventional works, the more pertinent question is whether there is any sound policy basis for *withholding* copyright protection¹⁷⁴ for computer-produced output that, if shaped by a human, would have received it?

The sparse Australian jurisprudence on copyright policy suggests that the ‘social contract’¹⁷⁵ has been fulfilled — a computer-generated work that benefits the public has been created. However, it is the requirement that the work not merely originates, but originates through intellectual effort that muddies the water. Thus the primary argument for withholding copyright based solely on computer generation is that there is insufficient intellectual effort in software-shaped material to justify the copyright reward.

It is doubtful that existing jurisprudence, with its renewed insistence on the mental efforts of authors, permits the ‘outsourcing’ of mental effort to software. However, it is germane to consider whether it should, or if that construct is too strained, whether reform is necessary.¹⁷⁶ What are the policy objections to utilising the artificial intelligence of software, rather than the natural intellect of the author? After all, a new work has originated without copying pre-existing expression. The offence seems to be that the effort has not come from the author’s own mental labour, but from that of another. But is that enough to warrant the preclusion of copyright protection? The following section examines justifications for protecting computer-generated works.

VII ARGUMENTS FOR PROTECTING COMPUTER-GENERATED WORKS

Assuming there is no other basis for denying copyright protection,¹⁷⁷ ascribing or deeming authorship to computer-generated output is largely consistent with copyright policy and would have positive outcomes.

¹⁷³ *IceTV* (2009) 239 CLR 458, 470 [24] (French CJ, Crennan and Kiefel JJ).

¹⁷⁴ Or indeed, some other form of *sui generis* protection.

¹⁷⁵ *IceTV* (2009) 239 CLR 458, 471 [25] (French CJ, Crennan and Kiefel JJ).

¹⁷⁶ Some possible reforms that merit further exploration are discussed below and thoroughly explored in the author’s article in the next issue of the *Review*: McCutcheon, ‘Curing the Authorless Void’, above n 10.

¹⁷⁷ For example if the generated output is unoriginal.

A *Creation of New Works*

The generation of new works of benefit to the public is clearly considered an important copyright policy.¹⁷⁸ Since new works are increasingly created with software,¹⁷⁹ denying those works copyright protection is inconsistent with the public interest reflected in this policy cornerstone.

While copyright policy clearly encourages and rewards independent intellectual effort, it does so because that effort produces unique and beneficial works. Given this, and the low standard of intellectual effort required to confer originality, copyright policy does not so much encourage great mental exertion, but its productive result — a new and potentially valuable work. Clearly, those social benefits apply equally to computer-produced works as to conventionally-authored works.

The restraint on copying imposed by the author–originality correlation, avoiding the inadequacy, inutility and impropriety of copying, is also an important consideration. Copyright works can still be created without much, if any, mental exertion. But no copied work can ever be new. Thus the copying prohibition is socially useful because it ensures the generation of something new, rather than duplication of the old. It also supports the natural justice theory by ensuring that ‘reaping without sowing’ is not rewarded.

Thus although the user has not engaged in personal mental effort to devise the particular form of the work, a new work is created, which satisfies perhaps the most critical policy cornerstone.

B *Promotion of Access to Information and Knowledge*

The policy goal of promoting access to information and knowledge, which could be essential to building other knowledge or further creation, is particularly important given the extent to which repositories of knowledge are contained in computer-generated productions. In the current Inquiry into the Digital Economy, the Australian Law Reform Commission’s terms of reference require it to acknowledge ‘the importance of the digital economy and the opportunities for innovation leading to national economic and cultural development created by the emergence of new digital technologies’.¹⁸⁰

¹⁷⁸ See *IceTV* (2009) 239 CLR 458, 470 [24], where the French judgment stated that copyright is awarded ‘having regard to the fact that literary works in turn benefit the reading public’.

¹⁷⁹ A trend which will no doubt continue: see above Part III.

¹⁸⁰ Australian Law Reform Commission, above n 169, 3.

C *Absence of Copying*

In producing computer-generated output, the user has not copied anything. As mentioned, the prohibition on the objectionable conduct of copying is a keystone of the authorship–originality correlation and the copyright policy mix.¹⁸¹ Thus in the absence of copying, and recognising that the originality threshold is low, conferring the copyright reward is consistent with copyright policy.

D *Increased Efficiency*

While the inclination to censure the use of software as ‘lazy’ may be understandable, there is also greater efficiency in employing software to produce works, since the labour saved can be otherwise directed, thus producing more, and often better, works. In the case of creation software, it also means even those unskilled in writing music or making art can be creators, thus democratising authorship.

E *Technological Necessity*

Rather than being ‘lazy’, the use of software is more efficient than manual production and is often necessary. The entire genre of generative art in particular is utterly reliant on software for its creation. Importantly, however, many computer-generated works are simply too complex and sophisticated to be created without the aid of software, due to the limits of a single human’s mental and physical ability.¹⁸² Since the skills to manifest the work will never reside in a single individual, it seems anomalous to insist on a standard of single human authorship for works that simply cannot be created using that standard.¹⁸³ In these circumstances, the copyright reward is effectively denied for failing to do the impossible!

¹⁸¹ Regardless of whether the prevention of copying is a policy objective of copyright, or simply its consequence.

¹⁸² Or even joint authors, assuming their output can be corralled into the definition of a ‘work of joint authorship’ in s 10(1) of the *Copyright Act 1968* (Cth).

¹⁸³ Or on existing prescriptions for joint authorship that are not conducive to computer-generated productions: see *ibid* s 10(1) (definition of ‘work of joint authorship’); *Phone Directories* (2010) 194 FCR 142, 190–1 [168] (Yates J).

F *Support of Related Industries*

The copyright reward given to computer-generated works will also incidentally support the related software or information technology markets for the supply of the intellectual effort. Thus, while there may be a reduction in the mental effort of authors of computer-generated works, there may be no net reduction in mental effort across the relevant span of industries supported by and related to copyright. In any event, any reduction in mental effort may well be compensated by the increased production of works, and their increased quality.

G *Certainty of Subsistence and Ownership*

Since the requisite level of computer generation required to prevent authorship is often undetectable, it leaves uncertainty about whether there is a copyright work, who can use it, whether it can be licensed, and, if so, who can licence it. Following *IceTV* and *Phone Directories*, copyright subsistence is likely to be contested more frequently, particularly when software has been utilised. This will increase litigation costs and may mean owners of copyright works are reluctant to prosecute rights due to uncertainty as to whether copyright subsists in a work. In short, uncertainty always leads to wasted expense and time.

Certainty of ownership is another important policy outcome. Authorless works must necessarily be ownerless works. Leaving works in which copyright may otherwise subsist in an authorless void leaves potentially expensive or valuable works in the public domain and it leaves investment unrewarded. Certainly, there are difficulties allocating authorship to any given individual, particularly in complex productions, and reforms will be necessary to achieve greater certainty of authorship and thus ownership, however, it is a compelling policy goal.

H *International Harmony*

Other comparable common law countries have legislated for the protection of authorless, computer-generated works, regardless of a lack of mental effort on the part of the deemed author.¹⁸⁴ This should provide some comfort, since

¹⁸⁴ Provisions deeming authorship to the person creating a computer-generated work are found in the UK, New Zealand, India, Ireland, Hong Kong, and South Africa. Sui generis protection for databases also provides some protection for authorless, computer-generated output. As

these jurisdictions have presumably considered the relevant policy issues and concluded that protection is necessary and warranted. Greater harmony with this group of other common law countries may encourage trade and investment in Australia due to greater legal certainty and conformity. It may also reduce forum shopping.

I *Conclusions*

Both this section and the preceding section,¹⁸⁵ which examined copyright's policy bases, suggest that there are no convincing reasons for denying copyright protection to material based solely on its computer generation. Indeed, such material has the same potential to confer the social benefits rewarded by copyright as any other material. Proceeding on the assumption that such material should be protected, the following section briefly examines some of the possible legislative reforms that could be further explored. A more comprehensive examination of the potential reforms is undertaken in a forthcoming article by the author.¹⁸⁶

VIII POSSIBLE REFORMS

A *Introduction*

Cases like *Phone Directories* and *IceTV* highlight manifold problems relating to absent, multiple and asynchronous authorship, and its corollary, originality. The possible reforms need careful consideration because of the wide range of computer-produced material, its varying degrees of originality, and incidental issues such as how duration of protection, copyright ownership, moral rights and exclusive rights are to be addressed. It is unlikely that a single solution will resolve both the authorship and originality problems exposed by *Phone*

mentioned, s 9(3) of the UK Act provides that the author of a computer-generated work 'shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.' The same provision is found in the following statutes: *Copyright Ordinance* (Hong Kong) cap 528, s 11(3); *Copyright Act 1994* (NZ) s 5(2); *Copyright and Related Rights Act 2000* (NI) s 21(f); *Copyright Act 1978* (South Africa) s 1(1) (definition of 'author'). A similar provision is found in the *Copyright Act 1957* (India) s 2(d)(vi), which provides that 'author means ... in relation to any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created'.

¹⁸⁵ See above Part VI.

¹⁸⁶ See McCutcheon, 'Curing the Authorless Void', above n 10.

Directories and *IceTV*. Indeed, complementary or sui generis legislation may be needed, in addition to, or instead of, amending the Act.¹⁸⁷

Broadly, the following reform options exist:

- 1 Retain computer-generated works in pt III of the Act as ‘works’, and fictionalise an author through a deeming provision similar to s 9(3) of the UK Act, which confers authorship on the person making the necessary arrangements for the creation of the work. Additional and complementary options include defining ‘computer-generated work’ and amending the definition of ‘work of joint authorship’ to accommodate multi-party works.
- 2 Protect computer-generated ‘material’ or ‘productions’ in pt IV of the Act as authorless ‘subject matter’, either with or without definitions of the subject matter and the maker of the computer-generated material.
- 3 Either instead of, or in addition to options one and two, introduce sui generis protection similar to the European Database Directive, or introduce completely novel sui generis protection such as that conferred on circuit layouts.

B *Option One: Ascribing Authorship to Persons Making Arrangements for Creation*

The major advantage of this solution is that it cures the central problem explored in this article — it finds the missing author. It was also supported by an expert advisory committee after a significant consultation process.¹⁸⁸ As mentioned above, an amendment of this nature would harmonise with a number of other jurisdictions that have adopted a deeming provision in relation to computer-generated works.¹⁸⁹

Most existing deeming provisions are modelled on s 9(3) of the UK Act, which provides:

¹⁸⁷ Indeed, given the problems generally with enforcing intellectual property rights, particularly in the digital environment, ‘self-help’ remedies such as contractual and technological locks may be the best, or at least complementary, methods of protection.

¹⁸⁸ See CLRC, *Computer Software Protection*, above n 77, 247 [13.18]. It should be noted that, in its final report, the Committee subsequently recommended pursuing option two. This does demonstrate, however, that both options are plausible solutions.

¹⁸⁹ See above n 184.

In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.

Section 178 of the UK Act also clarifies that ‘computer-generated’, in relation to a work, ‘means that the work is generated by computer in circumstances such that there is no human author of the work’.¹⁹⁰ This scheme fictionalises an author in order to confer protection.

1 *Definition of ‘Computer-Generated Work’*

One obvious issue, explored extensively in this article, is whether a ‘computer-generated work’ lacks an author. Only then will the definition apply. In practice, however, since the work will in any event be protected under pt III,¹⁹¹ the definition should only be an issue where copyright ownership depends on the answer.¹⁹² The problem may be more a lack of evidence of authorship than a lack of authorship, in which case the definition would be improved by a reference to ‘no identifiable human author’.

2 *Who ‘Undertakes the Arrangements Necessary’ for the Creation of the Work?*

The critical and difficult task, in the various scenarios discussed in this article, is identifying the person who ‘undertakes the arrangements necessary’ for the creation of the work. That person will be the deemed author, and very often the copyright owner.¹⁹³ For that reason, the identity of the deemed author may be contested strenuously where ownership turns on the issue.

Various potential candidates may be considered to undertake ‘arrangements’ that are ‘necessary’ to the creation of the work. These range from the user, the programmer, software selectors as discussed above, to the investor, whether that person is also the owner of the software or the machines on

¹⁹⁰ See also *Copyright and Related Rights Act 2000* (NI) s 2, which defines a ‘computer-generated work’ as a work ‘generated by computer in circumstances where the author of the work is not an individual’.

¹⁹¹ Either through natural authorship or deemed authorship.

¹⁹² For example, where the person making the arrangements is a third party unrelated to the person claiming copyright through putative authorship. The definition could also be an issue if a connecting factor turns on its construction. However, the reciprocal protection provisions of the *Berne Convention for the Protection of Literary and Artistic Works*, opened for signature 14 July 1967, 828 UNTS 222 (entered into force 29 January 1970) (*‘Berne Convention’*) make this a less pressing issue.

¹⁹³ If that person is a corporation, despite references to ‘person’ including corporations: *Acts Interpretation Act 1901* (Cth) s 2C, additional amendments to the Act may be required: see at s 32(4). Duration provisions also rely on the life of an author.

which the systems run. There could also be more than one arranger, in which case it may also be necessary to amend the s 10(1) definition of a ‘work of joint authorship’ to exclude a computer-generated work of joint authorship. This is because ‘arrangements’ undertaken by a number of fictitious authors will not necessarily satisfy the requirements of collaboration and inseparability in the definition. Certainly the scant judicial guidance on joint authorship of computer-generated works suggests that this is unlikely.¹⁹⁴

Ascertaining the relevant person will be necessarily fact-specific, notwithstanding the appeal and convenience of a bright-line rule. For example, in the case of generative art, perhaps the user is the appropriate candidate, as the instigator of (and possibly investor in) the work. On the other hand, if the work is a large complex production and the user is simply someone pushing a button, then the investor and/or overall supervisor¹⁹⁵ may be more suitable. This could ease the evidentiary burden of identifying the relevant person in a multi-party creation and reduces the possibility of copyright ownership being allocated to a third party making no financial contribution to the production.

3 Judicial Construction of the Deeming Provision

The only case to consider s 9(3) of the UK Act is *Nova Productions Ltd v Mazooma Games Ltd*.¹⁹⁶ In that case, the parties were competing manufacturers of electronic pool games. Relevantly, Nova claimed copyright in the computer-generated images displayed to the user when its game was played and alleged that its copyright in these artistic works was infringed. Justice Kitchin relied on s 9(3) of the UK Act and concluded:

In so far as each composite frame is a computer generated work then the arrangements necessary for the creation of the work were undertaken by Mr Jones *because he devised the appearance of the various elements of the game and the rules and logic by which each frame is generated and he wrote the relevant computer program*. In these circumstances I am satisfied that Mr Jones is the person by whom the arrangements necessary for the creation of the works were undertaken and therefore is deemed to be the author by virtue of s 9(3).¹⁹⁷

The player was not the person making the arrangements because:

¹⁹⁴ See *Desktop* (2001) 181 ALR 134, 136 [4] (Finkelstein J); *Phone Directories* (2010) 264 ALR 617, 684 [337] (Gordon J); *Phone Directories (Appeal)* (2012) 194 FCR 142, 171 [92] (Keane CJ).

¹⁹⁵ Who may be an employee or assignor of the investor.

¹⁹⁶ [2006] RPC 379.

¹⁹⁷ *Ibid* 398–9 [105] (emphasis added).

*The player is not ... an author of any of the artistic works created in the successive frame images. His input is not artistic in nature and he has contributed no skill or labour of an artistic kind. Nor has he undertaken any of the arrangements necessary for the creation of the frame images. All he has done is to play the game.*¹⁹⁸

Neither subsistence in nor ownership of the artistic works was contested, so the Court did not comprehensively consider s 9(3). However, Mr Jones, the creator of the artistic works, essentially undertook all relevant arrangements leading to their creation. As one of the two shareholders, he was also partly financially responsible for their creation. The judgment must be challenged, however, if it suggests that all programmers are necessarily the persons making the arrangements simply because they wrote the software creating the work. Mr Jones's position as an author of customised software used on its own machines is significantly different to the author of, for example, 'off-the-shelf' MYOB software, who has no direct relationship with or control over the multitude of accounts created through the use of the software by remote purchasers.

Similar wording is used to identify the 'maker' of a film. In Australia, this 'is the person by whom the arrangements necessary for the making of the film were undertaken' (the 'relevant person').¹⁹⁹ This is 'generally the producer who makes the financial or administrative arrangements for the production of the first copy of the film'.²⁰⁰ Reflecting a policy of rewarding the investor, the copyright in a commissioned film is owned by the commissioner, irrespective

¹⁹⁸ Ibid 399 [106] (emphasis added).

¹⁹⁹ *Copyright Act 1968* (Cth) s 22(4)(b). Pursuant to s 98(2), the maker of the film is the owner of the copyright.

²⁰⁰ *Wills v Australian Broadcasting Corporation [No 3]* (2010) 89 IPR 252, 258 [29] (Gilmour J), quoting James Lahore, *Copyright and Designs* (Butterworths, 1996) [20.145]. See also *Seven Network (Operations) Ltd v TCN Channel Nine Pty Ltd* (2005) 146 FCR 183, 187–8 [12]–[19] (Lindgren J), 200 [89] (Finkenstein J); Staniforth Ricketson and Christopher Creswell, Law-book, *The Law of Intellectual Property: Copyright, Designs and Confidential Information* (at Update 65) [5.45]. Note, however, that the Act appears to allow for the possibility of there being multiple 'makers' of a film: *Wills v Australian Broadcasting Corporation [No 3]* (2010) 89 IPR 252, 258 [28] (Gilmour J), citing the *Copyright Act 1968* (Cth) s 98(4), which refers to 'each director' of a non-commissioned film.

of who made it.²⁰¹ An employer owns the copyright in any film made by an employee director.²⁰²

An identical definition of film authorship has been utilised under UK legislation. Since December 1996, under the UK Act, the film's producer and the principal director are together deemed an author.²⁰³ While 'director' is not defined, 'producer' is defined as 'the person by whom the arrangements necessary for the making of the sound recording or film are undertaken'²⁰⁴ (the 'relevant person'). Prior to December 1996, the UK Act reflected the Australian position, and the maker of a film was defined as the relevant person. A number of cases have considered the UK provisions, and in general the relevant person is considered to be the person who is financially responsible for getting the film made.²⁰⁵

The construction of similar phrasing in the context of film authorship could be useful in construing an authorial deeming provision, notwithstanding that the arrangements for creating a film or sound recording may differ

²⁰¹ *Copyright Act 1968* (Cth) s 98(3). Thus, where the fact of commissioning can be established, the maker of the film has no claim to copyright.

²⁰² *Ibid* s 98(5). In narrow circumstances, a director may be a maker of a film together with the maker as defined in s 22(4)(b). The film must be non-commissioned, and the director must not make the film as an employee: ss 98(4)–(5), introduced by the *Copyright Amendment (Film Directors' Rights) Act 2005* (Cth). However, this copyright is very limited. The director (or the director's employer) becomes the owner of the copyright only so far as the copyright consists of the right to include the film in a retransmission of a free to air broadcast: s 98(6).

²⁰³ *Copyright, Designs and Patents Act 1988* (UK) c 48, s 9(2)(ab), with effect from December 1996. Prior to that, s 9(2)(a) provided that the author of a film is 'the person by whom the arrangements necessary for the making of the film are undertaken'. Section 13(10) of the *Copyright Act 1956* (UK) c 74 was the same. The change mandating co-authorship between the producer and director was introduced in response to a Directive of the European Parliament and Council on the harmonisation of the term of copyright protection of, inter alia, literary and artistic works under the *Berne Convention*, as the life of the author plus 70 years: *Council Directive 93/98/EEC of 29 October 1993 Harmonizing the Term of Protection of Copyright and Certain Related Rights* [1993] OJ L 290/9. Article 2(1) provides that 'the principal director of a cinematographic or audiovisual work shall be considered as its author or *one of its authors*' (emphasis added), thus mandating directors as authors but leaving some latitude to determine co-authors.

²⁰⁴ *Copyright, Designs and Patents Act 1988* (UK) c 48, s 178.

²⁰⁵ See, eg, *Re FG (Films) Ltd* [1953] 1 WLR 483, 485–6 (Valsey J); *Adventure Film Productions SA v Tully* [1993] EMLR 376, 379 (Whitford J); *Beggars Banquet Records Ltd v Carlton Television Ltd* [1993] EMLR 349, 361–2 (Warner J); *Mad Hat Music Ltd v Pulse 8 Records Ltd* [1993] EMLR 172, 176 (Davies J); *Century Communications Ltd v Mayfair Entertainment UK Ltd* [1993] EMLR 335, 342 (Sir Mervyn Davies); *A & M Records Ltd v Video Collection International Ltd* [1995] EMLR 25, 32 (Sir Mervyn Davies); *Bamgboye v Reed* [2004] EMLR 5, 75 [47], 86–7 [86]–[88] (Judge Williamson); *Slater v Wimmer* [2012] EWPC 7 (30 November 2011) [12], [85] (Judge Birss).

from those leading to the creation of a computer-generated work. The interpretation is particularly apposite to multi-party computer-generated works, where an overall organiser could play a similar role to a financially involved producer.

4 *Duration*

Where the deemed author is a natural person, the existing provisions moderating duration based on the life and death of an author can continue to apply.²⁰⁶ However, deemed corporate authorship would require modification of the duration provisions, and careful consideration both on policy grounds and in the context of Australia's international obligations.²⁰⁷

5 *Moral Rights and Deemed Authorship*

Given that only a human can be an 'author' of a work,²⁰⁸ and that a deemed author is a fictitious author, it is not appropriate that moral rights be conferred on that individual. This is consistent with the rationale underpinning moral rights as it cannot be said that the author's personality is expressed in the output. Further, given that the deeming provision may extend to a corporate author, it is inconsistent with existing provisions that deny moral

²⁰⁶ The duration of protection for a literary, dramatic, musical or artistic work is the life of the author plus 70 years: *Copyright Act 1968* (Cth) s 33(2). If a literary work (other than a computer program) or a dramatic or musical work is unpublished at the death of the author, the duration of protection is ordinarily 70 years after the date of first publication: s 33(3). The references in s 33 to the author of a work shall, in relation to a work of joint authorship, be read as references to the author who died last: s 80.

²⁰⁷ See *Berne Convention* art 7(1), which requires duration to be determined by the life of the author in the case of literary, musical and dramatic works. Given that the computer-generated output is still a 'work', the *Berne Convention* would still ostensibly apply. This raises questions in relation to the UK Act, which, permitting corporate authorship, limits copyright protection of computer-generated works to 50 years from the year the work was made: s 12(7). Duration of copyright in artistic works based on the date the work was made would, however, comply with the *Berne Convention* art 7(4).

²⁰⁸ See, eg, CLRC, *Simplification of the Copyright Act 1968*, above n 1, 57 [5.43]:

It is generally accepted that only a human can be the 'author' of a work. This acceptance reflects the historical understanding that works are the products of the human intellect; in this sense it is said works are creations as distinct from artefacts of production. This acceptance also explains the application of moral rights to works but not to other subject matter protected by copyright; only authors need rights to protect their non-economic (ie moral) interests.

rights to corporations.²⁰⁹ Withholding moral rights from deemed authors is also consistent with other jurisdictions that employ a deeming provision.²¹⁰

*C Option Two: Computer-Generated Material as Subject Matter
Other than Works in Part IV*

This option avoids the incongruity of fitting authorless works into the authorial domain of pt III,²¹¹ which was the primary reason why the Copyright Law Review Committee recommended it.²¹² Although we have the advantage of the CLRC's recommendations, they were never adopted and therefore the ability to observe option one as an enacted reality in other jurisdictions may make it more appealing.

The CLRC recommended the following definition of 'computer-generated material' ('CGM'): "computer-generated", in relation to computer-generated material, means that the material is generated by computer in circumstances such that there is no human author of the material.²¹³ The CLRC recommended that the following deeming provision apply: 'In the case of computer-generated material, the author shall be taken to be the person by whom the arrangements necessary for the creation of the material are undertaken.'²¹⁴ The CLRC clearly regards the investor as the relevant person and deserving owner.²¹⁵

Many of the advantages and disadvantages of this option are shared with option one. Both deem authorship by reference to a person making arrange-

²⁰⁹ See, eg, *Copyright Act 1968* (Cth) s 190.

²¹⁰ See, eg, *Copyright, Designs and Patents Act 1988* (UK) c 48, ss 79, 81; *Copyright Act 1994* (NZ) ss 97(2)(b), 100(2)(b). These sections provide that the right of paternity and the right to object to derogatory treatment do not apply to computer-generated works.

²¹¹ See *IceTV* (2009) 239 CLR 458, 506 [145] (Gummow, Hayne and Heydon JJ).

²¹² CLRC, *Computer Software Protection*, above n 77, 247 [13.17]. See also CLRC, *Simplification of the Copyright Act 1968*, above n 1, 45 [5.05]. Other commentators recommend a similar approach: see, eg, Ginsburg, 'The Concept of Authorship in Comparative Copyright Law', above n 100, 1070; Sterling, 'Philosophical and Legal Challenges', above n 162, 513.

²¹³ CLRC, *Computer Software Protection*, above n 77, 247 [13.18].

²¹⁴ *Ibid* 248 [13.21].

²¹⁵ *Ibid* 247 [13.20]:

Consistently with the characterisation of computer-generated material as subject matter other than works it is the investor or owner of the computer/computer program who should be the owner of the copyright in any material generated by its use. It will be that person who makes the necessary arrangements for the creation of the material.

ments, who could be a corporation.²¹⁶ Both mean that automation of the output is immaterial. Both options ameliorate the problems of multi-party creations, clarify ownership and facilitate the reward of investment where that is appropriate. Finally, both may require debate about whether the output is indeed authored or computer-generated.²¹⁷

The major difference is that option two would also protect unoriginal CGM. This cures the major assault on protection of 'sweat of the brow' wrought by *IceTV* and *Phone Directories*. Option one is thus an inferior option if the ultimate reform objective is not only to restore authorship to computer-generated creations but to reward investment in unoriginal output.²¹⁸ Another difference is that the CGM need not fit the definition of a 'work'. The subject matter could be any conceivable CGM, including databases. Another major difference is in the rights enjoyed by the copyright owner. One sacrifice with pt IV protection is that it confers more attenuated rights. The rights of publication and adaptation are lost, and the rights of reproduction and performance are replaced by the more limited rights to make a copy of the subject matter and cause it to be seen or heard in public.²¹⁹ Whether this suite of rights is sufficient to protect the incredible breadth of CGM²²⁰ would need to be carefully considered.

D *Option Three: Sui Generis Protection*

This option may be superfluous if either of the two preceding options is considered an adequate, if imperfect, solution.

Protection comparable to the European Database Directive would clearly be too restrictive to cure all the problems identified above. It is hampered by its limitation to 'databases', which, no matter how broadly defined, would exclude any other form of CGM, as well as non-computer-generated databases. While it would assist in protecting investment-based, authorless and

²¹⁶ Although in option two the duration provisions are simplified because the output is not a 'work' (the duration of protection of pt III works is determined by the life of an author, whereas the duration of protection of pt IV subject matter other than works is determined by the date of publication).

²¹⁷ The debate is more important in option two, however, since the answer determines whether protection is governed by pt III (authored works) or pt IV (made subject matter).

²¹⁸ Which is not, it will be recalled, the focus of this article.

²¹⁹ Assuming computer-generated material receives the same treatment as sound recordings and films.

²²⁰ Including, for example, computer-generated artwork and musical works.

unoriginal computer-generated databases,²²¹ they could also be protected under option two if we consider the investor to be the person making the arrangements to create the database.

While bespoke sui generis protection of CGM is clearly a reform option, it is only necessary if option one or two were too flawed to be acceptable. While neither option can be forensically explored in this article, it would seem that each option raises issues that require further consideration, rather than fundamental obstacles to its adoption. To the extent that either option will create debatable definitions and areas of uncertainty, this is the reality with all legislation, including bespoke protection. Bespoke protection completely outside the domain of copyright also appears incongruous given the propensity for substantially identical subject matter to be protected under both copyright and the sui generis regime.²²²

IX CONCLUSIONS

There is considerable uncertainty surrounding the status of computer-generated works, particularly which computer applications will destroy authorship. Clearly, conventional notions of authorship still strongly inform contemporary Australian copyright law, and they are difficult to reconcile with works created using computer software. This basis for impugning authorship and therefore copyright subsistence is very significant in an age when virtually every complex production and many otherwise conventional creative works will at least in part be generated or moderated through the application of computer software. If substantial computer generation prevents authorship, that fact alone will vitiate copyright in many, and perhaps most, computer-created productions.

As mentioned in the introduction, this may be inconsequential if such creations will in any event fail other copyright subsistence criteria, particularly originality. Following *IceTV*, this may well be the fate of many complex productions containing 'prosaically' arranged facts such as stock market lists or phone directories. However, and importantly, authorship will be denuded

²²¹ Which explains Gordon J's consistent advocacy of this reform option: see *Phone Directories* (2010) 264 ALR 617, 628 [30]. See also Transcript of Proceedings, *Telstra Corporation Ltd v Phone Directories Co Pty Ltd* [2011] HCATrans 248 (2 September 2011) 266–7 (Gummow J): 'I think your client really needs something like a database directive which you do not have at the moment'.

²²² Unlike, circuit layouts, for example, which would have appeared to be quite foreign to all the existing forms of intellectual property at the time the *Circuit Layouts Act 1989* (Cth) was introduced.

even if the computer-generated content is original, in the sense that it is not comprised of mere facts, is not copied, and, but for the computer generation, would have received copyright protection.²²³ The result is a strict and probably undesirable divide between human-authored and computer-generated works, with copyright protection for the former but none for the latter. This will also diminish international harmonisation of legal treatment, with such works receiving protection in countries that deem authorship of computer-generated works.

The dual assault on originality and authorship of complex compilations by cases such as *Phone Directories* and *IceTV* results in, or contributes to, the loss of their primary source of protection, notwithstanding the intuitive response that appropriation of that effort may be wrongful, particularly since such productions are expensive, difficult, risky and time-consuming to produce and may comprise a substantial component of an entity's assets.

It is important that the legal protection keeps step with the sophistication of modern production methods for complex works. Through the aid of software and technology, we have left behind the days of relatively simple compilations created by individual authors. If these modern complex works had been created by the physical effort of single authors, then, provided they are original, they would generally be protected. Introduce software and more efficient collection, arrangement and production methods, and copyright protection vanishes.

The lacuna in protection has arisen essentially because of the superimposition of a conventional notion of individuated authorship on material productions that don't fit that construct. That concept of authorship has remained steadfastly physically based on single authorship, while productions have steadily become digital and multi-authored. The copyright outcome is that producers have become victims of the authorless technology used to produce these works, technology that was ironically developed through the application of the 'independent skill and effort' of humans.

The tendency to concede issues of authorship and subsistence (as occurred in *Desktop* and *IceTV*) suggests that there was an understanding that the judicial process should admit the traditional author to the modern digital world. Or perhaps, like some little-known distant relative arriving at the door,

²²³ Such as works produced with 'creation' or generative software, a burgeoning creative force. This was the case with the safety data sheets in *Acohs* (2010) 86 IPR 492. While the source code was an original literary work, there was no human author for the code to be attributed to and thus no copyright subsisted in it. If it had been authored by a human, copyright would have subsisted.

no-one quite knew where to put him. There were of course rumblings that he may not belong in the digital world,²²⁴ but perhaps the inevitable reality that his home would be digital at least deferred closer examination of the issue, either judicially, or by Parliament. This could explain why no Australian government ever felt the need to adopt the recommendations of the CLRC and introduce an authorial deeming provision.

It is clear that any slow evolution of a judicial concept of authorship that could have assimilated computer-generated production has now been arrested. What caused the intensive scrutiny of authorship and originality by the *IceTV* and *Phone Directories* courts and the radical correction of *Desktop*? If *Desktop* was so inherently flawed, why did the High Court as then constituted refuse special leave to appeal the decision? It has been suggested that the facts of *Desktop* and *Phone Directories* are significantly different.²²⁵ However, the basic method of semi-automated production through manifold software, the application of defining parameters and rules, and the multiplicity of human contributors seem substantially the same.

Notably, the High Court that refused leave to appeal *Desktop* was differently constituted to the Court that decided *IceTV*. The contemporary High Court is clearly far more sympathetic to the critics of *Desktop* and the advocates of *Feist Publications Inc v Rural Telephone Service Co Inc*,²²⁶ the US counterpoint to *Desktop*. Both are motivated by the perennial fear of access to facts being wrongfully denied to legitimate users, 'the public interest in maintaining a robust public domain in which further works are produced',²²⁷ and concerns about monopoly pricing.

Of course, none of these policy concerns apply to works (complex or otherwise) with a benign effect on competition. The outmoded constructs of authorship applied and reinforced in *IceTV* and *Phone Directories* sweep up all works in their path, even when those constructs dangerously drift from the province of factual compilations to inherently original works. The resulting

²²⁴ See, eg, *Desktop* (2001) 181 ALR 134, 136 [4] (Finkelstein J), as discussed in the text accompanying above n 29.

²²⁵ *Phone Directories* (2010) 264 ALR 617, 633 [46] (Gordon J); *Phone Directories (Appeal)* (2010) 194 FCR 142, 169–70 [84]–[85] (Keane CJ), 191 [172]–[173], 192 [177] (Yates J).

²²⁶ 499 US 340 (1991).

²²⁷ *IceTV* (2009) 239 CLR 458, 485 [71] (Gummow, Hayne and Heydon JJ). See also at 471 [24] (French CJ, Crennan and Kiefel JJ).

gap in protection should therefore be remedied by Parliament,²²⁸ through one or more of the methods advocated above.

²²⁸ The discussion above indicates that the ambiguity and uncertainty is too profound to be left uncured, although one commentator argues that '[c]opyright law has faced comparably ambiguous situations before' and that 'there is analogous precedent for concluding that the author of a particular computer-generated work can be determined without formulating a general statutory rule for identifying authorship': Arthur R Miller, 'Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New since *Contu*?' (1993) 106 *Harvard Law Review* 977, 1059.