Case No: CA-2023-000404

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM THE HIGH COURT OF JUSTICE, BUSINESS AND PROPERTY
COURTS OF ENGLAND AND WALES, INTELLECTUAL PROPERTY LIST (ChD)
Mr Justice Mellor
[2023] EWHC 222 (Ch)

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 20 July 2023

Before :

LADY JUSTICE ASPLIN
LORD JUSTICE ARNOLD
and
LORD JUSTICE WARBY

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Between :

(1) DR CRAIG STEVEN WRIGHT	**Claimants/**
(2) WRIGHT INTERNATIONAL INVESTMENTS LIMITED	**Appellants**
(3) WRIGHT INTERNATIONAL INVESTMENTS UK LIMITED	
- and -	
(1) BTC CORE (A PARTNERSHIP)	**Defendants/**
(2) WLADIMIR JASPER VAN DER LAAN	**Respondents**
(3) JONAS SCHNELLI	
(4) PIETER WUILLE	
(5) MARCO PATRICK FALKE	
(6) SAMUEL DOBSON	
(7) MICHAEL ROHAN FORD	
(8) CORY FIELDS	
(9) GEORGE MICHAEL DOMBROWSKI	
(10) MATTHEW GREGORY CORALLO	
(11) PETER TODD	
(12) GREGORY FULTON MAXWELL	
(13) ERIC LOMBROZO	
(14) JOHN NEWBERY	
(15) PETER JOHN BUSHNELL	
(16) BLOCK, INC.	
(17) SPIRAL BTC, INC.	
(18) SQUARE UP EUROPE LTD	
(19) BLOCKSTREAM CORPORATION INC.	
(20) CHAINCODE LABS, INC	

(21) COINBASE GLOBAL INC.
(22) CB PAYMENTS, LTD
(23) COINBASE EUROPE LIMITED
(24) COINBASE INC.
(25) CRYPTO OPEN PATENT ALLIANCE
(26) SQUAREUP INTERNATIONAL LIMITED

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Michael Hicks (instructed by **Harcus Parker Ltd**) for the **Appellants**
The **Respondents** did not appear and were not represented

Hearing date : 12 July 2023
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Approved Judgment

Lord Justice Arnold:

Introduction

1.   This is an appeal from an order of Mellor J dated 7 February 2023 which refused the Claimants permission to serve the claim form in this claim on those Defendants who are outside the jurisdiction of England and Wales in so far as the claim form advanced a claim for infringement of copyright in a work referred to as the Bitcoin File Format. The judge held for the reasons given in his judgment of the same date [2023] EWHC 222 (Ch) that the Claimants had no real prospect of establishing that copyright subsisted in the Bitcoin File Format because it had not been "recorded, in writing or otherwise" in accordance with section 3(2) of the Copyright, Designs and Patents Act 1988. This provision gives effect to what is known in international copyright law as the requirement of fixation.

2.   Although compliance with the requirement of fixation is a discrete and narrow issue, in the factual context of the present case analysis is complicated by the need to disentangle it from three related issues: the requirement for a work that is capable of being protected by copyright; the requirement of originality; and the scope of protection conferred by copyright in computer programs.

Bitcoin

3.   This case concerns the digital currency known as Bitcoin. It is not necessary for present purposes to explain in detail how Bitcoin works. The following summary will suffice. It involves a blockchain. A blockchain is a distributed ledger in which transactions are verified in blocks. Each new block is then linked to the previous verified block. Transactions are verified by a process called "mining", which can be carried out by anyone with a sufficiently powerful computer, in exchange for a reward in Bitcoin. "Mining" is a form of "proof of work", which essentially involves solving cryptographic puzzles, in order to achieve consensus (rather than depending upon validation by a central authority). Each new block must be in the correct format. This format is referred to as the Bitcoin File Format. (A better name might be "the Bitcoin Block Format", but nothing turns on this.)

The Claimants' application

4.   The First Claimant, Dr Craig Wright, claims to be the creator of the Bitcoin system, the person who wrote the original Bitcoin source code and the author of a document entitled *Bitcoin: A Peer-to-Peer Electronic Cash System*, which describes the Bitcoin system and is known as "the White Paper". He claims he was the person who made the White Paper available to the public on 31 October 2008 under the pseudonym Satoshi Nakamoto.

5.   This claim is one of four in the Business and Property Courts involving Dr Wright. There is a common issue in all four claims: what has been called "the identity issue", namely, whether it was Dr Wright who adopted the pseudonym Satoshi Nakamoto when announcing the creation of the Bitcoin system. That issue will be determined at a trial fixed for hearing in January 2024.

6.   In this claim, Dr Wright claims that he owns the copyrights in two original literary works: (a) the Bitcoin File Format; and (b) the White Paper. Dr Wright also claims to be the owner of database rights in three databases: (i) the Bitcoin blockchain; (ii) the Bitcoin blockchain as it stood on 1 August 2017 at 14.11 (up to and including block 478,558); and (iii) another part of the Bitcoin blockchain made in a particular period (the details of which do not matter for present purposes). The Second and Third Claimants are companies controlled by Dr Wright which appear to have joined in case they own some or all of the rights claimed rather than Dr Wright personally.

7.   Dr Wright brings this claim because he objects to two "airdrops", each of which effected what he terms "significant changes" to the Bitcoin system without his consent. The first airdrop occurred on 1 August 2017 and resulted in what Dr Wright calls the BTC Network. Nodes on the Bitcoin network continued to operate the existing Bitcoin system, but the airdrop effectively created a branch in the chain, so that from block 478,558, the Bitcoin blockchain continued adding blocks mined by its nodes thereby extending the Bitcoin blockchain, with the BTC blockchain running in parallel. The ticker "BTC" has been adopted for the digital cash system operated by the BTC Network.

8.   The second airdrop occurred on 15 November 2018 and created another new peer-to-peer network ("the BCH Network"). So from that date another parallel blockchain emerged, called the BCH blockchain. The ticker "BCH" is used for the digital cash system operated by the BCH Network.

9.   Although Dr Wright says he did not coin the ticker "BSV" (Bitcoin Satoshi Vision), it is now used to designate the system which he claims to be original Bitcoin digital cash system.

10.   Dr Wright's case is that the copyrights and database rights which he or the other Claimants own provide a mechanism by which he can prevent the further operation of the BTC blockchain and the BCH blockchain without his consent.

11.   Both the BTC blockchain and the BCH blockchain contain the Bitcoin blockchain up to and including block 478,558. Dr Wright's claim is that the operation of the BTC blockchain and the BCH blockchain results in the extraction and/or re-utilisation of all or substantial parts of the databases in which he owns database right.

12.   The White Paper is included in block 230,009 of the Bitcoin blockchain. The consequence is that use of the BTC blockchain and the BCH blockchain entails reproduction of block 230,009 and reproduction of the entire White Paper. Dr Wright alleges that this amounts to an infringement of the copyrights in the Bitcoin File Format and in the White Paper respectively.

13.   The Claimants issued the claim form on 1 August 2022. Some of the Defendants are in the jurisdiction, but the majority of the Defendants are outside the jurisdiction. On 15 December 2022 the Claimants made an application for permission to serve the claim form on those Defendants who are outside the jurisdiction. The application originally came before Mellor J on paper.

14.   In order to grant a claimant permission to serve its claim on someone outside the jurisdiction, the court must be satisfied (among other things) that there is a serious

issue to be tried on the merits of the claim. This means that the claim must have a real (as opposed to a fanciful) prospect of success: see *Altimo Holdings and Investment Ltd v Kyrgyz Mobile Tel Ltd* [2011] UKPC 7, [2012] 1 WLR 1804 at [71] (Lord Collins of Mapesbury). This requirement applies to each cause of action asserted in the claim.

15. Having considered the matter on paper, Mellor J was satisfied that it was appropriate to grant the Claimants permission to serve the claim form out of the jurisdiction in respect of all the causes of action relied upon except for the claim for infringement of copyright in the Bitcoin File Format. He was doubtful whether the Claimants had a real prospect of success in establishing that copyright subsisted in the Bitcoin File Format. He invited the Claimants to file further written submissions and/or evidence addressing the following question: "when and in what form the alleged literary work in the Bitcoin File Format was first recorded, in writing or otherwise". In response to this question the Claimants filed a second witness statement of Dr Wright. The judge was not satisfied that this evidence established there was a serious issue to be tried, but he gave the Claimants the opportunity to persuade him otherwise at an oral hearing on 3 February 2023. Following the hearing, the judge remained unpersuaded for the reasons he explained in his judgment.

The Bitcoin File Format

16. The Bitcoin File Format is defined in Dr Wright's claim as the work "consisting of the structure of each block of the Bitcoin Blockchain as described in Schedule 2" to the Particulars of Claim. The overall structure of a block consists of three parts: (1) a block header of 80 bytes; (2) the vtx number, of 1-9 bytes, which records the number of transactions in a variable *VarInt*; and (3) the transactions recorded in the block, of variable size.

17. The block header consists of six fields:

    i)   nVersion, 4 bytes in length comprising a 32 bit unsigned integer stored in little endian (meaning that the least-significant byte is stored at the smallest address) representing the version of the block format;

    ii)   hashPrevBlock, 32 bytes in length, being a double hash (a mathematical representation) of the previous block header stored in little endian (essentially the link to the previous block in the chain);

    iii) hashMerkleRoot, again 32 bytes in length, comprising a double hash of the root of the Merkle tree of transactions stored in little endian (a Merkle tree being a method for efficient verification of data integrity);

    iv)   nTime, a 4 byte field, representing the time in seconds since 1 Jan 1970, comprising a 32 bit unsigned integer stored in little endian;

    v)   nBits, a 4 byte field recording a measure of the difficulty target in compact format;

vi)   nNonce, a 4 byte field. Nonce is a portmanteau word meaning "number used only once". The Nonce is used in the proof of work algorithm and is effectively the number that blockchain miners are solving for.

18.   Schedule 2 goes on to describe the transactions part of the block. There are two types: normal and "coinbase" transactions. Further paragraphs in Schedule 2 explain the general structure of a transaction, the structure of an input and an output in a normal transaction (which differ) and the structure of the input in a coinbase transaction (the output having the same structure), in a similar manner to the explanation of the additional structure in the header, which I summarised above. It is not necessary to set out these structures.

The Claimants' evidence as to fixation

19.   In his second witness statement Dr Wright says this:

"4.   I devised and created the Bitcoin File Format in the course of writing the code for the Bitcoin System. When the software runs and the hashing problem is solved, the software creates blocks in the Bitcoin File Format which are added to the Bitcoin Blockchain file.

5.   The first block in the Bitcoin Blockchain is a special block known as the 'Genesis Block'. I ran the Bitcoin Software on 3 January 2009 (GMT) and created the Genesis Block on that day. It includes the words 'The Times 03/Jan/2009 Chancellor on brink of second bailout for banks'. (These words are not part of the file format but are simply some of the contents of the Genesis Block). The 'Genesis Block' is an anchor value which is unique to Bitcoin.

6.   There were issues with the software which took me some days to correct. The second block (now known as Block #1) which is the first 'mined' block in the Blockchain was not created until I ran the software on 9 January 2009 (GMT).

7.   Therefore, the Bitcoin File Format in the form which is on the Bitcoin Blockchain was first recorded on 3 January 2009 (GMT) when the software was run as I have described above. The recording was in electronic form on the Bitcoin Blockchain."

The legal framework

International treaties

20.   *Berne Convention.* The International Convention for the Protection of Literary and Artistic works signed at Berne on 9 September 1886 (Paris Act of 1971 as amended in 1979) ("the Berne Convention"), to which the United Kingdom and all Member States of the European Union are parties, includes the following provisions:

"*Article 2*

(1)   The expression 'literary and artistic works' shall include every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression, such as books, pamphlets and other writings; lectures, addresses, sermons and other works of the same nature; dramatic or dramatico-musical works; choreographic works and entertainments in dumb show; musical compositions with or without words; cinematographic works to which are assimilated works expressed by a process analogous to cinematography; works of drawing, painting, architecture, sculpture, engraving and lithography; photographic works to which are assimilated works expressed by a process analogous to photography; works of applied art; illustrations, maps, plans, sketches and three-dimensional works relative to geography, topography, architecture or science.

(2)   It shall, however, be a matter for legislation in the countries of the Union to prescribe that works in general or any specified categories of works shall not be protected unless they have been fixed in some material form.

…

(5)   Collections of literary or artistic works such as encyclopedias and anthologies which, by reason of the selection and arrangement of their contents, constitute intellectual creations, shall be protected as such, without prejudice to the copyright in each of the works forming part of such collections.

(6)   The works mentioned in this Article shall enjoy protection in all countries of the Union. This protection shall operate for the benefit of the author and his successors in title.

…

Article 9

(1)   Authors of literary and artistic works protected by this Convention shall have the exclusive right of authorising the reproduction of these works, in any manner or form.

…

Article 20

The Governments of the countries of the Union reserve the right to enter into special agreements among themselves, in so far as such agreements grant to authors more extensive rights than those granted by the Convention, or contain other provisions not contrary to this Convention. The provisions of existing agreements which satisfy these conditions shall remain applicable."

21.   *TRIPS*. The Agreement on Trade-related Aspects of Intellectual Property Rights (commonly known as "TRIPS") which forms Annex 1C to the Agreement establishing the World Trade Organisation signed in Morocco on 15 April 1994, to which the United Kingdom and the European Union and all its Member States are parties, includes the following provisions:

"**Article 9**

Relation to the Berne Convention

1.   Members shall comply with Articles 1 through 21 of the Berne Convention (1971) and the Appendix thereto. However, Members shall not have rights or obligations under this Agreement in respect of the rights conferred under Article 6*bis* of that Convention or of the rights derived therefrom.

2.   Copyright protection shall extend to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.

Article 10

Computer Programs and Compilations of Data

1.   Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971).

…"

22.   *WIPO Copyright Treaty*. The World Intellectual Property Organisation Copyright Treaty agreed in Geneva on 20 December 1996 ("the WIPO Copyright Treaty"), to which the United Kingdom and the European Union and all its Member States are parties, includes the following provisions:

"*Article 1*

Relation to the Berne Convention

(1)   This Treaty is a special agreement within the meaning of Article 20 of the Berne Convention for the Protection of Literary and Artistic Works, as regards Contracting Parties that are countries of the Union established by that Convention. This Treaty shall not have any connection with treaties other than the Berne Convention, nor shall it prejudice any rights and obligations under any other treaties.

(2)   Nothing in this Treaty shall derogate from existing obligations that Contracting Parties have to each other under the Berne Convention for the Protection of Literary and Artistic Works.

…

(4)   Contracting Parties shall comply with Articles 1 to 21 and the Appendix of the Berne Convention.

Article 2

Scope of Copyright Protection

Copyright protection extends to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.

Article 3

Application of Articles 2 to 6 of the Berne Convention

Contracting Parties shall apply *mutatis mutandis* the provisions of Articles 2 to 6 of the Berne Convention in respect of the protection provided for in this Treaty.

Article 4

Computer Programs

Computer programs are protected as literary works within the meaning of Article 2 of the Berne Convention. Such protection applies to computer programs, whatever may be the mode or form of their expression."

23.   At the Diplomatic Conference at which the WIPO Copyright Treaty was adopted, a number of statements concerning its interpretation were agreed. These include the following statement:

"**Concerning Article 4**

The scope of protection for computer programs under Article 4 of this Treaty, read with Article 2, is consistent with Article 2 of the Berne Convention and on a par with the relevant provisions of the TRIPS Agreement."

European directives

24.   *Software Directive*. European Parliament and Council Directive 2009/24/EC of 23 April 2009 on the legal protection of computer programs (codified version) ("the Software Directive"), which replaced Council Directive 91/250/EEC of 14 May 1991, includes the following recitals:

"(6)   The Community's legal framework on the protection of computer programs can accordingly in the first instance be limited to establishing that Member States should accord protection to computer programs under copyright law as literary works and, further, to establishing who and what should be protected, the exclusive rights on which protected persons should be able to rely in order to authorize or prohibit certain acts and for how long the protection should apply.

…

(11)   For the avoidance of doubt, it has to be made clear that only the expression of a computer program is protected and that ideas and principles which underlie any element of a program, including those which underlie its interfaces, are not protected by copyright under this Directive. In accordance with this principle of copyright, to the extent that logic, algorithms and programming languages comprise ideas and principles, those ideas and principles are not protected under this Directive. In accordance with the legislation and jurisprudence of the Member States and the international copyright conventions, the expression of those ideas and principles is to be protected by copyright.

…"

25.   The Software Directive includes the following operative provisions:

"*Article 1*

Object of protection

1.   In accordance with the provisions of this Directive, Member States shall protect computer programs, by copyright, as literary works within the meaning of the Berne Convention for the Protection of Literary and Artistic Works. For the purposes of this Directive, the term 'computer programs' shall include their preparatory design material.

2.   Protection in accordance with this Directive shall apply to the expression in any form of a computer program. Ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive.

3.   A computer program shall be protected if it is original in the sense that it is the author's own intellectual creation. No other criteria shall be applied to determine its eligibility for protection.

…"

26.   *Information Society Directive*. European Parliament and Council Directive 2001/29/EC of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society ("the Information Society Directive") includes the following recitals:

"(15)   The Diplomatic Conference held under the auspices of the World Intellectual Property Organisation (WIPO) in December 1996 led to the adoption of two new Treaties, the 'WIPO Copyright Treaty' and the 'WIPO Performances and Phonograms Treaty', dealing respectively with the protection of authors and the protection of performers and phonogram producers. Those Treaties update the international protection

> for copyright and related rights significantly, not least with regard to the so-called 'digital agenda', and improve the means to fight piracy world-wide. The Community and a majority of Member States have already signed the Treaties and the process of making arrangements for the ratification of the Treaties by the Community and the Member States is under way. This Directive also serves to implement a number of the new international obligations.
>
> …
>
> (20) This Directive is based on principles and rules already laid down in the Directives currently in force in this area, in particular Directives 91/250/EEC, 92/100/EEC, 93/83/EEC, 93/98/EEC and 96/9/EC, and it develops those principles and rules and places them in the context of the information society. The provisions of this Directive should be without prejudice to the provisions of those Directives, unless otherwise provided in this Directive.
>
> …"

27. The Information Society Directive includes the following operative provisions:

"*Article 1*

Scope

…

2. Except in the cases referred to in Article 11, this Directive shall leave intact and shall in no way affect existing Community provisions relating to:

   (a) the legal protection of computer programs;

   …

Article 2

Reproduction right

Member States shall provide for the exclusive right to authorise or prohibit direct or indirect, temporary or permanent reproduction by any means and in any form, in whole or in part:

(a) for authors, of their works;

… "

28.   The Information Society Directive contains no definition of "work". Nor, by contrast with Article 1(3) of the Software Directive, does it contain an express requirement of originality.

Domestic legislation

29.   The Copyright, Designs and Patents Act 1988 was amended pursuant to section 2(2) of the European Communities Act 1972 by the Copyright (Computer Programs) Regulations 1992, SI 1992/3233, to implement the original version of the Software Directive. The 1988 Act was amended pursuant to section 2(2) of the 1972 Act by the Copyright and Related Rights Regulations 2003, SI 2003/2498, to implement the Information Society Directive. As amended by the 1992 Regulations and the 2003 Regulations, and other legislation, the 1988 Act includes the following provisions:

"**Copyright and copyright works**

1.(1)   Copyright is a property right which subsists in accordance with this Part in the following descriptions of work-

(a)   original literary, dramatic, musical or artistic works,

…

Literary, dramatic and musical works

3.(1)   In this Part:

'literary work' means any work, other than a dramatic or musical work, which is written, spoken or sung, and accordingly includes -

(a)   a table or compilation other than a database,

(b)   a computer program,

(c)   preparatory design material for a computer program, and

(d)   a database.

…

(2)   Copyright does not subsist in a literary, dramatic or musical work unless and until it is recorded, in writing or otherwise; and references in this Part to the time at which such a work is made are to the time at which it is so recorded.

(3)   It is immaterial for the purposes of subsection (2) whether the work is recorded by or with the permission of the author; and where it is not recorded by the author, nothing in that subsection affects the question whether copyright subsists in the record as distinct from the work recorded.

…

The acts restricted by copyright in a work

16.(1) The owner of the copyright in a work has, in accordance with the
following provisions of this Chapter, the exclusive right to do the
following acts in the United Kingdom –

(a)   to copy the work (see section 17);

…

Minor definitions

178.   In this Part-

…

'writing" includes any form of notation or code, whether by hand or otherwise
and regardless of the method by which, or medium in or on which, it is
recorded, and "written" shall be construed accordingly."

Interpretation of domestic legislation in the context of European directives

30.   It is well established that domestic legislation enacted or amended to implement a
European directive must be construed so far as is possible in conformity with, and to
achieve the result intended by, the directive: Case C-106/89 *Marleasing SA v La
Comercial Internacional de Alimentación SA* [1990] ECR I-4135 at [8]; *Litster v
Forth Dry Dock and Engineering Co Ltd* [1990] 1 AC 546, HL at 558C-H (Lord
Templeman) and 576E-577D (Lord Oliver of Aylmerton); Joined Cases C-397/01 to
C-403/01 *Pfeiffer v Deutsches Rotes Kreuz, Kreisverband Waldshut eV* [2004] ECR I-
8835 at [113]-[117]; and *R (IDT Card Services Ireland Ltd) v Commissioners for Her
Majesty's Revenue and Customs* [2006] EWCA Civ 29, [2006] STC 1252 at [73]-[92]
(Arden LJ). This is a strong duty of interpretation.

Interpretation of European directives

31.   A European directive falls to be interpreted according to principles of interpretation of
European Union legislation developed by the Court of Justice of the European Union.
The basic rule of interpretation, which has been frequently reiterated by the Court of
Justice, is that stated in Case C-306/05 *Sociedad General de Autores y Editores de
España v Rafael Hoteles SA* [2006] ECR I-11519 ("*SGAE*") at [34]:

"According to settled case-law, in interpreting a provision of
Community law it is necessary to consider not only its wording,
but also the context in which it occurs and the objectives
pursued by the rules of which it is part …"

32.   Another rule of interpretation applied by the Court of Justice is that stated in *SGAE* at
[35]:

"Moreover, Community legislation must, so far as possible, be interpreted in a manner that is consistent with international law, in particular where its provisions are intended specifically to give effect to an international agreement concluded by the Community …"

In that case the Court interpreted Article 3(1) of the Information Society Directive in accordance with Article 8 of the WIPO Copyright Treaty.

33.   It follows that, in a field of intellectual property law where the European Union has legislated, national courts must interpret both European and domestic legislation as far as possible in the light of the wording and purpose of relevant international agreements to which the EU is a party, such as TRIPS and the WIPO Copyright Treaty: see Case C-53/96 *Hermès International v FHT Marketing Choice BV* [1998] ECR I-3603 at [28]; Joined Cases C-300/98 and C-392/98 *Parfums Christian Dior SA v Tuk Consultancy BV* [2000] ECR I-11307 at [47]; Case C-89/99 *Schieving-Nijstad VOF v Groeneveld* [2001] ECR I-5851 at [35]; Case C-245/02 *Anheuser-Busch Inc v Budejovicky Budvar NP* [2004] ECR I-10989 at [55]-[57]; and Case C-431/05 *Merck Genéricos – Produtos Farmacêuticos Lda v Merck & Co Inc* [2007] ECR I-7001 at [35].

The effect of Brexit

34.   Legislation which transposed an EU directive into domestic law prior to 31 December 2020 remains part of UK law unless and until it has been repealed or amended. None of the legislation which implemented the Software Directive and the Information Society Directive has been repealed or amended, and the 1988 Act remains in the amended form set out above. Furthermore, the principle of supremacy of EU law continues to apply "so far as relevant to the interpretation, disapplication, or quashing of any enactment or rule of law passed or made before" 31 December 2020: see section 5(2) of the European Union (Withdrawal) Act 2018 and *R (Open Rights Group) v Secretary of State for the Home Department* [2021] EWCA Civ 800, [2021] 1 WLR 3611, at [12]–[13] (Warby LJ). Although this Court now has the power under the 2018 Act (as amended) to depart from decisions of the CJEU rendered before 31 December 2020 in an appropriate case, the default position is that such decisions remain binding.

Literary and artistic works within the meaning of Article 2(1) of Berne

35.   Article 2(1) of the Berne Convention defines the "literary and artistic works" which are to be protected by the countries of the Union as including "every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression". This is followed by a list of illustrative examples. This is a very broad definition, but it is not unlimited. Thus it is generally understood that it does not extend to broadcasts, sound recordings or the performances of performers, which are protected under the International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisation signed at Rome on 26 October 1961: see Ricketson and Ginsburg, *International Copyright and Neighbouring Rights: The Berne Convention and Beyond* (3rd ed) at 8.111-8.115. More importantly for present purposes, it has always been understood that the Berne Convention does not protect ideas, and nowadays the fact that copyright does not

extend to ideas is confirmed by Article 9(2) of TRIPS and Article 2 of the WIPO Copyright Treaty: see Ricketson and Ginsburg at 8.09.

The requirement of fixation under Berne

36.   Article 2(2) of the Convention makes it clear that the requirement of fixation is neither mandated nor prohibited by Berne, but is a matter for national law. As Ricketson and Ginsburg explain in 8.18-8.20, fixation had long been a "vexed question" in the negotiating history of the Convention which was only finally settled when the current form of Article 2(2) was adopted in the Stockholm Act of 1967. The authors comment at 8.20:

>   "In a sense, this was a retrograde step as regards the level of protection accorded under the Convention. However, it was a necessary recognition of the fact that many national laws were unprepared to take the step of abolishing the requirement for fixation altogether, and that to make this mandatory might drive countries out of the Union or discourage possible adherents, such as the USA. The principal reason for retaining the need for fixation is evidentiary: it is hard otherwise to prove the fact of existence of an unfixed work. Likewise, it is difficult to be sure of the scope or content of such a work, and without fixation the protection of such a work may come close to the protection of the 'ideas' or subject of that work."

The requirement of originality under Berne

37.   Article 2(1) of the Convention contains no express requirement of originality, but it is generally understood that it is implicit that a literary or artistic work must be an intellectual creation, an interpretation that is supported by Article 2(5): see Ricketson and Ginsburg at 8.03.

Copyright in computer programs

38.   Whatever the position might have been under Berne after the Paris Act of 1971, Article 10 of TRIPS and Article 4 of the WIPO Copyright Treaty make it clear that computer programs are protected as literary works. Article 1(1) of the Software Directive gives effect to this, as does section 3(1)(b) of the 1988 Act. As a counterweight to this, however, Article 9(2) of TRIPS and Article 2 of the WIPO Copyright Treaty stipulate that copyright protection does not extend to ideas, procedures, methods of operation and mathematical concepts. More specifically, Article 1(2) of the Software Directive provides that ideas and principles which underlie any element of a computer program are not protected by copyright under that Directive. These provisions are not replicated in the 1988 Act.

39.   It is important to appreciate that, in European law, the Software Directive constitutes a *lex specialis* with respect to the Information Society Directive: see Case C-128/11 *UsedSoft GmbH v Oracle International Corp* [EU:C:2012:407] at [51], [56] and Case C-262/18 *Nederlands Uitgeversverbond v Tom Kabinet Internet BV* [EU:C:2019:1111] at [55]. This means that claims to copyright protection in computer programs must be assessed by reference to the Software Directive rather than by

reference to the Information Society Directive. This has certain consequences, for example, with respect to the applicable exceptions and limitations and the applicable exhaustion rules.

40.   In *SAS Institute Inc v World Programming Ltd* [2010] EWHC 1829, [2011] RPC 1 ("*SAS v WPL (No 1)*") SAS Institute was a developer of analytical software known as SAS (referred to in the proceedings as "the SAS System"). The SAS System was an integrated set of programs which enabled users to carry out a wide range of data processing and analysis tasks, and in particular statistical analysis. The core component of the SAS System was Base SAS, which enabled users to write and run application programs (also known as "scripts") to manipulate data. Such applications were written in a language known as the SAS Language. The functionality of Base SAS could be extended by the use of additional components, including three which were called SAS/ACCESS, SAS/GRAPH and SAS/STAT (the four components being collectively referred to as "the SAS Components"). The SAS System had been developed over a period of 35 years.

41.   Over the years SAS Institute's customers had written, or had had written on their behalf, thousands of application programs in the SAS Language. These could range from fairly short and simple programs to large and complex programs which involved many man years of effort to create. Prior to the events giving rise to the dispute, SAS Institute's customers had no alternative to continuing to license use of the necessary components in the SAS System in order to be able to run their existing SAS Language application programs, as well as to create new ones. While there were many other suppliers of analytical software which competed with SAS Institute, a customer who wanted to change over to another supplier's software would be faced with re-writing its existing application programs in a different language.

42.   World Programming Ltd ("WPL") perceived that there would be a market demand for alternative software which would be able to execute application programs written in the SAS Language. WPL therefore created a product called World Programming System or WPS to do this. In developing WPS, WPL sought to emulate much of the functionality of the SAS Components as closely as possible in the sense that, subject to only a few minor exceptions, it tried to ensure that the same inputs would produce the same outputs. This was so as to ensure that WPL's customers' application programs executed in the same manner when run on WPS as on the SAS Components. There was no suggestion that in doing so WPL had access to the source code of the SAS Components or that WPL had copied any of the text of the source code of the SAS Components or that WPL had copied any of the structural design of the source code of the SAS Components. Nevertheless, SAS Institute contended that WPL had both committed a series of infringements of copyright and acted in breach of contract in creating WPS and its accompanying documentation.

43.   SAS Institute's claims included two that are relevant for present purposes:

        i)   A claim that WPL had copied the manuals for the SAS System published by SAS Institute ("the SAS Manuals") when creating WPS and thereby infringed the copyright in the SAS Manuals. There was no dispute that SAS Institute owned the copyrights in the SAS Manuals. This claim involved consideration of the Information Society Directive.

ii)   A claim that, by copying the SAS Manuals when creating WPS, WPL had indirectly copied the programs comprising the SAS Components and thereby infringed the copyright in the SAS Components. There was no dispute that SAS Institute owned the copyrights in the SAS Components. This claim involved consideration of the Software Directive.

44.   Following a three-week trial, I handed down a judgment in which I found the facts, set out the legal framework and then considered each of SAS Institute's claims. In the course of this judgment, I considered 31 examples of similarities between WPS and the SAS Manuals relied upon by SAS Institute, which counsel for SAS Institute had grouped into nine categories. I said this about category 8:

"128.   This category consists of example 23. This concerns a SAS data file format called SAS7BDAT. … The example consists of 'the SAS source code used to generate files in the SAS7BDAT formats' on the one hand and 15 identified routines in the WPS source code and their functions on the other hand. As presented in exhibit PAI11, example 23 appears to be an allegation of (presumably indirect) reproduction of unidentified SAS source code. That is also the flavour of Professor Ivey's evidence in the body of his report. As stated above, however, not merely is the SAS source code unidentified, but also Professor Ivey had not even inspected the relevant source code. There is no evidence that the SAS source code sets out the SAS7BDAT format, as opposed to reading and writing files in that format.

129.   Counsel for SAS Institute submitted that this example demonstrated that WPL had 'copied elements of the SAS source code into the source code of WPS'. In my judgment it shows nothing of the kind. All it shows is that, by examining the SAS System in operation, WPL worked out enough of the format of SAS7BDAT data files to be able to write source code which reads and writes data files in that format. This is precisely what the extract from WPL's internal wiki exhibited by Professor Ivey as exhibit PAI9 to his report indicated that it did, and precisely what Mr Clemow [a WPL witness] said in his witness statement that he did. The cross-examination of Mr Clemow took matters no further."

45.   As can be seen, what SAS Institute had alleged was that WPL had copied an element of the source code of the SAS Components, namely the SAS7BDAT format. In support of that allegation SAS Institute relied upon the evidence of its expert witness Professor Ivey. There was no evidence that WPL had done so, however. Indeed, there was no evidence that the SAS source code set out the SAS7BDAT format as opposed to reading and writing files in that format. Professor Ivey had not even inspected the source code of the SAS Components. Thus the problem faced by SAS Institute was not over fixation. It was more fundamental: an absence of evidence that the copyright work relied on comprised the element alleged to have been copied.

46.   In order to resolve some of the issues I concluded that it was necessary to refer certain questions of interpretation of the Software Directive and of the Information Society Directive to the Court of Justice for a preliminary ruling. The Grand Chamber gave its answer to these questions in Case C-406/10 [EU:C:2012:259] ("*SAS v WPL (No 2)*"). The Court of Justice considered questions 1 to 5 together, interpreting them as asking, in essence, whether Article 1(2) of the Software Directive was to be interpreted as meaning that the functionality of a computer program and the programming language and the format of data files used in a computer program in order to exploit certain of its functions constituted a form of expression of that program and might, as such, be protected by copyright in computer programs for the purposes of that Directive. Having cited Article 9(2) of TRIPS and Article 2 of the WIPO Copyright Treaty, the Court held at [39] that neither the functionality of a computer program, nor the programming language and the format of data files used in a computer program in order to exploit certain of its functions, constituted a form of expression of that program for the purposes of Article 1(2) of the Software Directive. The Court went on to hold at [46] that it followed that those elements were not protected by copyright in a computer program. The Court pointed out at [45] that its finding in [39]:

> "… cannot affect the possibility that the SAS language and the format of SAS Institute's data files might be protected, as works, by copyright under Directive 2001/29 if they are their author's own intellectual creation (see *Bezpečnostní softwarová asociace*, paragraphs 44 to 46)."

47.   I subsequently heard argument as to how the Court of Justice's rulings should be applied to the facts I had found in my first judgment and gave a further judgment largely dismissing SAS Institute's claims [2010] EWHC 1829 (Ch), [2011] RPC 1 ("*SAS v WPL (No 3)*"). An appeal by SAS Institute to this Court was dismissed [2013] EWCA Civ, [2014] RPC 8, but the Court of Appeal's judgment is not relevant for present purposes.

48.   SAS Institute argued that the SAS Language and SAS data file formats were independent copyright works within the Information Society Directive, relying upon what the Court of Justice had said at [45], and that WPL had infringed those copyrights. I refused to entertain these arguments on the grounds that no such claims had been pleaded by SAS Institute and that it was too late for SAS Institute to be permitted to amend its particulars of claim to advance these claims because they raised distinct factual and legal issues which would require a further trial to resolve.

49.   In this context I observed at [21]:

> "… counsel for WPL submitted, and I agree, that in [45] the CJEU was merely being careful, consistently with [Case C-393/09 *Bezpečnostní softwarová asociace – Svaz softwarové ochrany v Ministerstvo kultury* [2010] ECR I-13971], to make it clear that it was not excluding the *possibility* that the SAS Language *might* be protected as a work in its own right. In other words, it was simply identifying that as being a separate question. It was not purporting to answer that question, which was not before it."

50.   I also observed at [29]:

> "… as was common ground between counsel, it is important to distinguish between the putative work on the one hand and any particular fixation of the work on the other hand. The United Kingdom, in common with many other countries, takes advantage of Article 2(2) of the Berne Convention and requires fixation as a condition precedent to the subsistence of copyright: see section 3(2) of the 1988 Act. In principle, the technical means by which fixation is achieved is irrelevant. Thus, as discussed above, an artistic work may be fixed in the source code of a computer program. But the fixation must not be confused with the work. A printed book is a fixation which may embody a variety of works, for example a literary work (the text) and a series of artistic works (illustrations). These different works are likely to have different authors, and hence different owners and terms of copyright. Thus the fact that one can identify a fixation is a necessary, but not a sufficient, condition for the subsistence of copyright."

51.   With regard to SAS Institute's claim in respect of the SAS data file formats, I said:

> "38.   There was relatively little evidence about the SAS data file formats at trial. To the best of my recollection, the only format that was addressed in the evidence at trial was SAS7BDAT (see my first judgment at [128]-[129]). I do not even know what other formats, if any, SAS Institute claims that WPL has copied.
>
> 39.   The question of whether a data file format such as SAS7BDAT is a work is not straightforward for similar reasons to those that I have given in relation to the SAS Language.
>
> 40.   Even if it is a work, SAS Institute's claim in respect of the data file formats raises rather more acutely [than in the case of the SAS Language] the question of fixation. For the reasons given in my first judgment at [23] and [128]-[129], it has not been established that SAS7BDAT is fixed in the SAS Components. It is not clear to me that it is fixed in any of the SAS Manuals either.
>
> 41.   This claim also raises the question of originality, and in particular whether a data file format is an intellectual creation. For this purpose, elements 'differentiated only by their technical function' must be disregarded: … . What is required is something on which the author has stamped his 'personal touch' through the creative choices he has made: ... It is open to evidence and argument as to whether data file formats such as SAS7BDAT satisfy this requirement."

52.   The statements made in [40] need to be read in context. As I have explained, the copyright works which SAS Institute had pleaded were the SAS Components and the SAS Manuals. For the reasons given, SAS Institute was in difficulty in relying upon the SAS Components or the SAS Manuals as fixations of the SAS data files. Nor had SAS Institute argued, or adduced any evidence, that the SAS data files were fixed in some other way. I shall return to this point below.

Works protected under Article 2(a) of the Information Society Directive

53.   As noted above, the Information Society Directive contains no definition of the "works" of authors which Article 2(a) requires Member States to protect. This inevitably posed a significant issue of interpretation for the CJEU. The Court of Justice's jurisprudence on this question has evolved over time.

54.   The starting point is the Court of Justice's seminal decision in Case C-5/08 *Infopaq International A/S v Danske Dagblades Forening* [2009] ECR I-6569, in which the Court applied its normal approach of giving such expressions an autonomous and uniform interpretation in European law and reasoned:

> "33.   Article 2(a) of Directive 2001/29 provides that authors have the exclusive right to authorise or prohibit reproduction, in whole or in part, of their works. It follows that protection of the author's right to authorise or prohibit reproduction is intended to cover 'work'.
>
> 34.   It is, moreover, apparent from the general scheme of the Berne Convention, in particular Article 2(5) and (8), that the protection of certain subject-matters as artistic or literary works presupposes that they are intellectual creations.
>
> 35.   Similarly, under Articles 1(3) of Directive 91/250, 3(1) of Directive 96/9 and 6 of Directive 2006/116, works such as computer programs, databases or photographs are protected by copyright only if they are original in the sense that they are their author's own intellectual creation.
>
> 36.   In establishing a harmonised legal framework for copyright, Directive 2001/29 is based on the same principle, as evidenced by recitals 4, 9 to 11 and 20 in the preamble thereto.
>
> 37.   In those circumstances, copyright within the meaning of Article 2(a) of Directive 2001/29 is liable to apply only in relation to a subject-matter which is original in the sense that it is its author's own intellectual creation."

55.   The Court of Justice has elaborated upon the requirement that the work be its author's own intellectual creation in a number of subsequent judgments. What is required is that the author was able to express their creative abilities in the production of the work by making free and creative choices so as to stamp the work created with their personal touch: see in particular. Case C-145/10 *Painer v Standard Verlags GmbH* [2011] ECR I-12533 at [89]-[94]; Case C-604/10 *Football Dataco Ltd v Yahoo! UK*

Ltd [EU:C:2012:115] at [38]; Case C-469/17 *Funke Medien NRW v Germany* [EU:C:2019:623] at [19], [23]-[25]; Case C-683/17 *Cofemel—Sociedade de Vestuário SA v G-Star Raw CV* [EU:C:2019:721] at [30]; and Case C-833/18 *SI v Chedech/Get2Get* ("*Brompton Bicycle*") [EU:C:2020:461] at [23], [26]. This criterion is not satisfied where the content of the work is dictated by technical considerations, rules or other constraints which leave no room for creative freedom: see in particular Case C-393/09 *Bezpečnostní softwarová asociace – Svaz softwarové ochrany v Ministerstvo kultury* [2010] ECR I-13971 at [48]-[49]; Case C-403/98 *Football Association Premier League Ltd v QC Leisure* [2011] ECR I-9083 at [98]; *Football Dataco* at [39]; *Funke Medien* at [24]; *Cofemel* at [31]; and *Brompton Bicycle* at [24], [27].

56.   More recently, the Court of Justice has held that originality in this sense is not sufficient. In Case C-310/17 *Levola Hengelo BV v Smilde Foods BV* [EU:C:2018:899] Levola claimed copyright in the taste of a spreadable dip containing cream cheese and fresh herbs. The Gerechtshof Arnhem-Leeuwarden referred questions asking, in essence, whether the taste of a food product was precluded from being protected by copyright under the Information Society Directive. The Grand Chamber held that the taste of a food product could only be protected if it was a "work" within the meaning of the Directive. It said that two cumulative conditions must be satisfied for subject matter to be classified as a "work". First, the subject matter concerned must be original in the sense that it is the author's own intellectual creation. Secondly (internal citations omitted):

"37.   … only something which is the expression of the author's own intellectual creation may be classified as a 'work' within the meaning of Directive 2001/29 ….

38.   It should be recalled in that regard that although the European Union is not a party to the Berne Convention, it is nevertheless obliged, under Article 1(4) of the WIPO Copyright Treaty, to which it is a party and which Directive 2001/29 is intended to implement, to comply with Articles 1 to 21 of the Berne Convention ...

39.   Under Article 2(1) of the Berne Convention, literary and artistic works include every production in the literary, scientific and artistic domain, whatever the mode or form of its expression may be. Moreover, in accordance with Article 2 of the WIPO Copyright Treaty and Article 9(2) of the Agreement on Trade-Related Aspects of Intellectual Property Rights, … which also forms part of the EU legal order …, copyright protection may be granted to expressions, but not to ideas, procedures, methods of operation or mathematical concepts as such ….

40.   Accordingly, for there to be a 'work' as referred to in Directive 2001/29, the subject matter protected by copyright must be expressed in a manner which makes it identifiable with sufficient precision and objectivity, even though that expression is not necessarily in permanent form.

41.   That is because, first, the authorities responsible for ensuring
that the exclusive rights inherent in copyright are protected
must be able to identify, clearly and precisely, the subject
matter so protected. The same is true for individuals, in
particular economic operators, who must be able to identify,
clearly and precisely, what is the subject matter of protection
which third parties, especially competitors, enjoy. Secondly,
the need to ensure that there is no element of subjectivity —
given that it is detrimental to legal certainty — in the process
of identifying the protected subject matter means that the latter
must be capable of being expressed in a precise and objective
manner."

57.   It went on to hold that the taste of a food product did not satisfy the second condition,
and therefore was not a "work", for the following reasons:

"42.   The taste of a food product cannot, however, be pinned down
with precision and objectivity. Unlike, for example, a literary,
pictorial, cinematographic or musical work, which is a precise
and objective form of expression, the taste of a food product
will be identified essentially on the basis of taste sensations
and experiences, which are subjective and variable since they
depend, inter alia, on factors particular to the person tasting the
product concerned, such as age, food preferences and
consumption habits, as well as on the environment or context
in which the product is consumed.

43.   Moreover, it is not possible in the current state of scientific
development to achieve by technical means a precise and
objective identification of the taste of a food product which
enables it to be distinguished from the taste of other products
of the same kind."

58.   The Court of Justice has reiterated that the two cumulative conditions identified in
Levola must be satisfied in a number of subsequent judgments: see in particular *Funke
Medien* at [19]; *Cofemel* at [29]; and *Brompton Bicycle* at [25]. In *Cofemel* the Court
of Justice held at [53] that the subjective aesthetic effect that may be produced by a
clothing design did not comply with the second condition. Apart from that, no further
light has been cast on it.

59.   Counsel for the Claimants submitted that the second condition is either the same as, or
analogous to, the requirement of fixation in accordance with Article 2(2) of the Berne
Convention. I am not sure that it is the same as the requirement of fixation. This is for
three reasons. First, although the Court cited Article 2(2) in *Levola* at [4], it did not
mention this provision in its reasoning. Secondly, it can be seen from the opinion of
Advocate General Wathelet [EU:C:2018:618] at [56] that the second condition was
borrowed from the Court of Justice's jurisprudence in the field of trade marks, in
particular Case C-273/00 *Sieckmann v Deutsches Patent- und Markenamt* [2002] ECR
I-11737. Thirdly, the Court has expressed the second condition as being one of the
requirements for the existence of a work, whereas it is clear from Article 2(2) of
Berne that a work may exist before it is fixed (this is even clearer from section 3(2) of

the 1988 Act). I remain of the view that I expressed in *SAS v WPL (No 3)* at [29] that it is important not to confuse the fixation with the work.

60.   Despite these reservations, I agree that the second condition appears to serve essentially the same purposes as the requirement of fixation as explained by Ricketson and Ginsburg. (Similar purposes are identified in the context of domestic law by *Copinger and Skone James on Copyright* (18ᵗʰ ed) at 3-162; but, as the editors point out, section 3(2) also defines the time when the work is made for the purposes of the qualification provisions.)

Dr Wright's claim that copyright subsists in the Bitcoin File Format

61.   In order to establish that copyright subsists in the Bitcoin File Format, Dr Wright must show that the following requirements are satisfied:

   i)   the Bitcoin File Format is a work;

   ii)   it is a work that falls within one of the categories of protectable work specified in the 1988 Act;

   iii)   the work has been fixed;

   iv)   the work is original; and

   v)   the work qualifies for copyright protection under the 1988 Act.

62.   There is no difficulty with requirement (ii). If the Bitcoin File Format is a work at all, it is plainly a literary work within the meaning of section 3(1) of the 1988 Act bearing in mind the broad definition of "written" in section 178: compare cases such as *D.P. Anderson & Co Ltd v The Lieber Code Co* [1917] 2 KB 469 (holding that a telegraphic code consisting of 100,000 five-letter words was a copyright work). Nor is there any difficulty with requirement (v) assuming that Dr Wright was, as he claims, the author and an Australian citizen at that time, and therefore a qualifying person within section 154 of the 1988 Act. The potential difficulties are with requirements (i), (iii) and (iv).

63.   So far as requirement (i) is concerned, it might be argued that the Bitcoin File Format is something that enables the creation of works rather than a work itself; or to put it another way, is an idea, procedure, method of operation or mathematical concept within Article 9(2) of TRIPS and Article 2 of the WIPO Copyright Treaty. The judge evidently considered, however, that Dr Wright had a real prospect of successfully contending that the Bitcoin File Format is a work. I see no reason to differ from that assessment. One possible answer to the argument I have postulated is that all that is required for the existence of a work within the meaning of Article 2(a) of the Information Society Directive, and hence section 1(1)(a) of the 1988 Act, is that the two cumulative conditions identified in *Levola* be satisfied.

64.   Turning to requirement (iv), I have to say that I am sceptical as to whether the Bitcoin File Format is an intellectual creation in the sense that has been explained by the Court of Justice. On the materials presently before this Court, it seems to me that there is a strong argument that it is differentiated from other file formats only by technical considerations. The judge accepted, however, that Dr Wright had a real

prospect of success on this question. Again, I see no reason to differ from that assessment. It is an issue which requires a factual investigation, possibly including expert evidence, and detailed argument.

65.   That just leaves requirement (iii). As noted above, the judge did not consider that Dr Wright had a real prospect of success in showing that this requirement was satisfied. The judge accepted that, if the Bitcoin File Format had been recorded, it has been recorded in writing or otherwise, but was not persuaded that it had been recorded.

The judge's reasoning

66.   The judge cited extensively from *SAS v WPL (No 1)*, *SAS v WPL (No 2)* and *SAS v WPL (No 3)* and more briefly from *Levola*. The core of his reasoning is to be found in the following paragraphs in his judgment:

"54.   It remains the case that no relevant 'work' has been identified containing content which defines the structure of the Bitcoin File Format. Of course, Schedule 2 to the Particulars of Claim comprises content defining the structure of the Bitcoin File Format, but that is not a relevant 'work'. Schedule 2 was created for the purposes of this claim and cannot form part of the causative chain between what Dr Wright devised, an alleged copyright 'work' and the alleged infringements which were being created as from 1st August 2017.

55.   Second, the Claimants have now been given four opportunities to explain, in effect, what it is in the 'Bitcoin File Format', as expressed in each block, which comprises 'content and not just structure'.

56.   The Claimants were presented with a possible fifth opportunity during the hearing when I asked Counsel whether, in the light of the discussion which had taken place, the Claimants wished to file any further evidence. As mentioned above, Counsel offered extracts from textbooks which show that third parties have divined the structure of a block in the Bitcoin Blockchain. As also mentioned above, I have assumed that is the case, but it does not assist the Claimants on the key issue in any way.

57.   It is most revealing that, despite all these opportunities, the Claimants have not filed any evidence to the effect that a block contains content indicating the structure, as opposed to simply reflecting it. By 'content indicating the structure', I mean, by way of a crude example, a flag or symbol in the block which signals 'this is the start of the header' or 'this is the end of the header', or an equivalent of the sort of content which is found in an XML file format. Whilst I entirely accept that each block conforms to the structure described in Schedule 2 to the Particulars of Claim and is an instance or manifestation of that structure, the absence of such evidence confirms my initial view that, whether one considers the point at which the first,

second or subsequent block(s) were written embodying the structure of the file format, nowhere was the structure of Bitcoin File Format fixed in a copyright sense in a material form in any of those blocks.

58. … I am driven to the conclusion there are no overt signs in a block which indicate the structure as described in Schedule 2 to the Particulars of Claim. Akin to the conclusion set out at the end of [128] in *SAS No.3* [sic]: there is no evidence that the Bitcoin File Format is set out in any part of the software or early blocks written to the Bitcoin Blockchain, as opposed to the Bitcoin Software simply reading and writing files in that format."

The appeal

67. Dr Wright contends that the judge was wrong to hold that Dr Wright has no real prospect of success in establishing that the requirement of fixation is satisfied. I agree with this.

68. With respect to the judge, in my opinion there are a number of flaws in his reasoning. First, the judge's statement that "no relevant 'work' has been identified containing content which defines the structure of the Bitcoin File Format" confuses the work and the fixation. The work Dr Wright relies upon, the Bitcoin File Format, has been clearly identified. The question of how and when that work was fixed is a different one. Dr Wright's case is that the work was fixed when the first block in the Bitcoin blockchain was written on 3 January 2009.

69. Secondly, even if the judge meant to say "fixation" rather than "work", his statement presupposes that it is necessary for fixation for there to be content which defines the structure of the Bitcoin File Format. This is not necessarily correct. As the judge clearly appreciated, the work in which Dr Wright claims copyright is a structure. It is quite correct that the work, that is to say, *the structure*, must be fixed in order for copyright to subsist in it; but it does not necessarily follow that *content defining* (or describing or indicating) the structure is required in order to fix it. All that is required is that the structure be completely and unambiguously recorded.

70. Before the judge counsel for Dr Wright relied upon two cases in which it has been held or conceded that XML formats were copyright literary works: *Technomed Ltd v Bluecrest Health Screening Ltd* [2017] EWHC 2142 (Pat), [2018] FSR 8 and *Software Solutions Ltd v 365 Health and Wellbeing Ltd* [2021] EWHC 237 (IPEC), [2021] FSR 25. The judge distinguished those cases on the basis that the XML formats in those cases did include content describing their structures whereas no fixation by Dr Wright containing such content had been identified in this case prior to Schedule 2 to the Particulars of Claim (as to which, see below). This is factually accurate, but it does not necessarily follow that such content is required in order to satisfy the requirement of fixation.

71. The judge relied upon *SAS v WPL (No 1)* at [128]. As I have explained, however, that paragraph was addressing SAS Institute's claim that WPL had reproduced the source code of the SAS Components. That was why the absence of any evidence that the data

file format was set out in the source code was crucial. When SAS Institute tried to argue that the data file formats were independent copyright works in *SAS v WPL (No 3)*, I pointed out the fixation issue at [40], but as explained above that paragraph needs to be read in content. SAS Institute did not contend that data file formats such as SAS7BDAT were fixed when the first file was written in that format, and it would have been in some difficulty if it had done so due to the absence of any evidence about that.

72.   Thirdly, the judge did not apply the test laid down in *Levola*, which post-dates *SAS v WPL*, of asking whether the fixation relied upon by Dr Wright made the Bitcoin File Format identifiable with sufficient precision and objectivity. Dr Wright contends that the fixation upon which he relies satisfies this test. In support of this contention Dr Wright relies upon evidence, which the judge said at [56] that he would assume was correct, that third parties have been able to deduce the structure comprising the Bitcoin File Format from the blocks in the Bitcoin blockchain. The judge said that this did not assist Dr Wright, but I disagree.

73.   Fourthly, and a point closely related to the third point, the judge did not consider the rationale for the requirement of fixation. As I have explained, it serves two purposes: to evidence the existence of the work and to delimit the scope of protection. Dr Wright contends that the fixation upon which he relies serves both these purposes. The first block in the Bitcoin blockchain evidences the existence of the Bitcoin File Format and enables the scope of protection to be determined. Dr Wright again relies upon the evidence that third parties have been able to deduce the structure comprising the Bitcoin File Format as supporting this. I again consider that this evidence supports Dr Wright's case.

74.   The final point concerns the judge's discussion of Schedule 2 to the Particulars of Claim. Dr Wright does not rely upon Schedule 2 as fulfilling the requirement of fixation, but not for the reason stated by the judge. It is not necessary for Dr Wright to show that Schedule 2 formed part of a causative chain between Dr Wright's alleged copyright work and the alleged infringements. Copyright in a literary work protects the work as an intangible abstraction, not the particular tangible medium in which that work may happen to have been fixed. It is not necessary for the copyright owner to prove that the fixation relied upon for the purposes of subsistence has been copied, only to prove that the work has been copied. This distinction is made clear by section 3(2) read together with section 3(3).

75.   Suppose, for example, an author A who satisfies the qualification requirements extemporises an original literary work orally before an audience, and the work is digitally recorded by B (whether with or without A's consent). Next suppose that C is also present in the audience and memorises the work, and that a week later C transcribes the work from memory and publishes it without A's consent. On these facts A can rely upon the recording by B as satisfying the fixation requirement, and so copyright will subsist from that moment. Moreover, A has a good claim for infringement against C despite the absence of any causative link between B's fixation and C's infringement. I would add that it makes no difference if the digital recording is erased shortly after it is made, because fixations do not have to be permanent and may be destroyed either deliberately or accidentally. This shows that one should not place too much weight upon the evidential and definitional purposes served by fixation.

76.   I presume that Dr Wright does not rely upon Schedule 2 as satisfying the fixation requirement because it was created in late 2022 and thus post-dates the key infringements alleged. The problem is temporal rather than one of causation. It is an interesting question whether Dr Wright could, in the absence of any earlier fixation, rely upon Schedule 2 as satisfying the fixation requirement for the purposes of subsequent infringement claims, but it is not necessary for present purposes to explore that question.

Conclusion

77.   For the reasons given above, I consider that Dr Wright has a real prospect of successfully establishing that the fixation requirement is satisfied. I would therefore allow the Claimants' appeal.

Lord Justice Warby:

78.   I agree.

Lady Justice Asplin:

79.   I also agree.