CHAPTER EIGHT

Copyright and Changing Systems of Scientific Communication

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This article presents an overview of the role of copyright in the context of changing systems of scientific communication. The analyses are based on German and European copyright law. The primarily descriptive sections 1 and 2 on substantive copyright law in scientific works and copyright contract law are oriented towards the 'prevailing opinion' informed by highest-instance case law. Section 3 reports on the criticism of currently prevailing copyright in scientific works and alternatives currently under discussion.

1 Scientific communication as an object of copyright protection

In order to determine the significance of copyright with respect to systems of scientific communication, the extent to which scientific expression and findings are objects of protection under copyright must be clarified.

1.1 Scientific works

Scientific works have always been included among the objects of protection covered by copyright. In the 19th century, they were still listed as works of 'literature'.[1] It was only with the current Act on Copyright and Related Rights (hereinafter 'Copyright Act') of 9 September 1965 that scientific works were

1 See Article 2(1) of the Berne Convention for the Protection of Literary and Artistic Works 1886/1971 ('The expression "literary and artistic works" shall include every production in the literary, scientific and artistic domain').

placed explicitly and prominently in Articles 1 and 2(1) alongside works of literature and art.

1.1.1 Scientific literary works

According to Article 2(1)(1), Copyright Act, included among scientific works are scientific literary works, such as fixed written compositions and oral speech.[2] However, in this respect, only the concrete 'form' of the thought process is capable of protection under copyright, rather than the scientific content as such.

The concrete embodiment of speech, shaped by the process of thought, is understood as the form capable of protection.[3] The concrete text is the scientific literary work to the extent that it refers to an 'author's own intellectual creation'. As a rule, the qualitative prerequisites for protection are fulfilled in the cases of whole monographs, articles, book chapters or longer text passages.[4]

The capability of protection of a concrete representation reaches its end only where this is necessary due to scientific concerns or where there exists a general rule within the area under consideration.[5] Brief text passages, such as a single sentence or sentence portion, are only accorded protection according to case law when these are as such particularly significant or originally formulated and thereby exemplify a creative characteristic.[6]

Scientific teaching and scientific results (the 'content'), on the other hand, are public domain and not protected by copyright.[7] Hence, a scholar who, for example, is the first to discover or explain historical facts, relationships or theories in the natural sciences has no copyright on his or her intellectual

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2 See, for example, Federal Supreme Court, case no. I ZR 15/58, 25.11.1958, GRUR 1959, pp. 251, 251 – *Einheitsfahrschein*; Federal Supreme Court, case no. I ZR 106/78, 21.11.1980, GRUR 1981, pp. 352, 353 – *Staatsexamensarbeit*.

3 Rehbinder & Peukert, *Urheberrecht*, 17th edn, 2015, marginal note 214 ff.; European Court of Justice, case no. C-5/08, 16.07.2009, GRUR 2009, pp. 1041, marginal note 35 ff. – *Infopaq I*; Federal Supreme Court, case no. I ZR 9/95, 16.01.1997, ZUM-RD 1997, pp. 329, 331 ff. – *CB-Infobank I*; Federal Supreme Court, case no. I ZR 12/08, 01.12.2010, ZUM 2011, pp. 151, 155 – *Perlentaucher*.

4 Frankfurt Court of Appeal, case no. 11 U 66/11, 27.03.2012, ZUM 2012, pp. 574, 577 ff.; Federal Supreme Court, case no. I ZR 106/78, 21.11.1980, GRUR 1981, pp. 352, 355 – *Staatsexamensarbeit*.

5 Federal Supreme Court, case no. I ZR 106/78, 21.11.1980, GRUR 1981, pp. 352, 355 – *Staatsexamensarbeit*; Federal Supreme Court, case no. I ZR 16/89, 12.07.1990, GRUR 1991, pp. 130, 132 ff. – *Themenkatalog*.

6 CJEU, case no. C-5/08, 16.07.2009, GRUR 2009, p. 1041, marginal notes 44–48 – *Infopaq I* (considered possible for the formulation 'a forthcoming sale of the telecommunications group TDC which is expected to be bought'); Federal Supreme Court, case no. I ZR 12/08, 01.12.2010, ZUM 2011, pp. 151, 152 marginal notes 37, 39 – *Perlentaucher*; answers in the affirmative for the formulation 'A cancer in the morale of the German nation' from the Frankfurt Court of Appeal, case no. 11 U 66/11, 27.03.2012, ZUM 2012, pp. 574, 578.

7 Federal Supreme Court, case no. I ZR 106/78, 21.11.1980, GRUR 1981, pp. 352, 353 – *Staatsexamensarbeit*; Federal Supreme Court, case no. I ZR 16/89, 12.07.1990, GRUR 1991, pp. 130, 132 ff. – *Themenkatalog*; Federal Supreme Court, case no. I ZR 140/09, 01.06.2011, GRUR 2011, p. 803, marginal note 49 ff. – *Lernspiele*.

efforts – anyone may make use of this from a copyright perspective – without naming the scientific pioneer.[8]

However, the distinction between 'form' and 'content' presents difficulties. The transition between both categories is, in certain cases, fluid. Thus, the collection, selection, allocation and arrangement of material in a specific outline of a text is considered capable of protection to the extent that it is not exhausted in a factually obvious table of contents – such as the chronological construction of a historical work.[9] After all, the prevailing opinion also accords authors of scientific material protection for 'concrete original connections, conclusions and evaluations', 'when these extend beyond the public domain core of scientific teachings and theories'.[10] An example of this is the recognition in a postdoctoral thesis that Germany is the leader in earthquake research, even though the country is not among the particularly endangered areas.[11]

1.1.2 Illustrations of a scientific nature

According to Article 2(1)(7), Copyright Act, included among protected scientific works are: 'Illustrations of a scientific or technical nature, such as drawings, plans, maps, sketches, tables and three-dimensional representations'. A scientific illustration is characterised by the fact that it serves to impart educational or instructional information about the represented object through the means of expression of graphic or plastic description. The purpose of conveying information distinguishes these works from works of art, which primarily appeal to aesthetic sensibilities. The means of expression through graphic or plastic description differentiates them from literary works, whose means of expression is language.[12]

A typical example of a scientific illustration would be a model that represents a protein in a graphic form.[13] Yet, the group of potentially protected illustrations of a 'scientific nature' is not limited to such clear-cut examples. Even the illustration of the most basic scientific discoveries – such as learning games for children consisting of control units and exercise books (for example, miniLUK)

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8 Entirely the prevailing opinion, see Rehbinder & Peukert (supra note 3), marginal note 219; Frankfurt Court of Appeal, case no. 11 U 66/11, 27.03.2012, ZUM 2012, pp. 574, 577; to the contrary, Haberstumpf, 'Das Urheberrecht – Feind des Wissenschaftlers und des wissenschaftlichen Fortschritts?', ZUM 2012, pp. 529, 536. The rules of internal scientific communication demand such a specification.

9 Federal Supreme Court, case no. I ZR 157/77, 07.12.1979, GRUR 1980, pp. 227, 231 – *Monumenta Germaniae Historica*; Federal Supreme Court, case no. I ZR 29/79, 27.02.1981, GRUR 1981, pp. 520, 521 ff. – *Fragensammlung*; Federal Supreme Court, case no. I ZR 16/89, 12.07.1990, GRUR 1991, 130, 132 ff. – *Themenkatalog*.

10 Frankfurt Court of Appeal, case no. 11 U 66/11, 27.03.2012, ZUM 2012, pp. 574, 579.

11 Frankfurt Court of Appeal, case no. 11 U 66/11, 27.03.2012, ZUM 2012, pp. 574, 579.

12 Federal Supreme Court, case no. I ZR 140/09, 01.06.2011, GRUR 2011, 803, marginal note 39 m.w.N. – *Lernspiele*.

13 Frankfurt Court of Appeal, case no. 6 W 31/89, 04.04.1989, GRUR 1989, p. 589 – *Eiweißkörper*.

– are subsumed hereunder.[14] At the same time, as with literary works, the requirements on an 'author's own intellectual creation' of a scientific representation are low. A specific manner of representation that transcends everyday production in the relevant area is sufficient.[15] On the other hand, one must recognise the principle that only the concrete 'form' is capable of protection not, however, the abstract game or representational concept (the 'content').[16]

On the whole, it appears that copyright operates with a different understanding of the term 'science' than do the sciences in their self-description or constitution with respect to academic freedom. While 'science' is there defined as the serious and systematic attempt, according to content and form, to determine the truth in research and teaching,[17] copyright-related case law takes the concept of a scientific work much further to include common, yet economically valuable, crossword puzzles and word games.[18]

1.1.3 Content of legal protection

The creators of scientific literary works and representations and likewise the producers of scientific editions – the 'author' (Article 7, Copyright Act) – enjoy the same comprehensive legal protection as do all other authors. Authors' moral rights include the right of first publication, the recognition of authorship and the integrity of the work (Articles 12–14, Copyright Act).[19] The commercial exploitation rights extend to all existing and as of yet unknown forms of material and non-material exploitation of scientific works. Included are, in particular, the right to produce copies whether on a temporary or on a lasting basis, and this regardless of by which means of procedure or in which quantity they are made (Article 16(1), Copyright Act). Also included is the right to make a work available on the Internet (Article 19a, Copyright Act). Furthermore, adaptations or other transformations of a work may only be published or exploited with the consent of the author of the adapted or

14 Federal Supreme Court, case no. I ZR 140/09, 01.06.2011, GRUR 2011, p. 803, marginal note 43 with further references – *Lernspiele*.

15 Federal Supreme Court, case no. I ZR 140/09, 01.06.2011, GRUR 2011, p. 803, marginal note 50 – *Lernspiele*.

16 Cologne Court of Appeal, case no. 6 U 225/08, 13.07.2012, ZUM 2012, pp. 975, 979 – *Lernspiele*.

17 Constitutional Court, case no. 1 BvR 424/71, 29.5.1973, BVerfGE pp. 35, 79, 112 ff.; Constitutional Court, case no. 1 BvR 174, 178, 191/71 among others, 1.3.1978, BVerfGE pp. 47, 327, 367.

18 See Peukert, Das Verhältnis zwischen Urheberrecht und Wissenschaft: Auf die Perspektive kommt es an!, 4 JIPITEC 2012, p. 142 ff.; Federal Supreme Court, case no. I ZR 16/89, 12.07.1990, GRUR 1991, pp. 130, 132 ff. – *Themenkatalog* ('The area of science is not only limited to research and teaching in a narrow constitutional sense.'); on prize competitions as scientific representation, see Munich Court of Appeal, case no. 6 U 2093/88, 19.09.1991, GRUR 1992, pp. 510, 510 ff.

19 The publisher is not entitled to these authorisations for the first publication of a posthumous work. See Article 71(1), third sentence, Copyright Act.

transformed work (Article 23, Copyright Act). Copyright expires 70 years after the author's death (Article 64, Copyright Act).

1.1.4 Limitations of protection in a scientific context

Copyright is subject to certain restrictions ('limitations').[20] In line with the stipulations in various regulations, a work may be used without the author's permission. Several limitations pursue the purpose of easing scientific communication.[21]

Among these limitations is, firstly, the right to quote, which, in the interest of general cultural and scientific advancement, serves the freedom of intellectual exchange of others' ideas.[22] According to Article 51, Copyright Act in particular, it is permissible to include individual works after publication in an independent scientific work for the purpose of explaining the contents if the source is clearly specified. The right to quote allows for the word-for-word reproduction of a few text passages, illustrations and images in order to document and explain one's own scientific statements. More extensive reproduction of others' text passages, etc. that lack an explanation of the content in one's own work may be permissible in artistic text collages.[23] Concerning scientific works, however, such an expanded interpretation of the right to quote is not recognised. Rather, the scientific work containing the quotation must constitute the main idea, while the reproduced text passages, representations, etc. remain secondary, and an inner connection must exist between the works or work portions used and the ideas of the one using the quotation.[24]

While quotation free of remuneration is permissible, other limitations on copyright in the context of the sciences are coupled with lump-sum remuneration obligations, which are handled by collecting societies (for example, VG Wort). This concept is valid in particular for the production of single copies of a work for private scientific use, which is permissible if and insofar as such copying is necessary for this purpose, that it serves no commercial purpose, and if the

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20 The same is true for related rights in scientific editions and posthumous works. See Articles 70(1), 71(1), third sentence, Copyright Act.

21 Rehbinder & Peukert (supra note 3), marginal note 645 ff.; De la Durantaye, *Allgemeine Bildungs – und Wissenschaftsschranke*, 2014, pp. 73 ff.

22 Federal Supreme Court, case no. I ZR 32/92, 30.06.1994, GRUR 1994, pp. 800, 803 – *Museumskatalog*.

23 See Constitutional Court, case no. 1 BvR 825/98, 29.06.2000, GRUR 2001, pp. 149, 151 – *Germania 3*; Federal Supreme Court, case no. I ZR 212/10, 30.11.2011, GRUR 2012, p. 819 marginal note 14 ff. – *Blühende Landschaften*.

24 Federal Supreme Court, case no. I ZR 83/66, 03.04.1968, NJW 1968, pp. 1875, 1877 ff. – *Kandinsky* (denied for 69 reproductions of works by Kandinsky in a book on the artists' group 'Der blaue Reiter'); Federal Supreme Court, case no. I ZR 32/92, 30.06.1994, GRUR 1994, pp. 800, 803 – *Museumskatalog*; Federal Supreme Court, case no. I ZR 69/08, 29.04.2010, NJW 2010, p. 2731 marginal note 26 – *Vorschaubilder I*.

copies are neither distributed nor communicated to the public.[25] Accordingly, scholars themselves, or through contracting others, may produce reprographic and digital copies of scientific works.

In this regard, public libraries are permitted to transmit copies upon request (Article 53a, Copyright Act). Here, a distinction must be drawn between analogue paper copies and electronic copies. In response to an individual order, public libraries are permitted to reproduce and transmit by post or facsimile, individual articles published in newspapers and periodicals and also small parts of published works insofar as the exploitation by the person placing the order is permissible pursuant to Article 53, Copyright Act. Reproduction and transmission in other electronic forms are permissible solely as a graphic data file and for the purpose of scientific research, to the extent justified by a non-commercial purpose. Such transmission of copies in electronic form is, however, prohibited when access to contributions or small portions of a work is clearly available to members of the public at locations and times of their choosing through a contractual agreement under equitable conditions. In this regard, concerning transmission in digital form, the online offerings from the publisher have priority. Where such online offers exist under 'equitable conditions', public libraries must refrain from transmitting copies thereof in electronic form.

The latter reservation is not found explicitly among the legal regulations concerning the making available of works to the public for instructional and research purposes (Article 52a, Copyright Act). According to this provision, it is permissible to make available to the public already published, small, limited parts of a work, small-scale works, as well as individual articles from newspapers or periodicals for a specifically limited circle of persons for their personal scientific research, and for this purpose, to produce copies to the extent that this is necessary for the respective purpose and is justified for the pursuit of non-commercial aims. The intention here is to privilege small research teams who, in particular, store journal articles in a common online folder, which is protected by technical access mechanisms from the general access of all Internet users. This provision, however, does not permit works to be stored on a university's intranet server in a way that access would be available to all researchers working there.[26] The German Federal Supreme Court, however, views making available to the public as unnecessary for the specific purpose and thereby as prohibited if the rightholder offers the works or portions thereof in a digital form for use on the network of the individual

25 See Article 53(2)(1) and (6), Copyright Act and Koblenz Court of Appeal, case no. 6 U 606/83, 07.08.1986, NJW-RR 1987, p. 699.

26 See BT-Drucks. 15/837, p. 34.

institution under equitable conditions. The required licensing fee must be equitable and the licensed offer easily accessible.[27] It is left to the scientific publishers themselves to decide whether to market their works online directly or whether to be satisfied with a share of a lump-sum remuneration payment according to Article 52a IV, Copyright Act.

It has been correctly pointed out that this priority of an equitable licensing offer must consequently also pertain to the permissibility of digital copies for personal scientific research purposes.[28] According to this reading, in the digital age, only the right to quote remains without restriction and free of charge. Incidentally, German copyright law plainly assumes that scientific communication takes place primarily via digital, access-controlled publishers' databases. Contractual licences replace legal usage authorisations. These licences determine what an individual researcher may undertake with the contents of scientific publishers' databases.

Finally, the provisions, which enable the authorisation-free, mass-digitalisation of orphan and out-of-print works intended to strengthen the knowledge and information society, are mentioned. A work is orphaned when the rightholder cannot be determined or located; out-of-print means simply that a work is no longer supplied by the publisher. Orphan books, academic journals and other writings, works on film and sound storage media may be digitised and made available to the public for cultural and educational purposes by institutions that are publicly accessible and which serve the public interest, such as libraries, archives, museums and public broadcasting organisations. However, these privileged institutions must determine in advance through a diligent search that the specific work is genuinely orphaned. As the relevant provisions of Articles 61–61c, Copyright Act only permit the commercialisation of orphan holdings by publicly financed institutions within narrow limits, it seems questionable if and when a comprehensive indexing can be expected of orphan library holdings in the Deutsche Digitale Bibliothek and EUROPEANA under these strict constraints.[29] Against this background, the provisions on out-of-print works (Articles 13d and e, Copyright Administration Act) appear more feasible. These provisions have placed the collecting societies Wort and Bild-Kunst in the position to license all books, academic journals, newspapers, magazines or other written works published prior to 1 January 1966 and which

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27 Federal Supreme Court, case no. I ZR 84/11, 20.3.2013, GRUR 2013, p. 1220 marginal note 39 ff. – *Gesamtvertrag Hochschul-Intranet*; Federal Supreme Court, case no. I ZR 76/12, 28.11.2013, GRUR 2014, p. 549 marginal note 58 ff. – *Meilensteine der Psychologie*.

28 See Berger, Die öffentliche Zugänglichmachung urheberrechtlicher Werke für Zwecke der akademischen Lehre – Zur Reichweite des § 52a I Nr. 1 UhrG, GRUR 2010, pp. 1058, 1064.

29 See Rehbinder & Peukert (supra note 3), marginal notes 667–670.

are currently out of print, and located in the holdings of publicly accessible libraries, museums, archives, etc. for non-commercial digitising purposes.[30]

1.2 Computer programs

Included among the works protected under section 2(1)(1), Copyright Act are computer programs, which are important both as a means of communication as well as being an object and result of research. Because software is subject to a special European Union (EU) Directive,[31] its legal protection deviates from that of other work and must be examined separately.

As with other types of works, a distinction must be drawn at the outset between the 'expressions' of a computer program, which are eligible for protection, and the ideas and principles not protected under copyright which, as an element, form the basis for a computer program. Included among the expressions eligible for protection are the source and object codes but not, however, the user interface, the functionality of a computer program, the programming language or the file format.[32]

From a qualitative perspective, the source and object codes are protected if they represent individual works in the sense that they are the result of an author's own intellectual creation. No other criteria, in particular qualitative or aesthetic criteria, shall be applied in determining their eligibility for protection.[33] Thus, all computer programs enjoy protection to the extent that they transcend an utterly banal programming effort.[34] An assumption exists in this regard:[35] ultimately, all computer programs that find an application in a relevant fashion in systems of scientific communication are protected under copyright.

The exploitation rights in computer programs are essentially the same as those for other works. In particular, the source and object codes may not be reproduced, made available to the public or adapted (Article 69c, Copyright Act). There are, however, significant differences with respect to the limitations of the legal protection of software as compared with the remainder of copyright. The special provisions regarding computer programs permit usage without

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30 More specifically Rehbinder & Peukert (supra note 3), marginal notes 671–674.

31 Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs (codified version), OJ no. L 111 from 5.5.2009, p. 16.

32 See Article 69a(1) and (2), Copyright Act; likewise CJEU, case no. C-393/09, 22.12.2010, GRUR 2011, p. 220 marginal notes 44–46 – *BSA/Kulturministerium*; CJEU, case no. C-406/10, 02.05.2012, EuZW 2012, p. 584 marginal notes 39, 45 – *SAS/World Programming*.

33 Article 69a(3), Copyright Act.

34 BGHZ pp. 123, 208 – *Buchhaltungsprogramm*.

35 Federal Supreme Court, case no. I ZR 90/09, 20.9.2012, ZUM-RD 2013, p. 371 marginal note 23 ff. – *UniBasic-IDOS*.

authorisation and remuneration only where this is necessary for the intended purpose including error correction, the making of a backup copy, observation, study or testing of a program, as well as for decompilation (Articles 69d and e, Copyright Act). According to the prevailing opinion, these special provisions supersede the general limitations on copyright and in particular the limitations in the interest of science, be it reproduction for personal scientific use, the dispatch of copies or usage within a smaller network of researchers.[36] A controversial point of view holds that the right to quote remains applicable.[37]

1.3 Databases

The third protected subject matter important in scientific communication concerns databases. These too are subject to an individual EU Directive, governing protection requirements, the area of protection and limitations differing from other categories of works.[38] In this regard, one must further differentiate between copyright protection for collections of works (collections) and database works, and the *sui generis* protection of other investment-intensive databases.

1.3.1 Copyright in collections and database works

Collections and database works are characterised according to Article 4, Copyright Act in that the selection or arrangement of the works, the data or other individual elements must constitute the author's own intellectual creation. With such collections or databases, the primary purpose is not completeness; the purpose is rather the creative and individual selection or arrangement as seen in scientific volumes and encyclopaedias. The copyright owner of the collection/database is typically the publisher. Due to its selection work as the editor, it enjoys independent and extensive legal protection in addition to the authors' copyrights in their individual contributions. Database works may be reproduced for one's own scientific use, as long as this does not serve a commercial purpose.[39]

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36 Dreier, in: Dreier & Schulze (eds), *Urheberrechtsgesetz*, 4th edn, 2013, Article 69a, Copyright Act, marginal notes 3, 33; Grützmacher, in: Wandtke & Bullinger (eds), *Praxiskommentar zum Urheberrecht*, 4th edn, 2014, Article 69a Copyright Act marginal note 75.

37 Dreier, in: Dreier & Schulze (eds), (supra note 36), Article 69a Copyright Act, marginal note 34; to the contrary, Grützmacher, in: Wandtke & Bullinger (eds), (supra note 36), Article 69a, Copyright Act, marginal note 75 ('Article 51, in its spirit and purpose, is still unsuitable for computer programs').

38 Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, OJ no. L 77 from 27.3.1996, p. 20.

39 Section 53(5), sentence 2, Copyright Act.

1.3.2 Sui generis protection of database makers

European copyright protects not only the selection and arrangement efforts of scientific publishers, but also those businesses that *invest* in a database. Whoever provides an 'essential investment' in the acquisition, examination or representation[40] of works, data or other independent elements, receives an exclusive *sui generis* proprietary right for a period of 15 years following publication of the database. Thereby, an incentive for investment in electronic databases is established. The database maker (investor) disposes over an exclusive right to reproduce, distribute and make available to the public the database either in its entirety or, with respect to the total investment, a quantitatively or qualitatively essential portion.[41] Even non-essential (individual) portions of a database may not be used to the extent that this occurs repeatedly and systematically and where a 'normal' analysis of the database would be affected.

Both the publisher's copyright in a database and the database maker's rights are independent of the type of information arranged or collected. In particular, the database does not have to be comprised of copyrighted material. Instead, any type of dataset is sufficient – for example, raw scientific data.[42] Academic publishers are hereby accorded legal ownership, placing them in the position to control access to scientific information as such (the 'content').

Nevertheless, non-essential portions of a database – for example, an individual dataset – may be used without infringing the rights of the database maker. Furthermore, Article 87c(1)(2) states that the reproduction of essential portions of a database, according to the nature or extent, is permissible for personal scientific use if and insofar as the reproduction is justified for that purpose and the scientific use does not serve commercial purposes and where the source is clearly cited. Repeated and systematic retrievals, however, are always prohibited so that, for example, scientific analyses of publishers' databases ('data mining') require the agreement of the database investor.[43]

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40 Not, however, in the original production of the data, etc. See CJEU, case no. C-203/02, 09.11.2004, EuZW 2004, p. 757, marginal note 28 ff. – *The British Horseracing Board Ltd and Ors. v. William Hill Organization Ltd*.

41 Thereby, the value of the individual dataset is not meant, rather the relevance of the extracted portion with respect to the protected investment. See CJEU, case no. C-203/02, 09.11.2004, EuZW 2004, p. 757, marginal note 28 ff. – *The British Horseracing Board Ltd and Ors. v. William Hill Organization Ltd*.

42 CJEU, case no. C-545/07, 05.03.2009, GRUR 2009, p. 572, marginal note 73 – *Apis/Lakorda*.

43 Reichman & Okediji, When copyright law and science collide: Empowering digitally integrated research methods on a global scale, *Minnesota Law Review* 96 (2012), pp. 1362, 1423.

1.4 Protection of scientific editions and posthumous works and press publishers' related rights

Finally, three 'related rights' to copyright need to be pointed out which have a certain relationship to scientific communication but which possess only slight practical significance. Article 70, Copyright Act accords the 'author' of a scientific edition of a non- or no-longer copyright-protected work or text a 25-year right in such an edition if it represents the result of scientifically organised activity and differs substantially from previously known editions of the work or text. According to Article 71, Copyright Act, one who publishes a non- or no-longer copyright-protected work for the first time (for example, a scientific manuscript which was thought to be lost) likewise enjoys a 25-year exclusive right to exploit the posthumous work. The related right for press publishers (Articles 87f–h, Copyright Act) should indeed ultimately find application with respect to academic journals.[44] However, this only extends to the making available to the public of such 'press products' or portions thereof through commercial search engines and news aggregators.

1.5 Legal protection of technical protection measures

Irrespective of all these copyright authorisations, a rightholder is able to prevent all unauthorised usage of its protected subject matter, specifically a scientific database, through the employment of technical protection measures (digital rights management or DRM) and to sanction this in its licensing terms and conditions. Thus, even the access to an individual dataset, and thereby specific scientific information, can be made dependent on the acquisition of a licence. This model of access-controlled databases, already established in practice, is legalised and promoted by European copyright law in that the technical and actual control is placed under additional legal protection. Concerning the legal protection of technical protection measures, a distinction must be made between computer programs on the one hand, and protected scientific subject matter on the other.

1.5.1 Legal protection of technical protection measures in computer programs

To the extent that computer programs are supplied with DRM measures, only the directive on the legal protection of computer programs from 1991 has relevance.[45] Insofar Article 69f(2), Copyright Act determines that a rightholder

44 Jani, in: Wandtke & Bullinger (eds), (supra note 36), Article 87f, Copyright Act, marginal note 4.

45 On the specialty of the computer program directive, CJEU, case no. C-128/11, 03.07.2012, GRUR 2012, p. 904 – *UsedSoft*.

may demand the destruction of such means solely intended to simplify the unauthorised removal or circumvention of any technical protection measures, such instruments are declared illegal per se. While usage of these instruments in the circumvention of DRM systems is not explicitly prohibited, case law nevertheless grants rightholders such defence entitlements, and this on the basis of general private law (intentional damage contrary to public policy, section 826 of the German Civil Code) and the right against unfair competition.[46]

1.5.2 Legal protection of technical protection measures in other works and databases
Directive 2001/29/EC,[47] implemented in Articles 95a ff., Copyright Act, governs DRM systems which control the usage of individual scientific works and in particular scientific databases. According to this, circumvention of effective technological measures is prohibited, as well as rendering this possible by producing and offering of circumvention tools. A DRM system is considered 'effective' and thereby protected when an access or reproduction control has been put in place. It is sufficient that the average user may be hindered in deactivating the measure. It must be assumed that in practice, DRM systems put in place by scientific publishers enjoy legal protection, even though they may be continually circumvented.

With the aid of DRM systems, scientific publishers and database producers are able to override all science-relevant limitations. Articles 95b(1)(5) and (6)(b) determine that a rightholder who implements technical protection measures must subsequently make available to scholars all necessary means so that they may make use of the limitations of Article 52a (intranet usage) and Article 53(2) first sentence and (2)(1) (reproduction for scientific use). This regulation remains, however, practically irrelevant. Still more important is that, according to explicit rules, this does not apply to online databases.[48] This means when a DRM system is utilised, seminal exploitation of scientific works and databases over the Internet may take place with complete disregard for the limitations of copyright law.

1.6 Conclusion

On the whole, copyright protects and promotes the business model undertaken by most scientific publishers: an exclusive, access-controlled online database,

46 On Article 1 of the Act against Unfair Competition (former version), Federal Supreme Court, case no. I ZR 220/95, 09.11.1995, GRUR 1996, p. 78 – *Umgehungsprogramm*.

47 Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, OJ no. L 167 from 22.6.2001, p. 10.

48 Article 95b(3), Copyright Act.

the usage of which is subject to a flat rate ('big deal') or an individual ('pay-per-click') licensing fee. In this business model, the traditional distinction between the copyright-protected 'form' and freely accessible scientific 'content' is null and void. The interested user is only able to access even raw scientific data, theories and expressions when he or she has procured licensed access to the online database. European copyright provides publishers and database producers with total control over scientific information on the Internet.[49]

2 Scientific works and databases as contract subject matter

The conclusion above implies that the powers of copyright lie completely with the publisher. Apart from the database maker's right, which originally derives from the investor, for this purpose, a contractual acquisition of rights from the authors, i.e. scholars, is necessary.[50] They are free to decide when and with whom they assign their rights, and to what extent.

2.1 The original rightholder in scientific works

The original copyright owner in a work is its 'creator' – the 'author' (Article 7, Copyright Act). With respect to scientific works, the creator is the person who formulates the scientific literature or who realises a concrete scientific representation (for example, a model). However, a scientific discovery, the establishment of a theory or the production of raw data does not result in copyright. Scientists who confine themselves to this are not 'authors' as defined by copyright; copyright is tied rather to the concrete expression in language or representation of this information alone.[51] According to this definition, the original rightholder is also a scientist who is either employed or tenured at a research institution and who has created a scientific work in fulfilment of obligations deriving from the employment or service relationship.[52] In consideration of academic freedom, such works are fundamentally considered free and the personal achievement of the individual scientist. The employer acquires neither a tacit exploitation right upon conclusion of an employment

49 Hilty, *Das Urheberrecht und der Wissenschaftler*, GRUR Int. 2006, pp. 179, 181.

50 Different from the producers of sound recording media or film material, publishers do not receive an original right related to copyright in published literary works. The business model in the publishing industry is based thus far on derived copyrights. On the rights related to copyright for press publishers, see section 1.4 above.

51 On this point, friction results from the right to claim identification in copyright, to which only the person who formulated the contribution or representation is entitled, and the scientific practice of claiming identification, according to which those who supply 'only' raw data are also identified as 'authors'.

52 See Article 43, Copyright Act.

contract, nor are employed or tenured scientists required to submit an offer granting their employer an exploitation right in the works.[53]

Case law, however, has recognised exceptions to this so-called 'university professor's privilege'. Thus, a professor's heirs were required to offer to the university where he/she was active, possible copyrightable exploitation rights in extensive archaeological excavation materials, which could be of use for further research purposes.[54] In a collection, specifically concerning a journal edited over many years at a university institute, the financing university tacitly acquired exploitation rights because it could not be assumed that numerous university employees should have worked in practice for the individual publisher.[55] Finally, universities retain the exploitation rights in multiple-choice exams drafted by research assistants who are under their direction.[56] Regarding traditional articles or monographs produced in individual or joint authorship, it remains the case that individual scholars alone may dispose of and freely decide to whom exploitation rights are granted.

2.2 Copyright contract law and scientific publishers

In German copyright contract law, this power of disposition is secured in numerous ways. The regulations are based on the idea that individual authors are in a weaker position structurally as opposed to commercial middlemen, such as publishers, and therefore require legal protection.[57]

Copyright is not transferable among those still living (Article 29, Copyright Act). And where in doubt, the author also grants exploitation rights according to the so-called 'transfer purpose principle' only insofar as the purpose envisaged by both parties to the contract makes this necessary.[58] Where the holder of an exclusive exploitation right does not exercise the right or does so insufficiently or where the author no longer stands behind the work, he or she may revoke the exploitation right.[59] Payment of equitable remuneration is compulsory for the granting of exploitation rights.[60] However, exceptions are recognised specifically with respect to works for academic qualification

53 Dreier, in: Dreier & Schulze (eds), (supra note 36), Article 43, Copyright Act, marginal note 12 with further references.

54 Federal Supreme Court, case no. I ZR 244/88, 27.09.1990, NJW 1991, pp. 1480, 1483 – *Grabungsmaterialien*.

55 Berlin Superior Court, case no. 5 U 2189/93, 06.09.1994, NJW-RR 1996, p. 1066 – *Poldok*.

56 Cologne District Court, case o. 28 O 161/99, 01.09.1999, NJW-RR 2000, pp. 1294, 1295.

57 Rehbinder & Peukert (supra note 3), marginal note 932 ff.

58 See Article 31(5), Copyright Act and Rehbinder & Peukert (supra note 3), marginal note 980 ff.

59 See Articles 41, 42, Copyright Act. See further the provisions of the Publishers' Act (*Verlagsgesetz*) which, however, only affect traditional print publishing and not online rights.

60 Articles 32, 32a, 32b, 36 and 36a, Copyright Act.

and other scientific contributions because the respective works can only be published economically when the publisher is not liable for remuneration (rather, only receives a subsidy for printing costs).[61]

Of further interest to scientific journals and collections is the regulation whereby the publisher or editor may, in cases of doubt, acquire an exclusive right of reproduction, distribution and making available to the public. The author may however otherwise reproduce, distribute and make available to the public the work upon expiry of one year, unless otherwise agreed.[62] This provision serves the purpose of making a second publication possible. Admittedly, this non-mandatory rule of doubt only takes effect once the publisher has explicitly ensured a grant of comprehensive, exclusive exploitation rights. This shortcoming should be avoidable through the compulsory second publication right for scientific authors according to Article 38 IV, Copyright Act, valid since 2014, which is dealt with in detail in the context of the relationship between copyright and open access.[63]

Between 1966 and 2008 it was still the case that exploitation rights could not be granted effectively for yet unknown types of exploitation. The purpose of this provision was to ensure that the publisher, upon development of a new technology, would subsequently be forced to acquire authorisation from the author at a separate price. Accordingly, up until the early 1990s, scientific publishers were unable to obtain the rights for the online exploitation of scientific works.[64] As the intended subsequent acquisition of rights proved unfeasible in practice (cf. orphan works), in 2008, the prohibition against granting exploitation rights concerning unknown types of exploitation was lifted and replaced by an agreement-in-writing requirement, a right of refusal and a special right to remuneration.[65] For publishing contracts concluded between 1966 and the beginning of the 1990s, it would have remained the case that publishers were not authorised for exploitation on the Internet. In order to place them in the position of being able to import their archives into online databases, a legal fiction was codified whereby the online rights were deemed as granted to the publisher when the author exclusively granted all other exploitation rights, unlimited by location and in perpetuity.[66] Whether this provision actually results in scientific publishers being authorised to include an entire publishing portfolio in their online databases depends on the content of

61 Schulze, in: Dreier & Schulze (eds), (supra note 36), Article 32, Copyright Act, marginal note 61.

62 Article 38(1) and (2), Copyright Act.

63 See section 3.2.2 below.

64 Ehmann & Fischer, Zweitverwertung rechtswissenschaftlicher Texte im Internet, GRUR Int. 2008, pp. 284, 286.

65 Articles 31a and 32c, Copyright Act.

66 Article 137l, Copyright Act.

the legacy contracts on a case-by-case basis. The subsequent, fictive acquisition of rights is generally denied to newspaper publishers, in particular.[67] However, this segment is heavily impacted by the notion: 'where there is no accuser, there is no judge'.

One can conclude from the provisions sketched above that applicable copyright contract law is completely tailored according to the traditional marketing model of (print) publishers. As opposed to many other copyright regimes, namely that of the Anglo-American copyright system, the provisions prevent an author's complete loss of rights. At the same time, however, as a practical result, a similar acquisition of exclusive exploitation rights by publishers is possible and even fabricated with respect to online rights in the interest of the digital database business model.

2.3 Open content model

Alternatively, exploitation forms based on openness and access such as free/open source software and Creative Commons have, on the other hand, only had an impact on current copyright contract law in so-called 'Linux clauses'. Accordingly, an author may grant a basic exploitation right to everyone, free of charge and without regard for a written agreement for unknown types of use.[68] With these provision, the legislator recognises that open content models 'represent effective communication and cooperation structures', which create a new interest and protection arrangement between authors, exploiters and end users, to which the statutory compensation and written agreement requirements do not fit.[69]

Open content contracts are indeed based on the copyright of the author/licensor, who offers utilisation of a work to all interested users in either a comprehensive or specific respect. As opposed to other traditional publishing agreements, the granting of exploitation rights/licensing contracts does not serve the purpose of procuring an exclusive legal position for an individual acquirer. Rather, the fundamental idea goes in another direction where everyone may use the work free of charge – or where required, under certain conditions, such as a prohibition against commercial exploitation and identification of the

67 The argument for this is based on Article 38(1) and (2), Copyright Act, whereby the author may otherwise reproduce and distribute his journal or collection contributions one year after publication, so that the publisher was never able to acquire 'all essential' exploitation rights; see Sprang & Ackermann, Der 'Zweite Korb' aus Sicht der (Wissenschafts-)Verlage, K&R 2008, pp. 7, 10; Ehmann & Fischer (supra note 64), p. 289.

68 Articles 31a(1), second sentence, 32(3), third sentence, 32a(3), third sentence, 32c(3), second sentence, Copyright Act.

69 See BT-Drucks. 14/6433, 15; BT-Drucks. 14/8058, 19; BT-Drucks. 16/1828, 37; BT-Drucks. 16/5939, 44.

name of the author.[70] Copyright is thus transformed, through the power of private and autonomous decision, from being an instrument for the limitation of access into being an instrument enabling, and in the case of open source software, even forcing openness.[71] In systems of scientific communication, these contract models have attained increasing significance in the establishment of open access.[72]

Yet, nowhere near all scientific works are furnished with a specific open content licence. Scholars often simply make their works available online without further explanation. Such action has been qualified by the Federal Supreme Court as simple consent excluding specific illegal uses. An authorised party, or another with his or her agreement,[73] who makes texts or images freely available on the Internet without restriction, declares him- or herself as being in implied agreement with the 'general acts of exploitation according to the circumstances'. The interpretation of implied consent must be oriented on objective content from the perspective of the recipient of consent. As the consent to general online exploitation is targeted at the general public, it can only be retracted through generally recognisable circumstances, such as the removal of material from one's own home page or the activation of technical protection measures. A retraction with respect to an individual user with continued availability of the content is *protestatio facto contraria* irrelevant. Included in (legally permissible) general online exploitation is non-commercial reproduction by a private Internet user (downloading, printing)[74] and image searches of so-called 'thumbnails'.[75] The legal status of simple consent has the potential to bring social (including scientific) and copyright norms closer without complicated licensing constructs.[76]

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70 See Rehbinder & Peukert (supra note 3), marginal notes 855–857.

71 On open source licences, see Jäger & Metzger, *Open source software*, 3rd edn, 2011; on Creative Commons licences, see Berlin District Court 16 O 458/10, 08.10.2010, MMR 2011, pp. 763, 763 ff.; further Krujatz, *Open Access*, 2012, p. 110 ff.

72 See subsection 3.2.2 below; and Jaeger & Metzger, *Open Content-Lizenzen nach deutschem Recht*, MMR 2003, p. 431 ff.; Mantz, Open Access-Lizenzen und Rechtsübertragung bei Open Access-Werken, in: Spindler (ed.), *Rechtliche Rahmenbedingungen von Open Access-Publikationen*, 2006, pp. 55 ff.

73 See, for example, Federal Supreme Court, case no. I ZR 140/10, 19.10.2011, NJW 2012, p. 1886, marginal note 16 ff. – *Vorschaubilder II*.

74 Federal Supreme Court, case no. I ZR 94/05, 6.12.2007, NJW 2008, 751, marginal note 27 – *Drucker und Plotter I*.

75 Federal Supreme Court, case no. I ZR 69/08, 29.4.2010, NJW 2010, 2731, marginal note 28 ff., 33 ff. – *Vorschaubilder I*.

76 See Peukert, Der digitale Urheber, in: Bullinger et al. (eds), *Festschrift für Artur-Axel Wandtke zum 70. Geburtstag*, 2013, pp. 455 ff.

2.4 Contract law and computer programs

The principles of copyright contract law mentioned above essentially also apply to computer programs. Here too, the programmer, as an author, is the original rightholder. Whether or not the programmer exercises his or her rights in the realisation of an exclusive exploitation or in any open source model rests with his or her private autonomous decision.

A special rule applies in the case of programmers in an employment relationship. Where a computer program is created by an employee during the execution of his or her duties or following the instructions of his or her employer, the employer is exclusively entitled to exercise all economic rights in the computer program, unless otherwise agreed.[77] Out of consideration for academic freedom, this should not, however, apply to software programmed during free and individually guided research insofar as the rights remain exclusively with the employed/tenured scientist, while the universities, etc. are dependent on an explicit granting of exploitation rights.[78]

2.5 Contract law and databases

As mentioned, a distinction must be made with respect to scientific databases. The original rightsholder in a collection or database work is the one who undertakes the selection or arrangement of the elements as a personal intellectual creation – as a rule, the editor.[79] His or her contractual legal relationship to the publisher follows the same principle valid for works of scientific literature and representations. Thus, the editor has the power with respect to his or her intellectual creation of whether to grant an exclusive right or to select an open access model.

The *sui generis* right of database makers, however, originates in the hand of the investor, for example, a scientific publisher. Consequently, no contractual protection provisions exist to the benefit of the weaker author. Rather, the database maker acquires exploitation rights from the scientific author in the individual works contained in the database. The database maker then licenses all derived exploitation rights and original rights in the database to an institutional (for example, a university) or individual licensee. As a rule, the contract only permits the reproduction (downloading and printing) of database contents for personal scientific purposes. A more extensive exploitation, in particular in the form of further making available to the public or editing of

77 Article 69b, Copyright Act.

78 Dreier, in: Dreier & Schulze (supra note 36), Article 69b, Copyright Act, marginal note 7.

79 Rehbinder & Peukert (supra note 3), marginal note 340. On the acquisition of exploitation rights in scientific collections through university employers, see subsection 2.1 above.

database contents is, as a rule, not included in the licence and thus constitutes an infringement. The boundaries of permitted exploitation limitations in database licence contracts result primarily from consumer protection law and more precisely the General Terms and Conditions Act. Accordingly, the standard contract terms of scientific publishers may not be unusual and may not place the licensee unduly at a disadvantage contrary to the dictates of good faith.[80] However, as copyright legalises and promotes the maximum control over database content up to and including a pay-per-click model, such restrictive contract terms are in principle valid.[81]

3 Criticism of current copyright in scientific works

3.1 The digital dilemma in the sciences

'Copyright increasingly falls short in its function with respect to the production of scientific works.'[82] This statement serves as an example of the widespread criticism of current copyright in scientific works.

This criticism begins with the argument that the logic of copyright deviates fundamentally from the communication conditions and norms within the scientific community.[83] Generally, scholars do not publish because of the prospect of earning royalties; rather, they publish because of intrinsic motives and the acquisition of reputation, which is monetised indirectly. Copyright turns scientific communication to a large extent into an exclusive, marketable commodity, which as a single, isolated element ('work') is individually assigned to one specific person ('author') and is only available according to the stipulation of the potential buyer's ability to pay. Scientific communication, on the other hand, in principle proceeds in a non-enclosed communication context, characterised by preferably complete references to the state of research (quotation), openness, universality, comprehensiveness and collaboration. The individual results, at least in the form of raw data, findings and theories, are viewed by the scientific community as being a public good, belonging to everyone and no one.

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80 Sections 305, 307, German Civil Code; and Rehbinder & Peukert (supra note 3), marginal note 1157 ff.

81 Rehbinder & Peukert (supra note 3), marginal note 1171. However, by virtue of a special provision, contractual agreements with which, among other things, the usage of non-essential portions of a database are prohibited (Article 87e, Copyright Act) as well as the contractual exclusion of legally permissible uses of protected computer programs for the purpose of making backup copies, for test purposes and decompilation are null and void (Article 69g(2), Copyright Act).

82 Hilty (supra note 49), p. 179.

83 In detail Peukert, Das Verhältnis zwischen Urheberrecht und Wissenschaft: Auf die Perspektive kommt es an!, 4 JIPITEC p. 142 ff. (2012), with further references.

These differences have always existed. But in the age of book printing, it was necessary to accept them if the transfer of knowledge was to be organised as a decentralised market. Publishers assumed the technologically and organisationally formidable task of spreading scientific findings. Since the first Copyright Act of 1710, the publishers' business model has been based on the exclusive rights that were transferred or granted to them by scholars. This legal exclusivity promised profits and created an incentive to enter the scientific publishing market, which was in turn conducive to the degree of distribution of science and its communication conditions within the bounds of technical possibility. The 'content' of scientific work thereby remained copyright-free.

Digitalisation and the Internet have fundamentally changed the original conditions of traditional scientific publishing systems. Henceforth, scientists are able to undertake the representation and global distribution of their findings themselves; a traditional knowledge broker is, in principle, no longer necessary. Nevertheless, in the 1990s, copyright and with it the exclusive marketing model, were extended to digital networks. The business model of access-controlled databases made possible by copyright, which as mentioned conveys total control over scientific information, persists here. This creates the digital dilemma in copyright of scientific works: digitalisation allows maximum access and at the same time maximum control.[84]

This general conflict manifested itself around the turn of the century in the so-called 'journal (price) crisis'.[85] An ever-decreasing number of publishers active specifically in the science, technology and medicine (STM) segment demanded ever-expanding database packages, consistently with ever-higher prices, which forced libraries to cancel subscriptions to other journals and monographs. The Internet's promise of guaranteeing comprehensive, global access, turned virtually into the opposite. A growing digital gap emerged between those who were able to benefit from a campus or national licence and those situated outside of academic organisations and located generally in the southern hemisphere who had to do without access.

The behaviour on the part of publishers in this respect, however, unequivocally pursued the logic of the database model made possible by copyright: the more content that is made available, the more dependent researchers are on access, and the higher the prices become to offer still more content, and so forth. The more this price screw was turned, the clearer an atypical value chain became from a copyright perspective: the public sector finances the production and for the most part, the representation and quality

84 See in general Peukert, Das Urheberrecht und die zwei Kulturen der Online-Kommunikation, GRUR-Beil. 2014, pp. 77–93.

85 See with further references, for example, Hilty (supra note 49), p. 183 ff.; Brintzinger, Piraterie oder Allmende der Wissenschaften?, 38 *Leviathan* pp. 331, 332 ff. (2010).

control (peer reviewing) of scientific findings, which are subsequently assigned from scientists to publishers, who then license back the content to publicly financed libraries.

3.2 Suggested solutions

As a reaction to this situation, which is increasingly seen as untenable even among academics, essentially two approaches are under consideration. These envision either changing scientific substantive law or they advocate in different forms that publicly financed research findings be made available to the public through the principles of open access.

3.2.1 Changing substantive copyright law

The most radical copyright-related approach is found in US draft legislation from 2003 in which the US Copyright Act would have been changed to the extent that 'copyright protection […] is not available for any work produced pursuant to scientific research substantially funded by the Federal Government'.[86] Meanwhile, this 'Public Access to Science Act' failed to pass the initial hurdles of the US legislative process and has not been taken up again since. One likely reason is that abolition of copyright in scientific works is incompatible with international law conventions on copyright.[87]

A discussion of copyright in scientific works is therefore concentrated on an expansion of scientifically related limitations to copyright – in other words, on additional legal usage permissions. Discussions along these lines are taking place at the World Intellectual Property Organisation (WIPO) on an international law agreement in the interest of education and the sciences, so far without even coming close to an international consensus.[88] At national level in Germany, committees of the Federal Parliament and Federal Assembly have called for the introduction of a 'broader and more general education and science limitation'.[89] In the literature it has been suggested that written works

> produced within the framework of teaching and research activities financed primarily by public funds and published in periodicals should be available

86 H.R.2613 Public Access to Science Act, 108th Congress (2003–2004), http://thomas.loc.gov/cgi-bin/query/z?c108:H.R.2613.

87 See supra note 1.

88 See http://www.wipo.int/copyright/en/limitations/index.html.

89 See BR-Drucks. 737/1/12 from 5.12.2012, p. 2; further the recommended decision and report of the Judiciary Committee of the German Lower House from 4.7.2007, BT-Drucks. 16/5939, p. 26 ff.; the Third Preliminary Report of the Investigative Commission, *Internet und digitale Gesellschaft* [Internet and the Digital Society] – Copyright, 23.11.2011, BT-Drucks. 17/7899, 21; De la Durantaye (supra note 21), p. 191 ff.

> to the public for purposes of access to information for the first six months following their initial publication, […] to the extent that this is necessary for the pursuit of non-commercial purposes.[90]

According to another draft,

> the use of a published work through public intuitions, who have been assigned tasks in the areas of education, sciences and culture […] is permissible insofar as this is justifiable within the scope of their duties and in the pursuit of non-commercial aims […] within the framework of 1. teaching and research, 2. advanced training and further education, and 3. documentation, conservation and preservation.[91]

Proposals for a general education and scientific limitation follow a similar direction, permitting, among others, uses 'for purposes of scientific research' being specified through legal examples.[92] The permitted use should, in each case, trigger a right for remuneration, which is to be asserted by a collecting society.

The reservation in favour of non-commercial scientific use in all of these proposals takes the requirements of the EU InfoSoc Directive into consideration.[93] This restriction is considered problematic to a certain extent because commercial research in businesses is also dependent on comprehensive access. A corresponding change to European copyright is therefore also necessary with respect to a reorganisation of legal protection for technical protection measures, which should no longer enjoy a preference over limitations to copyright.[94] The European Commission would also like to improve the copyright-related conditions for commercial and non-commercial research, in particular concerning text and data mining.[95]

The proposals on the expansion of copyright-related limitations have in common that the exclusive right in scientific works with respect to certain uses is reduced to the author's remuneration right. Public research that is not commercially oriented and educational institutions would be authorised, and

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90 Hansen, Zugang zu wissenschaftlicher Information – alternative urheberrechtliche Ansätze, GRUR Int. 2005, pp. 378, 383 ff.

91 Pflüger, Positionen der Kultusministerkonferenz zum Dritten Gesetz zur Regelung des Urheberrechts in der Informationsgesellschaft – 'Dritter Korb', ZUM 2010, pp. 938, 944.

92 De la Durantaye (supra note 21), p. 213 ff.

93 See Article 5(3) lit. a InfoSoc Directive 2001/29/EC (supra note 44).

94 Reichman & Okediji (supra note 43), pp. 1432 ff. and 1440 ff. (also for scientific exploitation for subsequent commercial use).

95 European Commission, *Strategy for a Digital Single Market for Europe*, COM (2015) 192 final, 6.5.2015, p. 8.

at the same time liable, to pay. Their offerings would nevertheless compete with publishers' access-controlled databases.

Another approach pursues models of compulsory licences[96] or an obligation to contract.[97] Through these instruments, publishers would be compelled to open up their databases to competitors, who may then offer this scientific information in a differently edited form, so that a price competition between numerous commercial database providers, who essentially offer substitutable products, would arise. The desired effect would be, on the one hand, lowering of prices for scientific databases, and on the other, an increased incentive for publishers to edit and network scientific content optimally.

Both the proposals favouring broad scientific limitations and the approaches just discussed ultimately result in a situation where scientific works would no longer exist exclusively in access-restricted publishers' databases. Instead, an additional source of information would be available. Both conceptions, however, differ with respect to the question of whether this additional source is a freely available server of public education and research institutions (a limitations solution) or a DRM-protected database of one or more commercial 'information brokers' (a compulsory licence model). While the advocates of a broad scientific limitation above all seek to guarantee unhindered access to scientific information, the advocates of a compulsory licence or an obligation to contract worry no less about the structuring and processing of an otherwise overwhelming flood of data.

All of the abovementioned proposals, however, encounter very considerable political, in addition to legal reservations. Publishers in particular argue that the instruments of the critics impair the 'normal exploitation' of protected scientific subject matter in the form of an exclusive database model. Such a legislative intrusion into the (derived) copyright-related exclusivity in the digital environment is incompatible with relevant international and European guidelines.[98] These objections are, at any rate, justified insofar as digital copyright serves precisely the purpose of providing authors and their publishing partners with full exclusivity, up to and including a pay-per-click

96 Hilty, Renaissance der Zwangslizenzen im Urheberrecht? – Gedanken zu Ungereimtheiten auf der urheberrechtlichen Wertschöpfungskette, GRUR 2009, pp. 633, 641 ff. With reference to access rights according to media law, see also Peifer, Wissenschaftsmarkt und Urheberrecht: Schranken, Vertragsrecht, Wettbewerbsrecht, GRUR 2009, pp. 22, 28.

97 Krujatz (supra note 71), pp. 279 ff. and 280 (authors and publishers as the owners of an exclusive exploitation right in a scientific literary work are obligated 'to grant a right of reproduction, making available to the public and distribution for the purpose of further publication in another manner than the first publication to every other intermediary on equitable conditions,' as long as the source of the first publication is given).

98 See Articles 9(2), Bern Convention, 13 TRIPS, 10 WCT, 16(2) WPPT, 5(5) InfoSoc Directive 2001/29; and for interpretation, see Senftleben, Copyright, limitations and the three-step test, 2004. To the contrary, however, see Hansen (supra note 90), p. 384 ff.; De la Durantaye (supra note 21), p. 204 ff.

structure. Proposals which hollow out the centre of this business model are indeed therefore incompatible with prevailing international and European copyright law.[99]

Ultimately, the structural weakness of all the proposals addressing copyright needs to be pointed out. As with copyright itself, the limitations, compulsory licences and obligations to contract only apply in the territory of those legislatures that have enacted these regulations.[100] A regulation in the interest of digital science limited to and therefore only implemented within the territory of Germany or the EU would miss the inherent global character of scientific communication from the outset. Specifically, the gap between north and south would remain.[101]

3.2.2 Open access

The open access (OA) movement seeks to avoid precisely these deficits in a genuine copyright-related solution. It pursues worldwide technically and legally unrestricted access to scientific information, without the necessity of modifying substantive copyright law.[102]

Relationship to copyright. The copyright-related starting point of the OA movement is the recognition that it is left to the individual rightsholder whether and how his or her right is exercised. Copyright in no way forces scholars, as the original rightsholders, into an exclusive form of exploitation.

Rather, scholars may decide to release their work either completely or with certain caveats. The vast majority of copyright laws in the world permit a complete waiver of rights so that the work enters the public domain. In this respect, even the restrictive German copyright law explicitly stipulates that an author may grant an unremunerated, non-exclusive exploitation right for every person. In addition, there is the option to agree to the act of exploitation in an informal and implied manner. The author may reserve certain rights, in particular with respect to direct commercial exploitation and the author's moral rights.[103] Consequently, copyright does not stand in the way of an immediate, complete and worldwide shift in scientific communication to an OA first publication – if the authors concerned so desire.

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99 Correct in this respect, Peifer (supra note 96), p. 25; in detail on international law, Peukert, A bipolar copyright system for the digital network environment, 28 *Hastings Communications & Entertainment Law Journal* (Comm/Ent), pp. 1–80 (2005).

100 In detail, Peukert, Territoriality and extraterritoriality in intellectual property law, in: Handl, Zekoll & Zumbansen (eds), *Beyond Territoriality: Transnational legal authority in an age of globalization*, 2012, pp. 189–228.

101 To the contrary, Hilty (supra note 96), p. 638 (open access is only a territorial solution).

102 See in addition the contributions by Herb and by Ball in this volume. Further, German UNESCO Commission, *Open Access – Chancen und Herausforderungen*, 2007.

103 See section 2.2 above.

And not least, copyright may be exercised in such a flexible way that a publisher may, if necessary, be granted an exclusive exploitation right for a specific period of time, but the author reserves the right to make the work available to the public for non-commercial purposes, either himself or herself or through others at the same time, time-delayed, and in the same or a differing format.[104] In other words, copyright also permits a co-existence of the publisher and OA models. From this perspective, copyright guarantees above all decision-making power on the part of the scientist/author for one or the other form of scientific publication.

However, should there be an unlimited granting of exclusive online and reproduction rights in favour of a publisher, the author, in the exercise of his or her personal autonomy, has waived the right to opt for open access. Should the work then nevertheless and without the publisher's authorisation be made available on the Internet, the author would violate both the publishing contract and the publisher's exclusive exploitation right.[105] In this case, the author personally commits an act of copyright infringement. This scenario is considered a relevant obstacle to the broader expansion of so-called 'green OA', as by no means do all publishing contracts permit a parallel OA publication of the manuscript from the outset. Many scholars lose out on this option in that they sign publishing contracts unmindfully or, if need be, perceive the negotiation of an exception in favour of a delayed open access as pointless or shy away from the effort altogether.

This lock-in effect should be breached through the mandatory secondary publication right according to Article 38(4) Copyright Act. According to this, the author of a scientific contribution – which is the result of a research project publicly funded by at least 50% and which has appeared in a collection which is published periodically at least twice per year – has the right, even if he or she has granted the publisher or editor an exclusive right of use, to make the contribution available to the public in the accepted manuscript version upon expiry of 12 months after first publication, unless this serves a commercial purpose, and where the source of the first publication is indicated. The purpose of this regulation is to place scholars who received public financing in the position to make their contributions available to the public without remuneration in the manner of downstream green open access. Falling within the ambit of the provision are not only contributions produced in publicly sponsored, third-

104 Article 32(3), sentence 2, Copyright Act. Ultimately, the author retains a non-exclusive exploitation right in the work. So that the reservation becomes contractual subject matter, the author must declare the reservation upon submission of the manuscript or change a differently worded publishing contract either through deletion or amendment. Agreement on the part of the publisher to the changed terms may also be implied should the publisher publish the work as agreed without addressing the reservation again (see section 151, first sentence, no. 2., Alt. German Civil Code).

105 See Schulze, in: Dreier & Schulze (eds) (supra note 36), section 31, Copyright Act, marginal note 56.

party-funded projects or at extra-university research institutions, but the entire research output of state universities.[106] The regulation has mandatory character insofar as the right of secondary publication, as far as the publisher is concerned, may not be waived. And still it remains a personal autonomous exercisable right of the publicly financed scientific author, who is not obligated to undertake a downstream OA publication. The voluntary principle of open access is not contested by the mandatory right of secondary publication; rather, it is safeguarded with respect to stronger negotiating partners, such as publishers.[107] The author's disposition authority is restricted; however, not the scope of protection of copyright. The proposal is therefore correctly seen as unproblematic in terms of international, union and constitutional law.[108]

The obligation for open access for publicly financed research findings. The mandatory right of secondary publication has the effect that exclusive publishing rights, as an obstacle for green OA, expire after certain embargo periods. Especially in the humanities, significant reservations exist with respect to OA, which, according to the comments so far, have their roots in scientific systems themselves rather than in copyright.[109] Even if all publicly financed scholars were to make their contributions available in downstream green OA, this would lead to a co-existence of OA and publishing systems. As this condition is viewed as unsatisfactory, there are increasing calls for the establishment of mandatory OA requirements across the board as the primary form of publication. Its implementation would result in a situation where in addition to the production and representation, the propagation of scientific findings would be transferred into the publicly financed academic system, while publishers would withdraw from the value chain for scientific publications.[110]

At the height of the journal price crisis more than 10 years ago, a proposal was put forward to change Article 43, Copyright Act to the effect that authors employed by a university would be obligated to offer their work, produced within the framework of their teaching and research activities, for publication to the university – where necessary non-exclusively. Only when a work was not claimed by the institution within a period of two months would the scholar be entitled without restriction to the exploitation right according to copyright.[111]

106 In detail, Peukert, in: Schricker & Loewenheim, 5th edn, 2016, section 38, marginal note 45 ff. with further references.

107 Hansen (supra note 90), p. 382.

108 Hansen (supra note 90), p. 382.

109 See Taubert & Weingart, 'Open Access' – Wandel des wissenschaftlichen Publikationssystems, in: Sutter & Mehler (eds), *Medienwandel als Wandel von Interaktionsformen*, 2010, pp. 159, 170 ff.

110 On this ultimately decisive question, Brintzinger (supra note 85), p. 344; Finch Group Report, *Accessibility, Sustainability, Excellence: How to expand access to research publications*, 2012, http://apo.org.au/sites/default/files/Finch-Group-report-FINAL-VERSION.pdf, p. 11.

111 Pflüger & Ertmann, E-Publishing und Open Access – Konsequenzen für das Urheberrecht im Hochschulbereich, ZUM 2004, pp. 436, 441 ff.

This solution, based on the German Act on Employees' Inventions,[112] would have the effect that the decision regarding OA publication would no longer lie with the scholar but rather with the public employer. Current reservations with respect to OA would be overturned by shifting the authority of consent to the academic organisation. Even if a university were to claim only a non-exclusive exploitation right in the relevant work, it would be entitled to the decision of whether and how this right is exercised. The scientific author would have to push for an adequate exercise of the exploitation right by appealing to the fiduciary duty from the employment contract. This proposal was met with unanimous rejection on the part of OA proponents.[113] The two-month reservation period with regard to the assertion of exploitation rights by itself would present an unconstitutional intrusion in the heart of personal academic freedom in the form of a free decision on first publication.[114]

An alternative model does not begin with the individual scholar and his or her copyright, but rather with the general institutional and academic law conditions of the publication industry.[115] The starting point would be a regulation in university law in which articles and monographs produced in the context of teaching and research activity funded by at least 50% public financing would be published first according to OA principles.[116] This legal framework would have to be rendered more precisely in the internal statutes and charters of universities extending into work and project-financing contracts in terms of an obligation in principle for an OA first publication.[117] These obligations would be sanctioned in the qualification, appointment and evaluation statutes, which from a certain cut-off date would only recognise contributions first published

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112 See Article 42, Act on Employees' Inventions.

113 Hansen (supra note 90), p. 379 ff.; Steinhauer, *Das Recht auf Sichtbarkeit*, 2010, p. 31, but then considering id., 72.

114 See Constitutional Court, case no. 1 BvR 174, 178, 191/71 among others, 1.3.1978, BVerfGE 47, 327, 381 ff.; Schmidt-Assmann, Wissenschaft – Öffentlichkeit – Recht, in: Dreier (ed.), *Rechts und staatstheoretische Schlüsselbegriffe: Legitimität – Repräsentation – Freiheit*, 2005, pp. 67, 77.

115 See in detail, Peukert, Ein wissenschaftliches Kommunikationssystem ohne Verlage – zur rechtlichen Implementierung von Open Access als Goldstandard wissenschaftlichen Publizierens, in: Grünberger & Leible (eds), *Die Kollision von Urheberrecht und Nutzerverhalten im Informationszeitalter*, 2014, pp. 145 ff.

116 On the whole, this corresponds with the so-called golden road to OA, which favours the first publication of a scientific contribution in an OA journal, and likewise the first publication of other scientific writings such as monographs, collections, etc. in an OA form.

117 Tendencies in this direction are found in particular in the UK in reaction to the Finch Group Report (supra note 109). However, the intended obligatory OA principles are conceived to enable a coexistence between OA and publishers, where either a first publication is reserved for hybrid OA journals financed by publishers or secondary publication after observation of an embargo period; see Higher Education Funding Council for England, HEFCE statement on implementing open access, http://www.hefce.ac.uk/news/newsarchive/2012/statementonimplementingopenaccess/; RCUK announces new Open Access policy, http://www.rcuk.ac.uk/media/news/2012news/Pages/120716.aspx. Similar requirements also apply to research support by federal agencies in the United States; see Executive Office of the President, Office of Science and Technology Policy, Expanding Public Access to the Results of Federally Funded Research, http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf.

in open access as capable of consideration. Exceptions would be granted only in consideration of special academic interests – such as participation in an international collection released by a publisher or for international students.

From an infrastructural and institutional perspective, such a realignment of systems of scientific communication would be very long on requirements.[118] Moreover, the question concerning constitutionality presents itself again. Scientific publishers would be massively affected, because they would be practically taken out of action as the primary intermediaries of publicly financed science. However, a fundamental right to the preservation of a customer base and business model does not exist;[119] occupational freedom may be restricted in the interest of an overriding public interest – in this case, the access to publicly financed research findings.[120]

The decisive issue, on the other hand, would be the question of whether a fundamental and far-reaching sanctioning of an OA obligation is compatible with scientific freedom. To some extent, such an obligation has been categorised as an unconstitutional intrusion into the heart of scientific freedom, which protects not only the *if* and *when*, but also the *how* and *where* of a publication.[121] According to another view, Article 5(3) of the German Constitution does not present an obstacle for a realignment of the basic conditions of scientific communication to open access, should this be desired by the legislator and academic institutions.[122]

Regarding the latter view, it should be mentioned that the individual decision of when and in what media a contribution is published, remains unchanged exclusively with the scholar. The restriction of personal choice to OA media could be justified by the goal of the preservation and support of the functional capacity of universities and the protection of other subjects of fundamental rights, in particular students[123] – for their part protected by

118 Worthy of particular note are the requirements to replace the journal impact factor with author- or article-based evaluation criteria; to adapt the citation rules in OA publications; to establish additional OA journals and subject-specific repositories, such as for German-language jurisprudence; to ensure sufficient peer reviewing in an OA system; to change the academic conventions to the effect that making available to the public a contribution in a repository is equivalent to the final 'printing proof'; and certainly not least to bid farewell to the notion that academic articles must be published in a 'journal' – and not for example in an institutional series of a faculty. See in more detail, Peukert (supra note 115), p. 163 ff.

119 Constitutional Court, case no. 2 BvO 1/65, 18.3.1970, BVerfGE 28, 119, 142; Constitutional Court, case no. 1 BvR 35/82, 31.10.1984, BVerfGE 68, 193, 222 ff.; BGH MMR 2007, pp. 704, 705 (a competitor has no right to the preservation of his customer base).

120 See for example, Constitutional Court, case no. 1 BvR 459 u. 477/72, 2.10.1972, BVerfGE 36, 47, 59.

121 Rieble, Autorenfreiheit und Publikationszwang, in: Reuß & Rieble (eds), *Autorschaft als Werkherrschaft in digitaler Zeit*, 2009, pp. 29 ff.

122 Bäuerle, Open Access zu hochschulischen Forschungsergebnissen? Wissenschaftsfreiheit in der Informationsgesellschaft, in: Britz (ed.), *Forschung in Freiheit und Risiko*, 2012, pp. 1, 11 ff., 14.

123 See Constitutional Court, case no. 1 BvR 1289/78, 7.10.1980, BVerfGE 55, 37, 68 ff.; Constitutional Court, case no. 1 BvR 1864/94, 26.2.1997, BVerfGE 95, 193, 212; Constitutional Court, case no. 1 BvR

Article 5(3), first sentence of German Constitution. For this, free scientific activity must continue to be possible and safely practised under the application of the new framework for the publishing industry;[124] an obligation under academic law for open access would, however, be unconstitutional if this would structurally endanger free academic activity and accomplishment.[125] In this respect, the Constitutional Court grants the legislator the competence to assess and freedom to predict.[126] But before these indicated and far-reaching changes to the internal norms of scientific communication come into effect, in particular concerning the selection of texts and the distribution of reputation in an OA system, an obligation to first publish in open access with the exclusion of publishers must be seen as being scientifically inadequate and for this reason unconstitutional.[127] Finally therefore, this model only confirms that a fundamental change in systems of scientific communication can only be carried out step-by-step[128] within the sciences themselves rather than being imposed from the outside through the law.

911/00 among others, 26.10.2004, BVerfGE 111, 333, 353 ff.; Constitutional Court, case no. 1 BvR 462/06, 28.10.2008, BVerfGE 122, 89, 114.

124 Constitutional Court, case no. 1 BvR 424/71, 29.5.1973, BVerfGE 35, 79, 116 ff.; Constitutional Court, case no. 1 BvR 748/06, 20.7.2010, BVerfGE 127, 87, 115 ff.; Constitutional Court, case no. 1 BvR 911/00 among others, 26.10.2004, BVerfGE 111, 333, 355; Constitutional Court, case no. 2 BvL 4/10, 14.2.2012, BVerfGE 130, 263 marginal note 159 ff.

125 Constitutional Court, case no. 1 BvR 911/00 among others, 26.10.2004, BVerfGE 111, 333, 355; Constitutional Court, case no. 1 BvR 748/06, 20.7.2010, BVerfGE 127, 87, 116; Constitutional Court, case no. 2 BvL 4/10, 14.2.2012, BVerfGE 130, 263 marginal note 160; Schmidt-Assmann, Die Wissenschaftsfreiheit nach Art. 5(3 GG als Organisationsgrundrecht, FS Thieme 1993, pp. 697, 701.

126 See Constitutional Court, case no. 1 BvR 424/71, 29.05.1973, BVerfGE 35, 79, 117; Constitutional Court, case no. 1 BvR 911/00 among others, 26.10.2004, BVerfGE 111, 333, 356; Constitutional Court, case no. 1 BvR 748/06, 20.7.2010, BVerfGE 127, 87, 116; Constitutional Court, case no. 1 BvR 911/00 u. a., 26.10.2004, BVerfGE 111, 333, 355 ff.; Constitutional Court, case no. 2 BvL 4/10, 14.2.2012, BVerfGE 130, 263 marginal note 160.

127 Peukert (supra note 115), p. 171.

128 Regarding the time frame see Luhmann, *Die Wissenschaft der Gesellschaft*, 1990, p. 600 (it has taken respectively 200 or more years until society became accustomed to the alphabet and printing – an 'incredibly' rapid change).