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# **DIGITAL AGE: REPRODUCTION, COMMUNICATION AND CONTROL UNDER INDIAN AND INTERNATIONAL LAW**

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## **Abstract**

Digital technology has made copying instant, perfect and borderless, and has strained concepts designed for printed books and physical media. This article examines how Indian copyright law, read with the TRIPS Agreement and the WIPO Internet Treaties, treats computer programs, databases and multimedia works; how it handles digital reproduction, communication to the public and online infringement; and how technological measures, rights management information and intermediary safe harbours are used to manage rights online. It argues that the Indian statute has adapted more fully than is often assumed, but that temporary copies, multimedia classification and platform liability remain only partly settled.

**Keywords:** copyright, digital environment, WIPO Internet Treaties, technological protection measures, intermediary liability.

## **I. Introduction**

Intellectual property refers to creations of the mind, such as inventions, literary and artistic works, designs, and symbols, names and images used in commerce.<sup>1</sup> Information technology law governs how digital data is collected, stored, shared and protected, and it gives legal validity to electronic contracts and transactions.<sup>2</sup> The two fields are closely linked because both are shaped by technological change, and copyright sits where they meet.

Digital tools let creators produce music, films and software cheaply and reach a worldwide audience almost instantly. The same tools let anyone copy a work perfectly and circulate it at almost no cost, while copyright law remains territorial and the internet does not. Writing in 2002, the author observed that the basic notions of reproduction and distribution had become inadequate in the digital age, because physical copies had given way to non-material

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<sup>1</sup> World Intellectual Property Organization, "What is Intellectual Property?", available at: <https://www.wipo.int/en/web/about-ip/> (last visited on October 15, 2026).

<sup>2</sup> The Information Technology Act, 2000 (Act 21 of 2000), s. 10A

transmission.<sup>3</sup> This shows how far Indian copyright law, read with the TRIPS Agreement and the WIPO Internet Treaties, has answered that challenge. Part II sets out the digital setting of copyright and Part III the international response. Part IV considers computer programs, databases and multimedia works. Part V examines reproduction, communication to the public and common forms of online infringement. Part VI looks at the management of rights, and Part VII concludes.

## II. Copyright in a Digital Setting

Copyright gives creators control over how their original literary, artistic, musical and cinematographic works are used, copied and shared for a limited period.<sup>4</sup> It protects expression and not ideas.<sup>5</sup> Two conditions are usually stated. The work must be original, which requires a minimum of creativity, and many legal systems also expect it to be fixed in a tangible medium so that it can be perceived, reproduced or communicated; the Berne Convention leaves the fixation requirement to national law.<sup>6</sup> Protection arises automatically, without registration or any other formality.<sup>7</sup>

Digitisation strains each of these ideas. Text, images, sound and video all reduce to binary code, so that formerly distinct forms can be merged, transformed and remixed, and the boundaries of authorship and originality blur.<sup>8</sup> Storing a work electronically is itself a fixation and a reproduction. Copies are instantaneous, perfect and non-physical, and can be distributed worldwide at negligible cost. A common misconception follows, that a work published online is free to use. It is not. Public accessibility gives no licence to copy, modify or distribute, and everyday acts such as downloading, uploading, caching, mirroring and file-sharing may engage the owner's exclusive rights.

## III. The International Response

The Berne Convention (1886) and the Rome Convention (1961) were designed for an analogue world. WIPO began examining their revision in 1989, and in December 1996 a Diplomatic Conference adopted the WIPO Copyright Treaty (WCT) and the WIPO Performances and

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<sup>3</sup> T.C. James, "Indian Copyright Law and Digital Technologies" 7 *Journal of Intellectual Property Rights* 423, 425 (2002).

<sup>4</sup> The Copyright Act, 1957 (Act 14 of 1957), ss. 13, 14

<sup>5</sup> The WIPO Copyright Treaty, 1996, art. 2; The Agreement on Trade-Related Aspects of Intellectual Property Rights, 1994, art. 9(2).

<sup>6</sup> The Berne Convention for the Protection of Literary and Artistic Works, 1886 (Paris Act, 1971), art. 2(2)

<sup>7</sup> *Id.*, art. 5(2).

<sup>8</sup> *Supra* note 3 at 425.

Phonograms Treaty (WPPT), popularly called the Internet Treaties.<sup>9</sup> The TRIPS Agreement (1994), negotiated in parallel, had already brought computer programs and databases into the multilateral trade framework.<sup>10</sup>

The WCT's central provisions are these. Computer programs are protected as literary works (article 4). Compilations of data are protected where the selection or arrangement of their contents is an intellectual creation (article 5). Authors enjoy a right of distribution (article 6) and a broad right of communication to the public that includes making works available on demand (article 8). States must give adequate legal protection against circumvention of effective technological measures (article 11) and against tampering with electronic rights management information (article 12).<sup>11</sup> The Treaty also leaves room for exceptions. Article 10 permits limitations in certain special cases that do not conflict with normal exploitation or unreasonably prejudice the author's legitimate interests, and an agreed statement allows states to extend existing exceptions into the digital environment and to devise new ones.<sup>12</sup>

## IV. New Subject Matter

### A. Computer Programs

Whether software should be protected by patent, copyright or a sui generis regime occupied the international community for years. Article 10(1) of TRIPS settled the question: computer programs, whether in source or object code, are protected as literary works under the Berne Convention, and article 4 of the WCT repeats the rule whatever the mode or form of expression.<sup>13</sup> India had acted earlier. An inclusive definition of "literary work" covering software was inserted in 1984, and the 1994 amendment extended it to "computer programmes, tables and compilations including computer databases". Section 2(ffc) defines a computer programme as a set of instructions, expressed in words, codes, schemes or any other form, capable of causing a computer to perform a particular task or achieve a particular result.<sup>14</sup>

Because software is functional, the Act gives it tailored rights. Section 14(b)(ii) adds sale and commercial rental rights, and a proviso inserted in 1999, in line with article 11 of TRIPS, excludes rental where the program is not the essential object of the rental, as when a car containing embedded software is hired out.<sup>15</sup> In *Tata Consultancy Services v. State of Andhra*

<sup>9</sup> Supra note 3 at 425; The WIPO Performances and Phonograms Treaty, 1996.

<sup>10</sup> Supra note 6, art. 10.

<sup>11</sup> Supra note 5, arts. 4–6, 8, 11, 12.

<sup>12</sup> Supra note 5, art. 10.

<sup>13</sup> Supra note 6, art. 10(1); supra note 5, art. 4.

<sup>14</sup> Supra note 4, ss. 2(o), 2(ffc); supra note 3 at 427.

<sup>15</sup> Supra note 4, s. 14(b)(ii); supra note 6, art. 11.

Pradesh, the Supreme Court held that canned software sold on physical media is "goods" for sales tax purposes, without deciding the position for unbranded or customised software.<sup>16</sup> Protection extends beyond code to the whole package: documentation and specifications, and design elements such as flowcharts and screen layouts where they are original. The English decision in *Ibcos Computers v. Barclays Mercantile Highland Finance*, which is persuasive only in India, held that copyright subsisted in individual programs and in the package as a whole, and that program structure can be protected where skill and judgment were applied.<sup>17</sup> The Act also permits specified acts. Section 52(1)(aa) allows the lawful possessor to make copies or adaptations needed to use the program for its intended purpose, or back-up copies. Clauses (ab) to (ad), added in 1999, permit acts necessary for interoperability with an independently created program, observation and testing of a program's functioning, and non-commercial personal copies.<sup>18</sup> These clauses are the statutory basis for reverse engineering, which is lawful only within them. A developer may study how a program behaves and write independent code, but may not copy the code itself, and section 65A penalises circumvention of an effective technological measure with intent to infringe.<sup>19</sup> The leading foreign authority is *Sega Enterprises v. Accolade*, where the Ninth Circuit held that disassembly of object code can be fair use when it is the only means of access to unprotected functional elements and the purpose is legitimate; Sega's trademark claim failed because its own security system had caused the misleading display.<sup>20</sup> The decision does not bind Indian courts. Finally, section 63B makes the knowing use of an infringing copy of a computer programme an offence, punishable with imprisonment of at least seven days and up to three years and a fine of ₹50,000 to ₹2,00,000, although the court may waive imprisonment where the program was not used for gain.<sup>21</sup>

## B. Databases

A database is a collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means.<sup>22</sup> It has two parts: the program that runs it, which is protected as a computer programme, and the data it holds. For the content, article 10(2) of TRIPS and article 5 of the WCT protect compilations whose

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<sup>16</sup> (2005) 1 SCC 308

<sup>17</sup> [1994] FSR 275 (Ch.)

<sup>18</sup> Supra note 4, s. 52(1)(aa)–(ad); supra note 3 at 427.

<sup>19</sup> Supra note 4, s. 65A

<sup>20</sup> 977 F.2d 1510 (9th Cir. 1992)

<sup>21</sup> Supra note 4, s. 63B.

<sup>22</sup> The Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, art. 1(2); supra note 3 at 427–428

selection or arrangement constitutes an intellectual creation, but not the data itself.<sup>23</sup> Copying the structure, organisation or a substantial part of the arrangement infringes; independently gathering the same facts does not.

The difficulty is the originality threshold. In *Feist Publications v. Rural Telephone Service*, the US Supreme Court rejected the "sweat of the brow" doctrine and required a minimum of creativity in selection or arrangement, so that factual compilations receive only thin protection.<sup>24</sup> Indian courts were once more generous. In *Burlington Home Shopping v. Rajnish Chibber*, the Delhi High Court accepted that labour and skill could support copyright in a compilation, and James, writing in 2002, reported that expenditure of labour and skill was the only test applied.<sup>25</sup> That is no longer the law. In *Eastern Book Company v. D.B. Modak*, the Supreme Court held that skill and labour alone do not suffice and that some creativity is required.<sup>26</sup>

The result is a gap for large, costly databases made of unoriginal facts. The European Union closed it with a *sui generis* right for makers who invest substantially in obtaining, verifying or presenting data. India has no equivalent, and a similar WIPO proposal was deferred in 1996 for want of consensus.<sup>27</sup> Automatically updating databases add a further difficulty, because it becomes hard to say what is protected at any given moment.

### C. Multimedia Works

Multimedia works combine text, images, video and sound in an interactive product such as a video game or an educational application. Copyright protects both the combined work and each component, so that using third-party material needs authorisation, and unlicensed software or uncleared music in a multimedia project is a common source of infringement. The difficulty is classification. The Indian Act sorts works into literary, dramatic, musical, artistic and cinematograph film categories, each with its own rights and its own rule on authorship; a rental right exists in films but not in literary works, for example.<sup>28</sup> Multimedia blends them and fits none comfortably. One suggestion is to treat the whole product as a computer programme, which has its own rules on rights and authorship. That does not remove the problem, because under section 13(4) the copyright in a film or sound recording does not affect the separate

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<sup>23</sup> Supra note 6, art 10(2); Supra note 5, art. 5

<sup>24</sup> 499 U.S. 340 (1991)

<sup>25</sup> 1995 PTC (15) 278

<sup>26</sup> (2008) 1 SCC 1

<sup>27</sup> Supra note 24, art. 7; supra note 3 at 428–429, 434–435.

<sup>28</sup> Supra note 3 at 429; supra note 4, ss. 2(d), 14.

copyright in the works from which it is made, and performers' rights add a further layer.<sup>29</sup> Producers must assemble a chain of permissions, and the classification question has been left to the courts, as it was when James wrote.

## **V. Reproduction, Communication and Online Infringement**

### **A. Reproduction and Temporary Copies**

Reproduction is the most basic copyright. Article 9(1) of the Berne Convention, as revised at Stockholm in 1967, gives authors the exclusive right to authorise reproduction "in any manner or form". An agreed statement to the WCT confirms that this right fully applies in the digital environment and that storage of a protected work in digital form in an electronic medium is a reproduction.<sup>30</sup> In India, the reproduction right in literary, dramatic and musical works expressly includes storing the work in any medium by electronic means.<sup>31</sup>

Temporary copies are harder. Viewing a web page requires the browser to make a short-lived copy in RAM, and the WCT did not settle whether such copies fall within the reproduction right.<sup>32</sup> Indian law deals with them by exception. Section 52(1)(b) excepts transient or incidental storage that is purely part of the technical process of electronic transmission or communication to the public. Section 52(1)(c) covers transient or incidental storage for providing electronic links, access or integration, but a person who receives a written complaint from the owner must refrain from facilitating access for 21 days, or until a court order is received, and may resume access if no order arrives within that period.<sup>33</sup> Caching by browsers and intermediaries falls within these provisions. American courts have reached different results on the underlying question. *MAI Systems v. Peak Computer* held that loading software into RAM makes a copy, whereas *Cartoon Network v. CSC Holdings* held that buffer data kept for 1.2 seconds was not "fixed", because it lasted only a transitory duration.<sup>34</sup>

### **B. Communication to the Public**

Online, distribution and communication merge, because a download or stream hands over no physical object. The WCT answers by giving authors an exclusive right of communication to the public that includes making works available so that members of the public can access them

<sup>29</sup> Supra note 4, ss. 13(4), 38(4); supra note 3 at 429, 435.

<sup>30</sup> Supra note 7, art. 9(1) ; supra note 14, concerning art. 1(4).

<sup>31</sup> Supra note 4, s. 14(a)(i); supra note 3 at 430.

<sup>32</sup> Supra note 3 at 430

<sup>33</sup> Supra note 4, s. 52(1)(b)–(c); The Copyright Rules, 2013, r. 75

<sup>34</sup> 991 F.2d 511 (9th Cir. 1993); 536 F.3d 121 (2d Cir. 2008)

from a place and at a time individually chosen.<sup>35</sup> Section 2(ff) of the Indian Act defines "communication to the public" as making a work available to be seen, heard or otherwise enjoyed by the public other than by issuing copies, regardless of whether any member of the public actually does so. Uploading a protected file to a public server is therefore a communication to the public even if no one opens it. Section 51(a)(ii) also makes it an infringement to permit, for profit, any place to be used for communicating an infringing work, unless the person was unaware and had no reasonable ground for believing it to be an infringement.<sup>36</sup>

### **C. Downloading, Uploading and Derivative Works**

Downloading or uploading a protected file without permission is generally infringing. Private use is, however, accommodated: section 52(1)(a) permits fair dealing with a work for private use, including research, and for computer programmes clause (ad) separately permits non-commercial personal copies.<sup>37</sup> In the United States, *Sony Corp. of America v. Universal City Studios* held that recording broadcasts at home to watch later is fair use, a doctrine without a direct Indian counterpart.<sup>38</sup> Derivative works raise a different issue. Only the author may adapt a work or authorise new versions unless permission is given, as under open-source licences. In *Midway Manufacturing v. Artic International*, the Seventh Circuit held that circuit boards that sped up the arcade game *Galaxian* were unauthorised derivative works, and that boards copying *Pac-Man* infringed.<sup>39</sup>

### **D. Linking and Framing**

Plain hyperlinking, which only directs a user to a public web address, is generally treated as lawful. Framing, which displays another site inside a window on one's own page, and inline linking, which embeds another site's image or video so that it appears native, are more troublesome because they can obscure the source, divert advertising revenue and misappropriate the work. In *Washington Post Co. v. Total News, Inc.*, filed in 1997 by the Washington Post, CNN, Time and other news organisations against a site that framed their pages beneath its own logo and advertisements, the dispute settled with the defendant agreeing

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<sup>35</sup> Supra note 5, art. 8.

<sup>36</sup> Supra note 4, s. 51(a)(ii)

<sup>37</sup> Supra note 4, s. 52(1)(a), (ad).

<sup>38</sup> 464 U.S. 417 (1984).

<sup>39</sup> 704 F.2d 1009 (7th Cir. 1983)

to stop framing, while links to the plaintiffs' sites remained permitted.<sup>40</sup> Because the case ended in settlement, it is not a judicial ruling that framing infringes copyright.

## VI. Managing Copyright Online

The ease of copying from a private home has made enforcement by litigation alone inadequate. The response, in the phrase of Charles Clark quoted by James, is that "the answer to the machine is the machine". Owners use access controls such as passwords and subscription walls, copy controls, encryption, watermarking and digital rights management, together with content-recognition systems and notice-and-takedown procedures.<sup>41</sup> Technical measures invite counter-technology, however, and so need legal support.

Article 11 of the WCT requires adequate legal protection and effective remedies against circumvention of effective technological measures. Before 2012, India relied on the broad definition of "plate" in section 2(t), which covers devices used for reproducing copies, and James concluded that it protected technical measures only to a great extent.<sup>42</sup> The 2012 amendment added section 65A, which punishes circumvention of an effective technological measure applied to protect rights under the Act, with intention to infringe, with imprisonment of up to two years and a fine. Sub-section (2) preserves circumvention for purposes not expressly prohibited by the Act, encryption research, lawful investigation, security testing, identification or surveillance of a user, and national security.<sup>43</sup> Rights management information, meaning information that identifies the work, its author or owner, or the terms of use, and is attached to a copy or appears with a communication, is protected by article 12 of the WCT. Section 52A required only limited particulars on sound recordings and films and that no offence existed for removing such information. Section 65B now punishes knowingly removing or altering it without authority, or distributing works knowing it has been removed or altered, with up to two years' imprisonment and a fine.<sup>44</sup>

Platforms are the third element. Section 79 of the Information Technology Act, 2000 exempts intermediaries from liability for third-party content, provided they do not conspire, abet, aid or induce the unlawful act and they act on actual knowledge.<sup>45</sup> In *Shreya Singhal v. Union of India*, the Supreme Court read "actual knowledge" in this setting to mean a court order or

<sup>40</sup> 97 Civ. 1190 (S.D.N.Y. filed Feb. 20, 1997)

<sup>41</sup> Supra note 3 at 431, citing Charles Clark, *The Publisher in the Digital World*, WIPO Doc. No. WIPO/CR/Del/96/5 (New Delhi, 1996).

<sup>42</sup> Supra note 5, art. 11; supra note 4, s. 2(t); supra note 3 at 432.

<sup>43</sup> Supra note 21, s. 65A

<sup>44</sup> Supra note 5, art. 12(2); supra note 4, ss. 2(xa), 65B; supra note 3 at 432–433.

<sup>45</sup> Supra note 2, s. 79

government notification.<sup>46</sup> For copyright, the Delhi High Court's division bench in *MySpace v. Super Cassettes Industries* held that sections 79 and 81 of the IT Act and section 51(a)(ii) of the Copyright Act must be read harmoniously. The safe harbour is therefore available in copyright cases, section 51(a)(ii) requires actual and not general knowledge, and the platform must act on a specific notice from the owner, within 36 hours.<sup>47</sup> Section 52(1)(c) and its 21-day mechanism point the same way.<sup>48</sup> In *Tata Sky v. YouTube*, concerning videos that taught viewers to bypass the encryption on set-top boxes, the Delhi High Court held that YouTube, as an intermediary, was obliged not to host unlawful content and to act once specific unlawful material was notified, and directed it to improve its complaint mechanism.<sup>49</sup>

Cloud services raise a related set of questions. A subscriber to software delivered online holds a licence of access, not a copy, so the provider's terms define what the user may do. Those terms are contracts and are not unenforceable merely because they are formed electronically, while the transfer of personal data abroad is regulated by the Digital Personal Data Protection Act, 2023.<sup>50</sup>

## VII. Conclusion

Copyright law in India has adapted to the digital environment more fully than the 2002 assessment suggested. James found that the Act was equipped for many new challenges but left many issues unaddressed, and recommended amendments to align it with the WCT.<sup>51</sup> The 2012 amendment supplied several of them: protection of technological measures and rights management information, a wider definition of communication to the public, and exceptions for transient storage. The courts, in turn, have refined the originality standard for compilations and the conditions on which intermediaries are protected.

Questions remain. Multimedia works lack a category of their own, which forces case-by-case analysis. Databases of unoriginal facts depend on the thin protection that originality allows, and India has no *sui generis* right. The treatment of temporary copies rests on statutory exceptions whose scope is largely untested, and the distinction between private and public use on which fair dealing depends continues to erode online. A measured response, consistent with the three-step test in the WCT, is to retain exceptions that protect access and research, to clarify

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<sup>46</sup> (2015) 5 SCC 1

<sup>47</sup> 2016 SCC OnLine Del 6382

<sup>48</sup> Supra note 4, s. 52(1)(c)

<sup>49</sup> 2016 SCC OnLine Del 4476

<sup>50</sup> Supra note 2, s. 10A; The Digital Personal Data Protection Act, 2023 (Act 22 of 2023), s. 16

<sup>51</sup> Supra note 3 at 433–434.

the status of multimedia and database works by legislation, and to keep platform obligations tied to specific, actionable knowledge, so that rights can be enforced without requiring intermediaries to pre-screen all content.

