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INTELLECTUAL PROPERTY IN THE DIGITAL AGE

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INTRODUCTION

The internet has changed the way human beings create, distribute and consume knowledge, art and inventions. What once required a printing press, a recording studio or a physical marketplace can now be accomplished with a single upload. This transformation has brought immense convenience but has also placed enormous strain on intellectual property law, a body of law largely conceived in an era of tangible goods and territorial boundaries. Digital technology does not merely make infringement easier; it has altered the very nature of what is being protected, who owns it and how that ownership can be enforced.

This article examines how the four major branches of intellectual property, namely copyright, patents, trademarks and trade secrets, have responded to the pressures of the digital environment, with particular reference to the Indian legal framework. It also considers emerging challenges such as artificial intelligence, data ownership and the difficulties of cross-border enforcement, before reflecting on the direction Indian law may need to take.

COPYRIGHT AND THE CHALLENGE OF DIGITAL REPRODUCTION

Copyright law was built around the idea of a tangible, identifiable copy. The digital environment dissolves that idea almost entirely. A song, film or book can be reproduced an infinite number of times at virtually no cost and distributed globally within seconds. The Copyright Act, 1957, as amended in 2012, attempted to respond to this reality by introducing provisions on technological protection measures and rights management information, along with a notice and takedown mechanism for online intermediaries under the Information Technology Act, 2000.

The Delhi High Court's approach in *UTV Software Communications Ltd. v. 1337x.to* is instructive here. This built upon an earlier, more cautious approach taken by the Bombay High Court in *Eros International Media Ltd. v. Bharat Sanchar Nigam Ltd.*, which had required rights holders to prove that an entire website hosted only infringing content before a blocking order could be granted.

In *UTV Software Communications Ltd. v. 1337x.to*, the Delhi High Court developed the concept of a "rogue website" and permitted dynamic injunctions, allowing rights holders to seek blocking orders against mirror websites without filing fresh suits each time a website resurfaced under a new domain. This judicial innovation reflects an attempt to keep pace with the speed at which infringing content migrates online.

Streaming platforms have introduced a further complication. Unlike a sale, a stream does not result in a copy being permanently retained by the user, which raises questions about how royalties should be calculated and distributed among creators. The rise of user-generated content on platforms such as YouTube and Instagram has also blurred the line between original work and derivative use, making the application of fair dealing under Section 52 of the Copyright Act increasingly contested in everyday digital practice.

More recently, non-fungible tokens, commonly known as NFTs, have introduced a new layer of complexity. An NFT typically represents ownership of a unique digital token recorded on a blockchain, but it does not automatically transfer the underlying copyright in the artwork or content to which it is linked. This distinction is poorly understood by many participants in NFT markets and has already given rise to disputes internationally over unauthorised minting of copyrighted artwork as NFTs.

PATENTS AND THE QUESTION OF DIGITAL INVENTIONS

Patent law has faced its own set of digital-era dilemmas, particularly around the patentability of computer programs and software-related inventions. Section 3(k) of the Patents Act, 1970, excludes mathematical methods, business methods and computer programs per se from patentability. The Indian Patent Office's Guidelines for Examination of Computer Related Inventions have attempted to clarify this exclusion, generally permitting patents where a software invention demonstrates a technical effect or contribution beyond the mere automation of a process.

This has produced considerable uncertainty for technology companies, particularly in sectors such as fintech and artificial intelligence, where it is often difficult to separate the underlying algorithm from its technical application. Indian courts have, in several instances, taken a more liberal view than the Patent Office, recognising that modern inventions are rarely purely abstract and often involve a genuine technical contribution that merits protection.

A more recent and unresolved question concerns inventions created with little or no human intervention, generated substantially through artificial intelligence systems. The Patents Act presumes an "inventor" to be a natural person, and Indian patent practice, consistent with the position taken by most jurisdictions internationally, does not currently permit an AI system to be named as an inventor. As AI-assisted invention becomes more common in fields such as drug discovery and materials science, this question is likely to demand legislative attention rather than judicial improvisation alone.

TRADEMARKS IN THE ONLINE MARKETPLACE

Trademark law has had to adapt to an environment where brand identity exists as much in domain names, hashtags and social media handles as it does in traditional commercial use. Domain name disputes have been among the earliest and most frequent forms of digital trademark conflict, often resolved through the Uniform Domain Name Dispute Resolution Policy, an arbitration mechanism administered internationally for resolving cybersquatting complaints, or through Indian courts applying ordinary principles of passing off.

The Trade Marks Act, 1999, does not specifically address online use, but Indian courts have consistently held that the use of a registered trademark as a keyword, metatag or domain name, where it causes confusion among consumers, amounts to infringement. The Delhi High Court's reasoning in cases involving online marketplaces has emphasised that intermediaries cannot escape liability merely by claiming a passive role when they actively facilitate the sale of counterfeit goods.

E-commerce platforms have intensified the scale of counterfeiting, since a single seller can list infringing products to a national or even global audience instantly. The Consumer Protection (E-Commerce) Rules, 2020, introduced obligations for marketplaces to disclose seller information and respond to consumer complaints, but enforcement against counterfeit listings remains largely dependent on rights holders actively monitoring platforms and filing repeated takedown requests.

TRADE SECRETS AND THE VALUE OF DATA

Unlike copyright, patents and trademarks, trade secrets in India are not protected by a dedicated statute and instead rely on contractual obligations and common law principles of confidentiality. In the digital economy, where data itself has become an enormously valuable asset, this gap is increasingly significant. Customer data, algorithms, source code and business intelligence often constitute a company's most valuable intellectual property, yet their protection depends almost entirely on the strength of non-disclosure agreements and employment contracts.

The absence of a specific trade secrets law has periodically been the subject of policy discussion, including a draft Protection of Trade Secrets Bill that has not yet been enacted. As data breaches and employee mobility within the technology sector increase, the inadequacy of relying solely on contract law to protect what is often a company's core intangible asset becomes more apparent.

CROSS-BORDER ENFORCEMENT AND THE LIMITS OF TERRITORIAL LAW

Perhaps the most persistent challenge posed by the digital environment is the territorial nature of intellectual property law itself. A patent, trademark or copyright is generally protected on a country-by-country basis, yet infringing content or counterfeit goods can originate from, and be accessed in, jurisdictions far removed from where the rights holder is located.

International instruments such as the WIPO Copyright Treaty and the TRIPS Agreement provide a degree of harmonisation, and India's accession to these frameworks has shaped its domestic legislative amendments. However, enforcement still ultimately depends on cooperation between national courts, intermediaries and foreign authorities, a process that is often slow and resource-intensive. Indian rights holders seeking to act against infringement hosted on servers outside the country frequently encounter procedural and jurisdictional obstacles that domestic law alone cannot resolve.

THE WAY FORWARD

Several measures could strengthen India's intellectual property framework for the digital age. A dedicated trade secrets statute would close an important gap in protection for one of the most valuable categories of modern intellectual property. Clearer legislative guidance on the patentability of AI-related inventions, rather than reliance on examination guidelines alone, would reduce uncertainty for innovators. Strengthening obligations on e-commerce

intermediaries to proactively detect counterfeit listings, rather than acting only upon complaint, would also improve enforcement outcomes.

Equally important is greater public and judicial clarity on emerging categories such as NFTs, where the relationship between token ownership and underlying intellectual property rights remains poorly understood by both creators and consumers. As digital commerce continues to expand, Indian intellectual property law will need to evolve not merely through incremental judicial interpretation but through deliberate legislative reform.

CONCLUSION

The digital age has not rendered intellectual property law obsolete, but it has exposed the limits of a framework designed for a world of physical copies and territorial markets. Copyright must contend with infinite reproducibility, patents with inventions that blur the line between human and machine creativity, trademarks with infringement at a scale traditional enforcement was never designed to handle, and trade secrets with the absence of any dedicated statutory protection. India has made incremental progress through judicial innovation and selective legislative amendment, but a more comprehensive and forward-looking approach is necessary if intellectual property law is to remain meaningful in an increasingly digital economy.

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