INTERNATIONAL JOURNAL FOR LEGAL RESEARCH AND ANALYSIS

Open Access, Refereed Journal Multi Disciplinary
Peer Reviewed



www.ijlra.com

ISSN: 2582-6433

DISCLAIMER

No part of this publication may be reproduced, stored, transmitted, or distributed in any form or by any means, whether electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of the Managing Editor of the *International Journal for Legal Research & Analysis (IJLRA)*.

The views, opinions, interpretations, and conclusions expressed in the articles published in this journal are solely those of the respective authors. They do not necessarily reflect the views of the Editorial Board, Editors, Reviewers, Advisors, or the Publisher of IJLRA.

Although every reasonable effort has been made to ensure the accuracy, authenticity, and proper citation of the content published in this journal, neither the Editorial Board nor IJLRA shall be held liable or responsible, in any manner whatsoever, for any loss, damage, or consequence arising from the use, reliance upon, or interpretation of the information contained in this publication.

The content published herein is intended solely for academic and informational purposes and shall not be construed as legal advice or professional opinion.

Copyright © International Journal for Legal Research & Analysis. All rights reserved.

ISSN: 2582-6433

ABOUT US

The *International Journal for Legal Research & Analysis (IJLRA)* (ISSN: 2582-6433) is a peer-reviewed, academic, online journal published on a monthly basis. The journal aims to provide a comprehensive and interactive platform for the publication of original and high-quality legal research.

IJLRA publishes Short Articles, Long Articles, Research Papers, Case Comments, Book Reviews, Essays, and interdisciplinary studies in the field of law and allied disciplines. The journal seeks to promote critical analysis and informed discourse on contemporary legal, social, and policy issues.

The primary objective of IJLRA is to enhance academic engagement and scholarly dialogue among law students, researchers, academicians, legal professionals, and members of the Bar and Bench. The journal endeavours to establish itself as a credible and widely cited academic publication through the publication of original, well-researched, and analytically sound contributions.

IJLRA welcomes submissions from all branches of law, provided the work is original, unpublished, and submitted in accordance with the prescribed submission guidelines. All manuscripts are subject to a rigorous peer-review process to ensure academic quality, originality, and relevance.

Through its publications, the *International Journal for Legal Research & Analysis* aspires to contribute meaningfully to legal scholarship and the development of law as an instrument of justice and social progress.

ISSN: 2582-6433

PUBLICATION ETHICS, COPYRIGHT & AUTHOR RESPONSIBILITY STATEMENT

The *International Journal for Legal Research and Analysis (IJLRA)* is committed to upholding the highest standards of publication ethics and academic integrity. All manuscripts submitted to the journal must be original, unpublished, and free from plagiarism, data fabrication, falsification, or any form of unethical research or publication practice. Authors are solely responsible for the accuracy, originality, legality, and ethical compliance of their work and must ensure that all sources are properly cited and that necessary permissions for any third-party copyrighted material have been duly obtained prior to submission. Copyright in all published articles vests with IJLRA, unless otherwise expressly stated, and authors grant the journal the irrevocable right to publish, reproduce, distribute, and archive their work in print and electronic formats. The views and opinions expressed in the articles are those of the authors alone and do not reflect the views of the Editors, Editorial Board, Reviewers, or Publisher. IJLRA shall not be liable for any loss, damage, claim, or legal consequence arising from the use, reliance upon, or interpretation of the content published. By submitting a manuscript, the author(s) agree to fully indemnify and hold harmless the journal, its Editor-in-Chief, Editors, Editorial Board, Reviewers, Advisors, Publisher, and Management against any claims, liabilities, or legal proceedings arising out of plagiarism, copyright infringement, defamation, breach of confidentiality, or violation of third-party rights. The journal reserves the absolute right to reject, withdraw, retract, or remove any manuscript or published article in case of ethical or legal violations, without incurring any liability.

ISSN: 2582-6433

REVERSE ENGINEERING AS PUBLIC POLICY: BALANCING INNOVATION AND COMPETITION IN ELECTRONIC MARKETS

AUTHORED BY - SRIPURNA SANYAL
LL.M. Student,
University Institute of Legal Studies, Chandigarh University, Mohali, Punjab, India.

CO-AUTHOR - DR. RAJIV BHALLA
Professor,
University Institute of Legal Studies, Chandigarh University, Mohali, Punjab, India.

ABSTRACT

Reverse engineering, the process of analysing a product to discover how it works, sits at the intersection of intellectual property law and competition policy. In electronic markets, where integrated circuits, firmware and software are protected by overlapping regimes, reverse engineering can either entrench incumbents or open markets to interoperable competitors. This paper argues that reverse engineering should be treated as a policy instrument rather than a loophole. Drawing on the TRIPS framework, the United States, the European Union and India, it examines how each jurisdiction permits reverse engineering for interoperability, research and competitive development while protecting original design investment. It concludes that the most defensible policy is a purpose-limited permission, supported by clear statutory standards and institutional capacity, that preserves incentives to innovate without foreclosing the competition that drives technological progress.

Keywords: Reverse engineering, sui generis protection, interoperability, competition law, semiconductors, electronic markets, TRIPS.

Statement of Problem

Although India has attempted to meet its international obligations under TRIPS by establishing the Semiconductor Integrated Circuits Layout-Design Act, 2000 (SICLDA), protection and enforcement of layout designs remain largely theoretical. The Act establishes a sui generis

ISSN: 2582-6433

regime with exclusivity and deterrent penalties, but there is little evidence that it has been used or enforced in practice. Institutional barriers, including limited visibility of the registry, and overlaps with patent and copyright law add legal uncertainty that inhibits both innovation and commercialisation. Reverse engineering sits at the centre of this problem: it is the mechanism by which second comers build compatible products, and the policy question is how far the law should permit it.

Research Questions

1. Whether the SICLDA, read alongside the reverse engineering permissions of comparable regimes, balances protection of layout designs against interoperability and competition in practice.
2. Whether the absence of judicial interpretation of the SICLDA creates uncertainty that deters innovators and competitors from relying on the Act.
3. Whether ambiguities and overlaps between the SICLDA, copyright, patent law and competition law make it difficult to determine when reverse engineering is lawful.
4. Whether India's institutional arrangements for registration and dispute resolution are adequate to support a purpose-limited permission for reverse engineering in electronic markets.

Research Objectives

- To evaluate the international and comparative legal framework governing reverse engineering of integrated circuits, software and electronic products.
- To examine how the SICLDA, the Copyright Act, 1957 and the Competition Act, 2002 interact in India, and where they leave reverse engineering uncertain.
- To assess the economic case for and against reverse engineering in electronic markets.
- To recommend a purpose-limited permission and the institutional reforms needed to make it workable.

I. Introduction

Every electronic device rests on layers of protected knowledge. A microchip embodies a layout design, a topography of circuit elements that took substantial investment to develop and can be copied at a fraction of that cost.[1] Its firmware and drivers are protected as computer programs.

[1]Bharvi Shahi, "IP Protection of Semiconductor Layout Designs under TRIPS and Indian Law", VIII Indian

ISSN: 2582-6433

Its functional architecture may be covered by patents. Reverse engineering, which takes a finished product apart to learn how it works, is therefore a direct test of how far intellectual property (IP) rights should extend.

The policy question is not whether reverse engineering should be permitted, but under what conditions. An unrestricted right to reverse engineer would weaken the returns that justify design investment. A prohibition would give incumbents control over interfaces, spare parts and compatible products, reducing the competitive pressure that produces lower prices and faster innovation. This paper treats reverse engineering as a policy lever that must be calibrated to purpose, scope and market structure.

The paper proceeds in five parts. Part II sets out the international framework. Part III examines the legal treatment of reverse engineering in the United States, the European Union and India. Part IV considers the economic logic. Part V applies these insights to electronic markets, and Part VI offers policy recommendations.

The analysis adopts a doctrinal and comparative method. It reads the statutory texts of the TRIPS Agreement, the SICLDA, the Copyright Act, 1957 and the Competition Act, 2002 alongside leading decisions of United States courts and the European Union's copyright and competition instruments. Because India's layout-design regime has generated almost no reported case law, the Indian analysis relies principally on the statute and on the scholarly literature that has examined its operation. This limitation is itself a finding: the absence of adjudication is part of the policy problem the paper addresses, and any conclusion about how the SICLDA would apply to reverse engineering is tentative until courts give it content.

II. The International Framework

The TRIPS Agreement is the starting point. Articles 35 to 38 require members to protect layout designs of integrated circuits in accordance with the Washington Treaty of 1989, a sui generis regime distinct from patent and copyright.[2] Article 39 protects undisclosed information, which in turn makes reverse engineering a "proper means" of acquisition if it is not prohibited by law.[3] TRIPS therefore leaves considerable room for national choice. It sets a floor of protection but does not compel members to prohibit reverse engineering. This space is what allows different jurisdictions to adopt different balances.

The flexibility left by TRIPS deserves emphasis. Article 39 protects undisclosed information

Journal of Law and Legal Research 4768 (ISSN 2582-8878).

[2]Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, arts. 35–38.

[3] *Ibid.*, art. 39.

ISSN: 2582-6433

against acquisition by dishonest commercial practices, and it is generally read as leaving independent discovery and reverse engineering outside that prohibition unless another rule forbids them. Member states therefore decide for themselves whether to restrict reverse engineering through contract, statute or doctrine. This is why the comparative study matters: the same international obligation has been implemented in ways that range from broad judicial tolerance in the United States to a narrow statutory exception in the European Union.

Scholarship has long recognized that reverse engineering performs a socially useful function. Samuelson and Scotchmer argue that the legal treatment of reverse engineering determines whether a second comer can build on the first comer's work, and that a permissive rule can improve welfare where the first comer's design investment is otherwise protected by lead time, brand and other market advantages.[4]

The sui generis character of layout-design protection sharpens this point. Because the SICLDA protects a design rather than a functional idea or a literary expression, the question is not only whether a competitor copied a protected output but whether it reproduced the protected arrangement itself. A reverse engineer who studies a chip to understand how it functions, and then designs a different layout that achieves the same function, operates in the space the law deliberately leaves open. The difficulty lies in the middle ground, where analysis produces a near-copy of the layout. That middle ground is where the policy must be drawn.

III. Comparative Legal Treatment

A. United States

Reverse engineering has a long pedigree in American law. The Supreme Court in *Kewanee Oil Co. v. Bicron Corp.* recognised that trade secret protection does not extend to discoveries made through independent development or reverse engineering.[5] In *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, the Court held that the federal policy favoring free copying of unpatented designs limits state-law protection that would effectively create patent-like monopolies.[6]

In copyright, *Sega Enterprises Ltd. v. Accolade, Inc.* held that intermediate copying of object code to discover functional requirements for compatibility was a fair use, because the public interest in access to unprotected functional elements outweighed the copyright holder's interest.[7] *Sony Computer Entertainment, Inc. v. Connectix Corp.* extended this reasoning to the

[4] Pamela Samuelson and Suzanne Scotchmer, "The Law and Economics of Reverse Engineering" 111 Yale L.J. 1575 (2002).
[5] *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974).
[6] *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989).
[7] *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992).

ISSN: 2582-6433

copying needed to make a compatible console emulator.[8] Both cases turned on the distinction between protectable expression and unprotectable function, a distinction grounded in *Feist Publications, Inc. v. Rural Telephone Service Co.*[9]and in the abstraction-filtration-comparison test of *Computer Associates International, Inc. v. Altai, Inc.*[10]

Statutory exceptions reinforce this position. The Digital Millennium Copyright Act permits circumvention of technological protection measures for interoperability under 17 U.S.C. §1201(f).[11] The Semiconductor Chip Protection Act of 1984 contains its own reverse engineering provision for mask works, reflecting the same policy of allowing analysis of functional designs.[12] The Defend Trade Secrets Act of 2016 confirms that reverse engineering is a proper means of acquiring trade secrets.[13]

Taken together, the American position is open-textured. Permission to reverse engineer is built largely from judicial reasoning about fair use and from narrow statutory carve-outs, so its scope must be worked out case by case. The European position is closed. The Directive names the purposes for which decompilation is allowed and attaches conditions to each, which gives firms greater predictability but leaves little room for activity the legislature did not foresee. The trade-off is familiar in regulation: flexible standards adapt to new technology but are costly to apply, while precise rules are cheap to apply but may fail when markets change. For India, where the registry and courts are still building capacity, the closed model's predictability has a clear appeal, though the open model's adaptability will remain necessary for fast-moving semiconductor design.

B. European Union

The EU's Computer Programs Directive establishes the most explicit statutory model. Article 6 permits decompilation without authorisation where it is indispensable to achieve interoperability of an independently created program, subject to conditions that the information is not used for other purposes and is not given to third parties beyond what interoperability requires.[14] The provision is a closed exception. It does not authorise general reverse engineering for competitive copying, which reflects the EU's concern that expression, rather than function, should remain protected.

[8] *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596 (9th Cir. 2000).
[9] *Feist Publications, Inc. v. Rural Telephone Service Co.*, 499 U.S. 340 (1991).
[10] *Computer Associates International, Inc. v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992).
[11] Digital Millennium Copyright Act, 1998, 17 U.S.C. s. 1201(f).
[12] Semiconductor Chip Protection Act of 1984, 17 U.S.C. ss. 901–914.
[13] Defend Trade Secrets Act of 2016, 18 U.S.C. s. 1839(6)(B).
[14]Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs, art. 6, OJ L 111/16.

ISSN: 2582-6433

The competition dimension is equally important. In *Microsoft Corp. v. Commission,* the General Court upheld the Commission's finding that Microsoft's refusal to supply interoperability information abused a dominant position under Article 82 of the EC Treaty.[15] The Commission's decision had emphasised that interoperability information was indispensable to competitors in the server market.[16] The case shows that IP-based exclusion can become a competition problem where the protected interface is essential to downstream markets.

The lesson of the Microsoft case extends beyond software. In electronic markets, a manufacturer may control not only a product's functionality but also the interfaces through which other devices connect to it. If intellectual property rights are used to withhold those interfaces, the effect can resemble a barrier to entry in a downstream market, even though the underlying rights were lawfully obtained. Competition authorities therefore face a difficult question: whether a refusal to supply interoperability information is a legitimate exercise of an IP right or an abuse of a dominant position. The Commission's answer in Microsoft was that the refusal, in those circumstances, was abusive. The case does not resolve every future dispute, but it establishes that IP rights do not automatically immunize exclusionary conduct.

C. India

India's regime combines three instruments. The Semiconductor Integrated Circuits Layout-Design Act, 2000 provides a registration-based sui generis right, granting the registered proprietor exclusive rights for ten years.[17] As the discussion of the Act in recent scholarship makes clear, the statute also establishes civil and criminal remedies, but it has generated little judicial interpretation.[18] Copyright protects software as literary works under the Copyright Act, 1957, while the Competition Act, 2002 prohibits abuse of dominant position under section 4.[19] This combination creates a gap. The SICLDA addresses layout designs, the Copyright Act addresses code, and the Competition Act addresses exclusionary conduct, but there is no clear statutory statement on when reverse engineering of a registered layout design or a programme is lawful for interoperability or research. Without that guidance, the Indian system risks the very ambiguity that scholars have identified as undermining commercialization.[20]

The Indian gap also has a practical dimension. A firm that wishes to analyse a competitor's

[15] *Microsoft Corp. v. Commission,* Case T-201/04 (Court of First Instance, Sept. 17, 2007).
[16] Commission Decision relating to a proceeding under Article 82 of the EC Treaty, Case COMP/C-3/37.792 *Microsoft* (Mar. 24, 2004).
[17] Semiconductor Integrated Circuits Layout-Design Act, 2000 (Act 37 of 2000), ss. 17, 18.
[18] *Supra* note 1 at 2.
[19] Copyright Act, 1957 (Act 14 of 1957); Competition Act, 2002 (Act 12 of 2003), s. 4.
[20] S*upra* note 1, at 2.

ISSN: 2582-6433

registered layout before launching a compatible component cannot easily determine whether its activity is permitted, because no reported decision applies the SICLDA's infringement provisions to analysis of this kind. Legal advisers, faced with that silence, tend to advise caution, and caution in turn discourages the very competition the policy seeks to encourage. Institutional weakness compounds the problem. As the literature on the Act observes, the registry's limited visibility and technical capacity make the rights it confers harder to verify and harder to rely on than rights granted by more established offices. The result is a regime that is formally generous to rights holders but uncertain in both directions.

IV. The Economic Logic

The economic case for reverse engineering rests on two propositions. First, innovation requires both incentives to create and access to existing knowledge. Arrow argued that information, once produced, has a public-good character, so that without some protection investment will be underprovided, but excessive protection restricts the use of knowledge that could generate further invention.[21] Schumpeter emphasised that competitive dynamics, including the replacement of established products, drive long-run technological change.[22] Aghion and colleagues later found an inverted-U relationship between competition and innovation: some competitive pressure stimulates investment, but very intense competition or complete protection reduces it.[23]

Reverse engineering operates on this balance. Permitting it lowers the cost of entry and interoperability, increasing competitive pressure on incumbents and expanding the ecosystem of complementary products. Restricting it protects the first comer's investment but can lock consumers into proprietary platforms and reduce incentives for downstream innovation. The optimal rule therefore depends on the type of product, the degree of investment at risk and the presence of alternatives.

Easterbrook's influential critique reminds us that IP rights are themselves creatures of policy, and that property rights should be defined by their social function rather than treated as absolute.[24] That insight supports a purpose-based approach: reverse engineering should be permitted where it serves recognized functions such as interoperability, security research,

[21] Kenneth J. Arrow, "Economic Welfare and the Allocation of Resources for Invention", in Richard R. Nelson (ed.), *The Rate and Direction of Inventive Activity* 609 (Princeton University Press, 1962).
[22] Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (Harper & Brothers, New York, 1942).
[23] Philippe Aghion, Nick Bloom, Richard Blundell, Rachel Griffith and Peter Howitt, "Competition and Innovation: An Inverted-U Relationship" 120 Q.J. Econ. 701 (2005).
[24]Frank H. Easterbrook, "Intellectual Property Is Still Property" 13 Harv. J.L. & Pub. Pol'y 108 (1990).

ISSN: 2582-6433

repair and competitive development, and restricted where it appropriates protected expression or undermines the investment that the right is designed to reward.

The tension between static and dynamic efficiency runs through this debate. In the short run, a rule that permits reverse engineering lowers prices and widens access, which are static gains. In the long run, the rule matters because it shapes whether firms are willing to invest in designs that competitors may later analyse. Dynamic efficiency therefore depends on finding the boundary at which access is generous enough to sustain competition but not so generous that it removes the return on original design. No general formula identifies that boundary. It must be located through the features of each market, including how quickly designs become obsolete, how costly development is relative to copying, and whether follow-on innovation depends on access to earlier work.

V. Application to Electronic Markets

Electronic markets present three features that make reverse engineering especially important:

First, **investment asymmetry** is severe. Designing a complex integrated circuit requires large sums, yet the copying cost can be low. Atul Gupta's analysis of the Indian position identifies this disproportion between high development costs and low reproduction costs as the core justification for layout design protection.[25] A rule that permits full reverse engineering of layouts would therefore undermine the incentive the SICLDA is designed to provide. A purpose-limited rule, permitting analysis for research and evaluation but not commercial copying, fits this problem.

Second, **interoperability** determines competition in platform markets. Peripherals, accessories and replacement components depend on the ability to understand interfaces. The Microsoft decision shows that refusal to disclose such information can foreclose competition, and the EU Directive's interoperability exception reflects a judgment that access to interface information should not depend on the incumbent's goodwill.[26]

Beyond interoperability, reverse engineering serves at least two further purposes that deserve protection. The first is security research. Engineers who examine a device's hardware or firmware can identify vulnerabilities that the manufacturer has missed, and public disclosure of those flaws is often the only way to compel repair. A legal rule that treats all analysis as infringement therefore weakens the safety of the devices consumers rely on. The second is

[25]Atul Gupta, "Integrated Circuits and Intellectual Property Rights in India" 10 J. Intellectual Property Rights 474 (2005).

[26] S*upra* note 14, art. 6; S*upra* note 15.

ISSN: 2582-6433

repair and maintenance. Owners who cannot understand how a device works depend on the manufacturer for servicing, which can raise costs and shorten product life. A policy that permits analysis for these purposes aligns consumer interests with the broader goal of a competitive and durable electronics market.

Third, **enforcement capacity** conditions whether any rule works. A permission to reverse engineer is only as valuable as the clarity of its boundaries. Where courts lack technical familiarity with semiconductor design, uncertainty about infringement increases, and that uncertainty itself deters both innovators and competitors.[27] Indian scholarship has emphasized precisely this gap between legislative design and judicial practice.[28]

Enforcement capacity also shapes behavior before any dispute arises. Firms that cannot predict how a court would treat their analysis will either avoid reverse engineering altogether or adopt defensive measures, such as technical locks and restrictive licence terms, that impose their own costs. A clear statutory standard reduces both responses. It allows legitimate analysis to proceed without fear of litigation and makes the boundary of protection visible to rights holders, who can then design their products with the permitted uses in mind.

These features suggest a policy rule with four elements: (a) permission for reverse engineering to achieve interoperability, subject to limits on disclosure and use; (b) permission for research, evaluation and education; (c) prohibition of wholesale copying of protected layouts or expression for commercial exploitation; and (d) competition-law oversight where IP holders use their rights to exclude interoperable rivals.

A hypothetical illustrates how the four elements would operate. Suppose a company manufactures printers and a second firm wishes to produce cartridges that work with them. The second firm may analyse the printer's communication protocol to ensure its cartridges are compatible, since that analysis is necessary for interoperability and falls within element (a). It may not copy the printer manufacturer's protected chip layout and sell that copy as its own product, because that is commercial copying of a protected design under element (c). If the printer manufacturer refuses to disclose the protocol and thereby forecloses the cartridge market, element (d) allows competition authorities to intervene. The example shows that the four elements separate permitted purposes from prohibited uses, rather than simply favouring one party.

[27] S*upra* note 1.
[28] *Ibid.*

ISSN: 2582-6433

VI. Suggestions

On the basis of this analysis, five recommendations follow.

1. **Codify a purpose-limited exception in India.** The SICLDA and Copyright Act should be read together, or amended, to state expressly that reverse engineering for interoperability, research and evaluation does not infringe, provided the analysed material is not commercially exploited in a copied form. This would translate the comparative lessons of *Sega* and Article 6 into Indian law.
2. **Clarify the originality and overlap standards.** As the SICLDA literature notes, the statutory concept of originality is not firmly distinguished from patent inventiveness or copyright originality.[29] Official guidance on how each regime applies to a given design would reduce the uncertainty that discourages registration.
3. **Build technical capacity in the registry and courts.** Examiners and judges need specialist training in semiconductor design. A technical advisory mechanism, along the lines of the recommendations in recent scholarship, would make reverse engineering disputes more predictable.[30]
4. **Use competition law as a backstop.** Where IP holders refuse interoperability information for markets they dominate, the Competition Act's abuse provisions should be applied with the *Microsoft* analysis in view. This avoids overbroad IP exceptions while still preventing exclusion.
5. **Promote public awareness.** Many small designers do not know that reverse engineering can be lawful or that registration is required for protection.[31] Guidance materials would improve both compliance and the efficient use of permitted analysis.

VII. Conclusion

Reverse engineering is neither a threat to innovation nor an automatic good for competition. Its effect depends on purpose, scope and market structure. The comparative experience of the United States, the European Union and India shows that a well-designed permission, bounded by clear limits on copying and supported by competition oversight, can serve both goals. In electronic markets, where investment is heavy and interoperability is essential, such a permission is not a concession to competitors but a condition of a functioning innovation system. The task for policymakers is to make that permission clear, predictable and

[29] Semiconductor Integrated Circuits Layout-Design Act, 2000 (Act 37 of 2000).
[30] *Supra* note 1.
[31] *Supra* note 1.

ISSN: 2582-6433

enforceable.

Looking forward, the policy choice is not static. As semiconductor design becomes more modular and as devices depend more heavily on software updates and networked interfaces, the boundary between analysis and copying will move. A permission framed around purpose, rather than around particular technologies, is more likely to remain workable as those changes occur. The immediate priority for India is to give the SICLDA the interpretive content its text has so far lacked, through clearer administrative guidance, better-trained examiners and courts willing to decide the first cases. Until then, the law's promise of balanced protection will remain largely unrealised.

REFERENCES

Books

Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (Harper & Brothers, New York, 1942).

Richard R. Nelson (ed.), *The Rate and Direction of Inventive Activity* (Princeton University Press, 1962).

Articles and Essays

Atul Gupta, "Integrated Circuits and Intellectual Property Rights in India" 10 J. Intellectual Property Rights 474 (2005).

Bharvi Shahi, "IP Protection of Semiconductor Layout Designs under TRIPS and Indian Law", VIII Indian Journal of Law and Legal Research 4768.

Frank H. Easterbrook, "Intellectual Property Is Still Property" 13 Harv. J.L. & Pub. Pol'y 108 (1990).

Kenneth J. Arrow, "Economic Welfare and the Allocation of Resources for Invention", in Richard R. Nelson (ed.), *The Rate and Direction of Inventive Activity* 609 (Princeton University Press, 1962).

Philippe Aghion, Nick Bloom, Richard Blundell, Rachel Griffith and Peter Howitt, "Competition and Innovation: An Inverted-U Relationship" 120 Q.J. Econ. 701 (2005).

Pamela Samuelson and Suzanne Scotchmer, "The Law and Economics of Reverse Engineering" 111 Yale L.J. 1575 (2002).

Cases

Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989).

ISSN: 2582-6433

Computer Associates International, Inc. v. Altai, Inc., 982 F.2d 693 (2d Cir. 1992).

Feist Publications, Inc. v. Rural Telephone Service Co., 499 U.S. 340 (1991).

Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470 (1974).

Microsoft Corp. v. Commission, Case T-201/04 (Court of First Instance, Sept. 17, 2007).

Sega Enterprises Ltd. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992).

Sony Computer Entertainment, Inc. v. Connectix Corp., 203 F.3d 596 (9th Cir. 2000).

Statutes, Treaties and Regulatory Materials

Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, 1869 U.N.T.S. 299.

Competition Act, 2002 (Act 12 of 2003).

Copyright Act, 1957 (Act 14 of 1957).

Commission Decision, Case COMP/C-3/37.792 *Microsoft* (Mar. 24, 2004).

Defend Trade Secrets Act of 2016, 18 U.S.C. s.1839.

Digital Millennium Copyright Act, 1998, 17 U.S.C. s. 1201.

Directive 2009/24/EC of the European Parliament and of the Council on the legal protection of computer programs, OJ L 111/16.

Semiconductor Chip Protection Act of 1984, 17 U.S.C. ss.901–914.

Semiconductor Integrated Circuits Layout-Design Act, 2000 (Act 37 of 2000).