

Artificial Intelligence and Intellectual Property Rights: Copyright, Patent, and Ownership Challenges

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Abstract—The rapid development of Artificial Intelligence (AI) has transformed the creation, development, distribution, and commercialization of intellectual property. AI systems are increasingly capable of generating text, images, music, software code, inventions, designs, and other creative or technological outputs. These developments challenge traditional intellectual property rights (IPR) frameworks, which were primarily designed around human creators and inventors. The emergence of generative AI has consequently created complex legal questions concerning authorship, inventorship, ownership, originality, infringement, training data, patentability, trade secrets, licensing, and liability. This article examines the principal intellectual property challenges arising from the development and deployment of Artificial Intelligence, with particular focus on copyright, patents, and ownership. It adopts a doctrinal and comparative legal research methodology, examining statutory provisions, judicial developments, regulatory approaches, international instruments, and emerging policy debates. Particular attention is given to India's Copyright Act, 1957, Patents Act, 1970, Designs Act, 2000, and relevant information-technology and data-protection frameworks. Comparative analysis is made with the United States, European Union, United Kingdom, and international intellectual property developments. The article examines whether AI-generated works satisfy traditional concepts of originality and human authorship, whether AI systems can be recognized as inventors, how AI training may interact with copyright law, and how ownership should be allocated among developers, users, employers, and other stakeholders. It argues that AI should not automatically be treated as an independent legal person or intellectual-property owner under existing frameworks. Instead, legal systems should focus on identifying meaningful human contribution, contractual arrangements, organizational responsibility, transparency, and sector-specific risk. The article concludes by proposing reforms based on human-centered authorship, AI-assisted inventorship, transparent training practices, licensing mechanisms, improved attribution standards, and international harmonization.

Index Terms—Artificial Intelligence, Intellectual Property Rights, Copyright, Patent, AI-Generated Works, Inventorship, Authorship, Ownership, Generative AI, Patentability, Copyright Infringement, Technology Law

1. Introduction

Artificial Intelligence has moved from being primarily a computational technology to becoming an important tool for creativity, research, innovation, and commercial activity.

Modern AI systems can generate:

- Text.
- Images.
- Music.
- Videos.

- Software code.
- Designs.
- Business content.
- Scientific hypotheses.
- Technical solutions.

AI is also increasingly used in:

- Pharmaceutical research.
- Engineering.
- Financial services.
- Advertising.
- Manufacturing.
- Education.
- Entertainment.
- Software development.

This transformation has significant implications for intellectual property law.

Traditional IPR systems generally assume that a human being or legally recognized organization creates, owns, or controls intellectual property.

AI challenges this assumption.

A fundamental legal question therefore arises:

When an AI system contributes substantially to the creation of an intellectual work or invention, who should receive the resulting intellectual property rights?

Possible answers include:

- AI developers.
- AI users.
- Employers.
- Companies.
- Human collaborators.
- No one, where legal requirements for protection are not satisfied.

This question becomes increasingly important as AI-generated outputs become commercially valuable.

2. Background of the Study

Intellectual property law seeks to encourage innovation and creativity by granting legally enforceable rights.

The major categories include:

- Copyright.
- Patents.
- Trademarks.
- Designs.
- Trade secrets.
- Geographical indications.

AI interacts with nearly every category.

However, copyright and patent law face particularly significant challenges because they depend heavily on concepts such as:

- Authorship.
- Originality.
- Creativity.
- Inventorship.
- Novelty.
- Human contribution.

AI can generate outputs without functioning as a human legal subject.

This creates a tension between technological capability and traditional legal doctrine.

3. Meaning of Artificial Intelligence

Artificial Intelligence refers broadly to computational systems capable of performing tasks associated with human intelligence.

These may include:

- Learning.
- Reasoning.
- Pattern recognition.
- Prediction.
- Language generation.
- Image generation.
- Problem solving.

Generative AI represents a particularly important development because it can produce new content in response to user instructions.

4. Meaning of Intellectual Property Rights

Intellectual Property Rights provide legal protection for creations and innovations.

Major forms include:

Copyright

Protects qualifying literary, artistic, musical, dramatic and other creative works.

Patent

Protects qualifying inventions that satisfy statutory requirements.

Trademark

Protects distinctive signs associated with goods or services.

Industrial Design

Protects qualifying visual features of products.

Trade Secret

Protects confidential business information subject to legal requirements.

AI can affect each of these areas.

5. Research Problem

The development of AI raises several unresolved legal questions.

These include:

1. Can AI-generated works receive copyright protection?
2. Who is the author of an AI-generated work?
3. Does human prompting constitute sufficient creative contribution?
4. Can AI systems legally be recognized as inventors?
5. Who owns AI-generated inventions?
6. Is training an AI model on copyrighted material infringement?
7. How should AI-generated works be distinguished from human-created works?
8. Who is liable when AI outputs infringe third-party rights?
9. How should ownership be determined when several parties contribute to AI development?
10. Are existing IPR laws sufficiently flexible to address AI technologies?

6. Objectives of the Study

The objectives of this article are:

1. To examine the relationship between AI and intellectual property law.

2. To analyze copyright challenges arising from generative AI.
3. To examine AI-related patent and inventorship issues.
4. To analyze ownership of AI-generated works.
5. To examine AI training and copyright.
6. To study AI-related infringement and liability.
7. To compare international approaches.
8. To evaluate India's existing IPR framework.
9. To identify legal gaps.
10. To propose legal and policy reforms.

7. Research Questions

The study addresses the following questions:

1. Should AI-generated works qualify for copyright protection?
2. What degree of human involvement should be required?
3. Can an AI system be recognized as an inventor?
4. Who should own AI-generated intellectual property?
5. How should AI training datasets be regulated?
6. How should infringement liability be allocated?
7. Is India's current IPR framework adequate?
8. What lessons can India learn from international approaches?
9. Should AI-specific intellectual property legislation be introduced?
10. How can innovation be encouraged while protecting existing creators?

8. Research Methodology

This research adopts a **doctrinal, analytical, and comparative legal methodology**.

The study considers:

- Intellectual property statutes.
- Judicial decisions.
- Government policies.
- International agreements.
- Regulatory materials.
- Academic literature.

- Comparative legal developments.

India is used as the principal jurisdiction, with comparative analysis of selected international approaches.

9. AI and Copyright Law

Copyright is one of the areas most directly affected by generative AI.

AI systems can produce:

- Articles.
- Stories.
- Poems.
- Paintings.
- Photographs.
- Music.
- Videos.
- Computer programs.

The central question is whether such outputs satisfy the legal requirements for copyright protection.

10. Human Authorship

Traditional copyright systems generally place human creativity at the center of authorship.

This creates a problem when an AI system generates content with limited human intervention.

Consider three situations:

Situation A

A human creates the entire work without AI assistance.

Situation B

A human uses AI as a tool but exercises substantial creative control.

Situation C

A user enters a simple prompt and the AI independently generates the final work.

The legal treatment of these situations may differ.

The stronger the meaningful human contribution, the stronger the argument for human authorship.

11. Originality

Copyright generally requires some degree of originality.

AI-generated content creates difficult questions concerning originality.

For example:

Prompt → AI Model → Generated Image

Who contributed the originality?

Potentially:

- The model developer.
- The prompt writer.
- The dataset creators.
- The AI system.
- The user who selected and edited the output.

The legal system must determine which contributions are legally relevant.

12. AI as a Copyright Author

One of the most controversial questions is whether AI itself should be treated as an author.

Under traditional legal concepts, copyright ownership is generally associated with legally recognized persons or entities.

An AI system does not ordinarily possess independent legal personality.

Recognizing AI as an author could therefore require fundamental changes to copyright law.

Possible arguments **for AI authorship** include:

- AI can generate complex works.
- Human intervention may sometimes be minimal.
- AI creativity may become increasingly autonomous.

Arguments **against AI authorship** include:

- AI lacks legal personality.
- AI cannot exercise legal rights independently.
- AI cannot bear legal responsibility.
- Copyright law historically seeks to incentivize human creativity.

13. Human-AI Collaboration

A more practical approach is to treat AI as a sophisticated tool.

Under this model, copyright may belong to the human who makes a sufficiently creative contribution.

Examples include:

- Selecting and arranging AI-generated materials.
- Editing generated content.

- Combining multiple outputs.
- Creating a detailed creative direction.
- Making substantial modifications.

This approach preserves the central role of human creativity while recognizing technological assistance.

14. Prompt Engineering and Copyright

Prompts can range from simple instructions to highly detailed creative directions.

For example:

Simple Prompt:

“Create a landscape.”

versus

Detailed Prompt:

A highly structured instruction specifying composition, perspective, lighting, characters, artistic features, narrative context, and visual arrangement.

The legal question is whether the prompt itself represents sufficient creative expression and whether the resulting output reflects that expression.

There is no universally settled answer.

15. AI Training and Copyright

AI systems often require large datasets for training.

Training datasets may contain:

- Books.
- Articles.
- Images.
- Music.
- Websites.
- Software code.

This creates an important legal issue:

Can copyrighted material be lawfully used to train AI systems?

The answer differs among jurisdictions.

Potential legal theories include:

- Fair use.
- Fair dealing.
- Specific text-and-data-mining exceptions.

- Licensing.
- Consent.
- Other statutory exceptions.

16. Copyright Infringement in AI Training

Potential infringement may arise when:

1. Copyrighted material is copied.
2. It is incorporated into a training dataset.
3. The model processes the material.
4. The resulting output reproduces protected expression.

The legal analysis may depend on:

- Purpose.
- Nature of the work.
- Amount used.
- Market impact.
- Applicable statutory exceptions.
- Licensing arrangements.

17. Text and Data Mining

Text and data mining involves automated analysis of large datasets.

It can support:

- Research.
- AI development.
- Innovation.

However, where copyrighted materials are involved, legal frameworks must balance:

Innovation + Research ↔ Copyright Protection

Some jurisdictions have introduced specific exceptions, while others rely on broader doctrines.

18. AI-Generated Copyright Infringement

An AI-generated output may unintentionally resemble protected material.

Potential examples include:

- Similar images.
- Similar musical compositions.

- Similar text.
- Similar software code.

The legal question is whether the output contains legally protected expression and whether the relevant legal requirements for infringement are satisfied.

19. Style Imitation

Generative AI can imitate the style associated with artists, writers, musicians, or designers.

This raises important questions.

Copyright generally protects expression rather than abstract ideas or styles.

Therefore:

Style Imitation $\neq$ Automatically Copyright Infringement

However, other legal doctrines may potentially apply depending on the circumstances, including:

- Passing off.
- Trademark law.
- Unfair competition.
- Personality or publicity rights.
- Contractual restrictions.

20. AI and Moral Rights

Moral rights can protect interests such as:

- Attribution.
- Integrity of a work.

AI creates new questions concerning:

- Attribution of AI-assisted works.
- Misrepresentation of authorship.
- Unauthorized alteration.
- Attribution of human contributors.

The legal treatment varies significantly between jurisdictions.

21. AI and Software Copyright

AI-generated software code creates additional challenges.

Questions include:

- Who owns generated code?
- Does generated code reproduce existing copyrighted code?

- Who is responsible for infringement?
- How should open-source licenses apply?

Software developers using AI coding tools should therefore conduct appropriate review before commercial deployment.

22. AI and Patent Law

AI is increasingly used in invention and research.

It may assist in:

- Drug discovery.
- Engineering.
- Material science.
- Chemical research.
- Software development.
- Product design.

This creates questions concerning inventorship and patent ownership.

23. Meaning of Inventorship

Patent systems generally require an inventor to be identified.

Traditionally, an inventor is a human being who contributes to the conception of an invention.

AI challenges this assumption where an AI system produces an inventive concept without direct human conception.

24. Can AI Be an Inventor?

The issue has received significant attention internationally.

A central legal question is:

Can an AI system be listed as the inventor on a patent application?

Many current patent systems require human inventorship.

The debate therefore centers on whether this requirement should change as AI becomes more autonomous.

25. The DABUS Litigation

The DABUS patent cases involving AI developer Stephen Thaler generated significant international discussion.

The applications identified the AI system DABUS as the inventor.

Courts and patent authorities in major jurisdictions have generally rejected the proposition that an AI system can itself be recognized as the inventor under existing patent law.

The cases demonstrate that current patent systems remain substantially human-centered.

A distinction should be made between:

AI as Inventor

AI independently generates the inventive concept.

AI-Assisted Human Inventor

AI assists a human who ultimately contributes to the inventive concept.

The second situation is more compatible with existing patent systems.

27. Patentability of AI-Generated Inventions

An invention involving AI must satisfy the applicable patentability requirements.

These generally include:

- Novelty.
- Inventive step/non-obviousness.
- Industrial applicability/usefulness.
- Patentable subject matter.

The fact that AI was used to create an invention should not automatically determine patentability.

28. Inventive Step and AI

AI can generate thousands of possible solutions rapidly.

This may create difficulties in assessing inventive step.

If AI can easily identify a particular solution, should that solution still be considered inventive?

Patent law may need to reconsider how “obviousness” is assessed in an AI-assisted innovation environment.

29. AI and Patent Examination

AI can also be used by patent offices to:

- Search prior art.
- Classify applications.
- Identify similar inventions.
- Assist examiners.

This can improve efficiency.

However, automated examination creates concerns about:

- Bias.
- Transparency.
- Errors.

- Explainability.

Human oversight remains important.

30. Ownership of AI-Generated Inventions

Even if an AI system is not recognized as an inventor, ownership remains an important question.

Potential owners include:

- AI developers.
- AI users.
- Employers.
- Companies.
- Investors.
- Contractual partners.

Ownership should ideally be determined through:

Applicable Law + Employment Rules + Contract + Human Contribution

31. Employer Ownership

Where employees use AI during employment, ownership may depend on:

- Employment contracts.
- IP assignment clauses.
- Applicable copyright or patent law.
- The nature of the employee's duties.

Organizations should establish clear internal policies governing AI-generated IP.

32. Contractual Ownership

AI service agreements should address:

- Ownership.
- Licensing.
- Permitted uses.
- Confidentiality.
- Training-data rights.
- Indemnification.
- Infringement responsibility.

Clear contractual provisions can reduce uncertainty.

33. AI and Trade Secrets

AI systems may process confidential business information.

Potential risks include:

- Uploading proprietary information.
- Unauthorized disclosure.
- Model retention.
- Third-party access.

Organizations should therefore establish rules concerning confidential data and AI systems.

34. AI and Trademark Law

AI-generated content can also affect trademarks.

Potential problems include:

- AI-generated logos.
- Trademark similarity.
- Brand impersonation.
- Synthetic advertising.
- Fake endorsements.

Trademark searches and human review remain important before commercial adoption.

35. AI and Industrial Designs

AI can generate:

- Product designs.
- Architectural concepts.
- Fashion designs.
- Packaging.

Questions arise concerning:

- Originality.
- Ownership.
- Registration.
- Human contribution.

Design law may therefore face challenges similar to copyright law.

36. Indian Copyright Framework

India's Copyright Act, 1957 provides the principal statutory framework for copyright protection.

The Act contains provisions concerning:

- Literary works.
- Dramatic works.
- Musical works.
- Artistic works.
- Cinematograph films.
- Sound recordings.
- Computer programs.

AI-generated works create interpretative questions concerning authorship and human contribution.

37. Computer-Generated Works in Indian Law

Indian copyright law contains provisions concerning computer-generated works.

The statutory framework has historically contemplated situations involving computer-generated works and identifies a person associated with their creation.

However, modern generative AI creates new questions that were not necessarily contemplated when the relevant statutory language was developed.

This creates scope for judicial interpretation and legislative clarification.

38. Indian Patent Framework

The Patents Act, 1970 provides India's principal patent framework.

Important concepts include:

- Invention.
- Novelty.
- Inventive step.
- Industrial applicability.
- Patentable subject matter.
- Inventorship.
- Ownership.

The framework traditionally operates around human inventorship.

39. AI and Indian Patent Applications

Indian applicants using AI in research should distinguish between:

AI Assistance → Human Inventive Contribution

and

AI Autonomous Generation → No Clear Human Inventor

The first is more easily accommodated within traditional patent principles.

The second creates significant unresolved legal questions.

40. Indian Judicial Perspective

Indian courts have increasingly dealt with technology-related disputes involving:

- Copyright.
- Software.
- Digital platforms.
- Online infringement.
- Personality rights.

However, comprehensive judicial principles specifically governing autonomous AI-generated works and inventions are still developing.

Future litigation may significantly shape Indian AI-IP jurisprudence.

41. European Union Approach

The European Union has adopted significant regulatory measures concerning AI and digital technologies.

EU copyright law includes provisions relevant to text and data mining.

The EU framework increasingly emphasizes:

- Transparency.
- Accountability.
- Risk management.
- Protection of rights.

AI regulation and copyright regulation are therefore becoming increasingly interconnected.

42. United States Approach

The United States has traditionally placed substantial emphasis on human authorship for copyright protection.

U.S. copyright authorities have indicated that works generated without sufficient human creative contribution may not qualify for copyright protection.

However, AI-assisted works may receive protection to the extent that protectable human creativity is present.

Patent law similarly remains centered on human inventorship.

43. United Kingdom Approach

The United Kingdom has historically maintained statutory provisions addressing computer-generated works.

This makes the UK approach particularly relevant to the debate concerning AI-generated copyright.

However, modern generative AI raises questions concerning whether existing concepts remain appropriate.

44. International Intellectual Property Framework

International intellectual property law is significantly influenced by:

- World Intellectual Property Organization (WIPO).
- TRIPS Agreement.
- Berne Convention.
- Paris Convention.

These frameworks were developed before modern generative AI.

Consequently, international harmonization may become increasingly important.

45. WIPO and Artificial Intelligence

WIPO has undertaken extensive policy discussions concerning AI and intellectual property.

Major questions include:

- AI inventorship.
- AI-generated works.
- Training data.
- Copyright.
- Patents.
- Licensing.
- Innovation policy.

International dialogue is essential because AI operates across borders.

46. AI Training and Licensing Models

One possible solution to copyright disputes is the development of licensing markets for AI training.

Possible approaches include:

- Direct licensing.
- Collective licensing.
- Extended licensing.
- Opt-in systems.
- Opt-out mechanisms.
- Dataset licensing.

The appropriate model must balance creator compensation with technological innovation.

47. Transparency of Training Data

AI developers may face increasing pressure to disclose information about training datasets.

Transparency can help:

- Identify copyrighted material.
- Facilitate licensing.
- Assess infringement.
- Improve accountability.

However, complete disclosure may conflict with:

- Trade secrets.
- Security.
- Competitive interests.

A balanced disclosure framework is therefore necessary.

48. Liability for AI-Generated Infringement

Potentially responsible parties may include:

- AI developers.
- Platform operators.
- Users.
- Businesses deploying AI.

Liability should consider:

1. Control over the system.
2. Knowledge of infringement.
3. Ability to prevent infringement.
4. Human involvement.

5. Contractual allocation of responsibility.

49. AI Output Verification

Organizations should not assume that AI-generated content is automatically free from legal risks.

Before commercial use, organizations should consider:

- Copyright review.
- Trademark searches.
- Patent searches.
- Confidentiality review.
- Data-protection review.

Human verification remains essential.

50. Ownership Uncertainty

AI creates an ownership gap.

Traditional model:

Human Creator → IP Right

AI-assisted model:

Human + AI → IP Right?

Autonomous model:

AI → IP Right?

The third scenario presents the greatest legal difficulty.

51. Should AI Receive Legal Personality?

One proposal is to recognize AI systems as limited legal persons.

Potential advantages include:

- Clear attribution.
- Recognition of autonomous activity.

However, significant problems arise.

AI systems:

- Cannot meaningfully own property in the conventional sense.
- Cannot independently enforce rights.
- Cannot bear ordinary legal responsibility.
- May not have economic interests independent of their owners.

Therefore, granting AI independent IP personality may be premature.

52. Human-Centered IP Model

A practical alternative is to maintain human-centered IP law while recognizing AI-assisted creativity.

Under this model:

AI = Tool

Human = Legal Author/Inventor

where the human contribution satisfies legal requirements.

This approach minimizes disruption to existing legal principles.

53. AI-Assisted Authorship Test

A potential legal test could consider:

1. Was there meaningful human creative input?
2. Did the human select or arrange the output?
3. Did the human materially edit the output?
4. Did the human determine substantial expressive elements?
5. Is the final work sufficiently original?
6. Can the human identify their contribution?

The greater the human contribution, the stronger the claim to protection.

54. AI-Assisted Inventorship Test

For patent law, authorities could consider:

1. Who conceived the inventive concept?
2. Did the human understand the invention?
3. Did the human make a significant contribution?
4. Was AI merely an assisting tool?
5. Was the invention independently validated by the human inventor?

This would preserve human inventorship while allowing extensive AI assistance.

55. AI and Open-Source Licensing

AI-generated software can create complex licensing issues.

An AI system may produce code resembling open-source software.

Potential consequences include:

- Attribution requirements.

- License obligations.
- Source-code disclosure requirements.
- Commercial-use restrictions.

Organizations should therefore implement code-review procedures.

56. AI and Academic Publishing

AI-generated academic content raises questions concerning:

- Authorship.
- Originality.
- Plagiarism.
- Research integrity.
- Attribution.

Academic publishers increasingly require disclosure of AI assistance.

Human researchers should remain responsible for:

- Accuracy.
- Citations.
- Originality.
- Legal compliance.

57. AI and Creative Industries

Creative sectors affected include:

- Film.
- Music.
- Publishing.
- Advertising.
- Fashion.
- Gaming.

AI may reduce production costs but also create disputes concerning:

- Creator compensation.
- Unauthorized training.
- Style imitation.
- Employment.

- Licensing.

58. Economic Impact

AI can significantly increase innovation and productivity.

Potential benefits include:

- Lower research costs.
- Faster product development.
- Increased creative production.
- Improved patent discovery.
- Greater access to innovation tools.

However, uncertainty concerning IP ownership can discourage investment.

Clear legal rules can therefore promote innovation.

59. Challenges for Small Businesses

Small businesses may face difficulties understanding:

- AI licensing.
- Copyright risks.
- Patent ownership.
- Training-data restrictions.

Simplified regulatory guidance is therefore necessary.

60. Challenges for Content Creators

Creators may face:

- Unauthorized use of works for training.
- AI imitation.
- Reduced licensing opportunities.
- Difficulty identifying infringement.

Effective enforcement mechanisms are therefore important.

61. Challenges for AI Developers

AI developers face uncertainty concerning:

- Training datasets.
- Copyright liability.

- Output infringement.
- Licensing.
- Transparency.
- Contractual responsibility.

Clear regulatory standards can reduce compliance uncertainty.

62. Challenges for Patent Applicants

Patent applicants using AI must carefully document:

- Human contribution.
- Research processes.
- Inventive decisions.
- AI assistance.

Detailed records can help establish inventorship and ownership.

63. Documentation and Record-Keeping

Organizations should maintain records concerning:

- AI systems used.
- Prompts.
- Human edits.
- Training data sources where known.
- Licensing arrangements.
- Output selection.
- IP searches.

Documentation can become valuable evidence in future disputes.

64. Need for AI-IP Policies

Businesses should develop internal policies addressing:

1. Approved AI tools.
2. Confidential information.
3. Copyrighted content.
4. Ownership.
5. Human review.
6. Patent inventorship.

7. Record-keeping.
8. Third-party licensing.
9. Data security.
10. Employee responsibilities.

65. Proposed Regulatory Framework

A modern AI-IP framework should include:

Human-Centered Authorship

Copyright should generally require meaningful human creativity.

Human Inventorship

Patent inventorship should remain human unless legislation deliberately changes the principle.

Training Transparency

Developers should provide appropriate information concerning training practices.

Licensing Mechanisms

Rights holders should have workable licensing options.

Output Accountability

Commercial users should conduct reasonable IP checks.

Risk-Based Regulation

Higher-risk AI applications should face stronger safeguards.

66. Proposed AI Copyright Disclosure System

A possible system could require commercial AI-generated works to disclose:

AI-Assisted Creation

where AI made a material contribution.

This would improve:

- Transparency.
- Consumer awareness.
- Attribution.
- Legal analysis.

Disclosure should not necessarily determine copyrightability.

67. Proposed AI Training Registry

A voluntary or regulatory registry could record:

- Major training datasets.
- Licensing arrangements.
- Copyright compliance measures.
- Data-governance practices.

This could improve transparency while protecting legitimate trade secrets.

68. Collective Licensing

Collective licensing organizations could negotiate rights for large-scale AI training.

Advantages include:

- Reduced transaction costs.
- Creator compensation.
- Easier compliance.
- Scalable licensing.

This may be particularly useful for large datasets.

69. International Harmonization

AI development is inherently global.

Different national rules may create:

- Regulatory fragmentation.
- Forum shopping.
- Compliance costs.

International organizations should therefore work toward common principles concerning:

- AI authorship.
- Inventorship.
- Training data.
- Licensing.
- Transparency.

70. Recommendations for India

India should consider:

1. Clarifying AI-generated copyright ownership.
2. Clarifying the role of human contribution.
3. Developing guidance on AI training and copyright.

4. Clarifying AI-assisted patent inventorship.
5. Encouraging transparent licensing.
6. Strengthening judicial expertise.
7. Developing AI-IP policy guidelines.
8. Supporting creators affected by AI.
9. Promoting responsible AI innovation.
10. Coordinating IPR and AI regulation.
11. Encouraging industry standards.
12. Promoting international cooperation.

71. Recommendations for Businesses

Businesses should:

- Establish AI-use policies.
- Review AI-generated content.
- Maintain IP records.
- Conduct copyright checks.
- Conduct trademark searches.
- Document human contributions.
- Clarify employee ownership.
- Review AI-provider contracts.
- Protect confidential information.
- Obtain appropriate licenses.

72. Recommendations for AI Developers

AI developers should:

1. Establish responsible data-governance systems.
2. Evaluate training-data rights.
3. Develop copyright-compliance processes.
4. Provide appropriate transparency.
5. Establish output safeguards.
6. Maintain documentation.

7. Develop mechanisms for handling infringement complaints.
8. Clarify ownership and licensing terms.
9. Protect confidential information.
10. Engage with rights holders.

73. Recommendations for Creators

Creators should:

- Maintain records of original works.
- Monitor unauthorized AI use.
- Understand licensing options.
- Consider technological protection mechanisms.
- Clearly define contractual AI-use rights.
- Review platform terms.
- Preserve evidence of creation.

74. Recommendations for Patent Applicants

Patent applicants using AI should:

1. Maintain invention records.
2. Identify human contributors.
3. Document AI assistance.
4. Evaluate novelty.
5. Conduct prior-art searches.
6. Maintain confidentiality before filing.
7. Obtain professional patent advice.
8. Ensure inventorship declarations are accurate.

75. Ethical Considerations

AI and intellectual property also raise ethical issues.

These include:

- Fair compensation.
- Creator consent.
- Transparency.
- Attribution.

- Cultural appropriation.
- Bias.
- Economic displacement.

Legal regulation should therefore be supported by ethical governance.

76. Economic Policy Considerations

Overly restrictive AI regulation may reduce innovation.

Conversely, inadequate protection may undermine creators and inventors.

The appropriate objective is:

Innovation + Fair Compensation + Legal Certainty + Public Interest

A balanced approach can encourage responsible technological development.

77. Limitations of the Study

This study has several limitations:

1. AI technology is rapidly evolving.
2. Judicial decisions remain limited in some areas.
3. National laws differ significantly.
4. International consensus is developing.
5. AI training practices may not be fully transparent.
6. The study primarily uses doctrinal and comparative methods.

78. Scope for Future Research

Future studies may examine:

- Generative AI and copyright infringement.
- AI training and fair use/fair dealing.
- AI inventorship in patent law.
- AI and trade secrets.
- AI-generated software.
- AI and trademark law.
- AI and personality rights.
- AI and employment-related IP.
- AI and academic publishing.
- AI and collective licensing.

- AI-generated music.
- AI-generated visual art.
- AI and pharmaceutical patents.

Empirical research involving creators, AI developers, patent professionals, lawyers, and businesses would further strengthen the academic understanding of these issues.

79. Conclusion

Artificial Intelligence is fundamentally challenging traditional assumptions underlying intellectual property law. Copyright and patent systems were developed around the concept of human creativity and human invention, while modern AI systems are increasingly capable of producing sophisticated creative and technical outputs.

The most important legal questions concern:

Authorship + Originality + Inventorship + Ownership + Training Data + Infringement + Liability

Current legal systems generally remain centered on human legal actors. This approach provides stability and avoids the difficult consequences of granting independent legal personality to AI systems.

The emerging legal consensus in many jurisdictions suggests that AI should primarily be treated as a sophisticated technological tool rather than an independent owner of intellectual property. Where humans make meaningful creative or inventive contributions, existing copyright and patent principles can potentially accommodate AI-assisted creation.

However, completely autonomous AI-generated works create more difficult questions.

Copyright law must determine whether protection should exist where human creativity is insufficient. Patent law must determine how inventorship should be attributed when AI substantially contributes to an invention. At the same time, AI training raises significant questions concerning the lawful use of copyrighted works.

A sustainable legal framework should therefore adopt a **human-centered but technology-aware approach**.

The proposed framework should be based on:

Human Contribution + Transparency + Accountability + Licensing + Fair Compensation + Innovation

India has an opportunity to develop a balanced AI-IP framework that protects creators and inventors while supporting technological innovation. Rather than immediately creating a separate legal personality for AI, lawmakers should clarify existing principles and establish targeted rules for AI-assisted creation, training data, disclosure, licensing, and ownership.

International cooperation is equally important because AI development and intellectual-property markets are inherently global.

Ultimately, the objective of intellectual property law should remain unchanged: **to encourage creativity and innovation while ensuring that legal rights are allocated fairly and predictably**.

AI does not eliminate the need for intellectual property law. Instead, it requires intellectual property law to reconsider how **human creativity, technological assistance, ownership, and innovation** should interact in the digital age.

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