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The Use of Interdisciplinary Approach in International Law Study in the Digital Era 5.0: Highlights and Future Research Directions

Abstract

International law faces numerous complex and novel challenges in the context of globalization and rapid technological advancements. This paper analyses the importance and potential of applying an interdisciplinary approach in international law research in the Digital Era 5.0. The results show that this method can enhance in-depth research on the relationship between international law and related fields, effectively address emerging legal challenges, improve the practicality of legal proposals, promote international cooperation in research, and enhance the ability to resolve international conflicts and disputes. The paper also identifies future research trends, including the application of artificial intelligence, blockchain, and other emerging technologies in international law research. The paper emphasises the development and refinement of interdisciplinary research methods to effectively respond to international legal challenges in the Digital Era 5.0.

KEYWORDS: Digital Era 5.0, interdisciplinary approach, international law study, research methods

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1 | Introduction

In the era of globalization and rapid technological advancement, international law faces unprecedented, novel, and complex challenges. The emergence of the Digital Era 5.0 (or Technology 5.0), also known as the Super Smart Society, has created a multidimensional legal landscape, requiring researchers to adopt new approaches to understanding and addressing international legal issues comprehensively. Digital 5.0 was first introduced in Japan's 5th Science and Technology Basic Plan in 2016, describing a future society where humans and machines collaborate harmoniously to create an innovative, sustainable, and human-centered living environment. This concept surpasses Industry 4.0, focusing on integrating advanced technologies such as artificial intelligence (AI), the Internet of Things (IoT), robotics, and biotechnology into all aspects of social life. According to Fukuyama, this has created a diverse and complex legal environment, compelling researchers to adopt new approaches to understand and address international legal issues comprehensively.^[1] Applying an interdisciplinary approach to international law research has become more urgent than ever in this context. Schwab emphasizes that the current situation requires researchers to employ an interdisciplinary approach to comprehensively and effectively grasp and handle international legal issues.^[2] This method enables researchers to integrate knowledge, methodologies, and perspectives from various fields, such as technology, ethics, economics, and social sciences, to address complex legal issues on a global scale.

This paper analyses the importance and potential of applying an interdisciplinary approach to international law research in the Digital Era 5.0. The following key questions are addressed: (1) How can the interdisciplinary approach contribute to a better understanding of emerging legal challenges in the Digital Era 5.0? (2) Which areas of international law can benefit the most from an interdisciplinary approach in the context of Technology 5.0? (3) How can interdisciplinary research in international law effectively contribute to policy development and addressing global issues in the Digital Era 5.0?

¹ Mieko Fukuyama, "Society 5.0: Aiming for a New Human-Centered Society" *Japan Spotlight* 1 (2018): 47-50.

² Klaus Schwab, *The Fourth Industrial Revolution* (Geneva: World Economic Forum, 2016).

To answer these questions, the main research methods used in this paper are as follows: document analysis (this is the primary method, focusing on researching and analyzing secondary sources such as scientific articles, monographs, policy reports, and theses related to the topic); comparative analysis (used to compare different approaches to international law research, evaluate the effectiveness of the interdisciplinary approach, and compare research trends in other countries); case study analysis (applied to illustrate specific uses of the interdisciplinary approach in cross-border data management, artificial intelligence regulations, and cybersecurity); trend analysis: (aimed at identifying emerging trends and predicting potential future developments of the interdisciplinary approach).

This paper addresses the above questions and provides an overview of the role and potential of the interdisciplinary approach in shaping the future of international law research in the Digital Era 5.0.

2 | Interdisciplinary Approach in International Law Research – A Literature Review

Taekema and van Klink describe the interdisciplinary approach to legal research as integrating methods, concepts, or theories from at least two fields to address a specific legal issue.^[3] These scholars emphasize the difference between multidisciplinary and interdisciplinary research, where interdisciplinary research requires a more profound combination of disciplines. They see interdisciplinary legal research as an approach to law from the perspective of other fields, such as sociology, philosophy, and economics. Successful interdisciplinary approaches to law have led to significant advances in many areas. For example, the intersection of law and economics has given rise to influential theories and policy frameworks, shaping antitrust law and regulatory practices.^[4] Similarly, according to

³ Sanne Taekema and Bart van Klink, “On the Border: Limits and Possibilities of Interdisciplinary Research,” [in:] *Law and Method: Interdisciplinary Research into Law*, ed. Bart van Klink and Sanne Taekema (Tübingen: Mohr Siebeck, 2011), 7-32.

⁴ Richard A. Posner, *Economic Analysis of Law* (New York: Wolters Kluwer, 2014).

Lessig, the fields of law and technology have provided essential insights into intellectual property rights and Internet governance.^[5]

Banakar and Travers propose that socio-legal research is a form of interdisciplinary research combining legal studies and social sciences.^[6] They emphasize that this is not merely the application of social science methods to legal issues but a deep integration between the two fields. Siems defines interdisciplinary legal research as using methods or knowledge from other disciplines to study law.^[7] He describes many ways of integrating different disciplines into legal research, from using concepts to developing entirely new theories based on the combination of law and other disciplines.

Overall, the multidisciplinary approach to law involves the integration of knowledge from various fields, such as technology, ethics, economics and social sciences, into legal research; the use of research methods from different disciplines, such as quantitative analysis, computer modelling and qualitative research; the examination of legal issues in a broader context, taking into account social, economic and technological factors; and the emphasis on collaboration between experts from different fields.

In international law, Berman invents the concept of global legal pluralism, suggesting that law is not solely the domain of nation-states in our interconnected world.^[8] Instead, multiple overlapping legal and quasi-legal systems exist, including international, transnational, religious, and indigenous law. So, legal traditions define the multidisciplinary approach as the process of integrating knowledge, methods, and perspectives from various disciplines to address complex legal issues on an international scale. Jessup argues that this approach not only broadens the scope of research but also creates a more profound and comprehensive understanding of international legal issues.^[9] Many scholars have applied the multidisciplinary approach in international law research. Zumbansen studies the concept of transnational law from a socio-legal theoretical perspective, proposing

⁵ Lawrence Lessig, *Code: Version 2.0* (New York: Basic Books, 2006).

⁶ *Theory and Method in Socio-Legal Research*, ed. Reza Banakar, Max Travers (Oxford: Hart Publishing, 2005).

⁷ Mathias M. Siems, "The Taxonomy of Interdisciplinary Legal Research: Finding the Way Out of the Desert" *Journal of Commonwealth Law and Legal Education*, No. 1 (2009): 5-17.

⁸ Paul Schiff Berman, *Global Legal Pluralism: A Jurisprudence of Law Beyond Borders* (Cambridge: Cambridge University Press, 2018).

⁹ Philip C. Jessup, *Transnational Law* (New Haven: Yale University Press, 1956).

that the combination of legal and sociological research can help better understand the complex nature of law in the context of globalization.^[10] Orford analyses the relationship between history and international law, emphasizing the importance of considering political and social factors in forming international law.^[11] Bianchi studies international law by exploring philosophy, sociology, and political science theories.^[12] He suggests that *International Law Theories* is intended to spur students' and scholars' intellectual curiosity and cause them to reflect more generally on how knowledge is formed and used in the international scientific field. Meanwhile, Roberts et al. explore how different countries and legal systems interpret and apply international law, introducing a comparative approach to international law research and combining comparative and international law methods.^[13] In the context of the digital age, the impact on international law has been clarified. According to Tsagourias and Buchan, in the digital technology era, traditional legal concepts and principles are being transformed, new areas of international law are emerging, and long-standing notions of jurisdiction and enforcement are being challenged in the borderless digital realm.^[14] The digital era has created new legal challenges, such as cross-border data flows and privacy issues, cybersecurity and state responsibility in cyberspace, regulation of emerging technologies like AI and autonomous systems, and digital sovereignty and internet governance. Merry discusses the challenges and implications of using quantitative measures to assess complex social issues like human rights violations, gender-based violence, and human trafficking.^[15] She combines methods from anthropology and sociology to study the impact of international law on local communities in the context of globalization and digitalization. Ryngaert and Hora Siccama

¹⁰ Peer Zumbansen, "Transnational Law as Socio-Legal Theory and Critique: Prospects for 'Law and Society' in a Divided World" *Buffalo Law Review*, No. 3 (2019): 909-962.

¹¹ Anne Orford, "International Law and the Limits of History", [in:] *The Law of International Lawyers: Reading Martti Koskenniemi*, ed. Wouter Werner, Marieke de Hoon, and Alexis Galán (Cambridge: Cambridge University Press, 2017), 297-320.

¹² Andrea Bianchi, *International Law Theories: An Inquiry into Different Ways of Thinking* (Oxford: Oxford University Press, 2016).

¹³ Anthea Roberts et al., *Comparative International Law* (Oxford: Oxford University Press, 2018).

¹⁴ *Research Handbook on International Law and Cyberspace*, ed. Nicholas Tsagourias and Russell Buchan (Cheltenham: Edward Elgar Publishing, 2015).

¹⁵ Sally Engle Merry, *The Seductions of Quantification: Measuring Human Rights, Gender Violence, and Sex Trafficking* (Chicago: University of Chicago Press, 2020).

discuss the concept of extraterritorial law enforcement and its implications for sovereignty and self-defense in international law. They find that international legal issues in the Digital Era 5.0 are often cross-border and multi-dimensional.^[16] The multidisciplinary approach helps researchers to better respond to these challenges.

3 | The Importance of an Interdisciplinary Approach in International Law Research in the Digital Era 5.0

3.1. Enhancing In-Depth Research on the Relationship Between International Law and Related Fields

The interdisciplinary approach allows researchers to better assess the real-world impact of international law. By combining research methods from the social sciences, economics, and policy evaluation, researchers can more comprehensively measure and analyze the effects of international legal regulations. For example, when facing complex legal challenges in the Digital Era 5.0, integrating knowledge from various fields such as information technology, artificial intelligence, ethics, and social sciences helps researchers gain a more holistic view of the issue, according to Ryngaert and Hora Siccama.^[17] In studying the impact of international trade agreements, combining legal analysis with economic and sociological analysis helps researchers more comprehensively assess the effects of these agreements on participating countries' economies, societies, and environments, according to Shaffer.^[18] According to Schmitt, combining computer science, international relations, and international law knowledge can help develop

¹⁶ Cedric Ryngaert, Duco W. Hora Siccama, "Extraterritorial Law Enforcement: The Changing Nature of Sovereignty and Self-Defense" *Leiden Journal of International Law*, no. 4 (2018): 795-819.

¹⁷ Ryngaert, Hora Siccama, "Extraterritorial Law Enforcement".

¹⁸ Gregory Shaffer, "Legal Realism and International Law", [in:] *Concepts for International Law: Contributions to Disciplinary Thought*, ed. Jean d'Aspremont and Sahib Singh (Cheltenham: Edward Elgar Publishing, 2019), 671-688.

more effective strategies for cross-border cyber threats.^[19] Schmitt has comprehensively demonstrated the application of existing international law to cyberspace activities, including sovereignty, state responsibility, human rights, and the law of armed conflict. Similarly, integrating knowledge from environmental science, economics, and public policy in international environmental law can help build more effective legal mechanisms to address global climate change.^[20] According to Bodansky, evaluating the legal and policy aspects of the agreement will contribute to assessing its potential and limitations in addressing global climate change, providing a better understanding of the legal and political implications of the Paris Agreement.^[21]

3.2. Addressing Emerging International Legal Challenges in the Context of the Digital Era 5.0

The Digital Era 5.0 is creating many new legal challenges that traditional research methods may not be sufficient to address. A multidisciplinary approach helps international legal researchers keep up with the rapid development of technology and better understand its impact on the law, according to Selin et al.^[22] For example, in artificial intelligence (AI), combining knowledge from computer science, ethics, and law allows researchers to propose appropriate legal frameworks to manage the development and use of AI at the international level. This is particularly important when considering legal responsibility for AI-made decisions or protecting human rights in increasingly developing AI, according to Smuha.^[23] Kuner et al.'s research provides a detailed analysis of all aspects of the GDPR, including its significance and impact on international law and global business

¹⁹ Tallinn Manual 2.0 on the International Law Applicable to Cyber Operations, ed. Michael N. Schmitt (Cambridge: Cambridge University Press, 2018).

²⁰ Daniel Bodansky, "The Paris Climate Change Agreement: A New Hope?" *American Journal of International Law*, No. 2 (2016): 288-319.

²¹ Bodansky, "The Paris Climate Change Agreement".

²² Cynthia Selin et al., "Experiments in Engagement: Designing Public Engagement with Science and Technology for Capacity Building" *Public Understanding of Science*, No. 6 (2017): 634-649.

²³ Nathalie A. Smuha, "From a 'Race to AI' to a 'Race to AI Regulation': Regulatory Competition for Artificial Intelligence" *Law, Innovation and Technology*, No. 1 (2021): 57-84.

practices.^[24] It is an excellent example of a multidisciplinary approach to international legal research, combining perspectives from law, technology, and public policy.

According to Weber and Studer, the proliferation of the Internet of Things (IoT) has significant implications for international law, especially regarding international data protection for privacy.^[25] It gives rise to legal challenges and considerations surrounding cybersecurity concerning the growing network of internet-connected devices. The cross-border nature of IoT data flows will challenge traditional jurisdiction and data sovereignty concepts. Therefore, international legal frameworks must evolve to address the complexities of managing connected devices operating across national borders. Meanwhile, De Filippi and Wright argue that blockchain technology has the potential to revolutionize many aspects of international law and governance.^[26] Smart contracts and self-executing agreements on blockchain platforms can streamline international trade processes and enhance transparency in cross-border transactions. However, the legal status and enforceability of smart contracts across jurisdictions remains uncertain and requires further research. Similarly, the rise of cryptocurrencies and decentralized finance (DeFi) systems based on blockchain technology poses challenges for international financial regulation. Traditional frameworks for combating money laundering and terrorist financing may need to be adjusted to address the unique characteristics of blockchain-based financial systems, according to Houben and Snyers.^[27]

²⁴ *The EU General Data Protection Regulation (GDPR): A Commentary*, ed. Christopher Kuner, Lee A. Bygrave, Christopher Docksey (Oxford: Oxford University Press, 2021).

²⁵ Rolf H. Weber, Evelyne Studer, "Cybersecurity in the Internet of Things: Legal Aspects" *Computer Law & Security Review*, No. 5 (2016): 715-728.

²⁶ Primavera De Filippi and Aaron Wright, *Blockchain and the Law: The Rule of Code* (Cambridge, MA: Harvard University Press, 2018).

²⁷ Robby Houben, Alexander Snyers, *Cryptocurrencies and Blockchain: Legal Context and Implications for Financial Crime, Money Laundering and Tax Evasion* (Brussels: European Parliament, 2018).

3.3. Enhancing the Practicality and Feasibility of Proposals in the Field of International Law

The interdisciplinary approach helps international law researchers to develop more practical and feasible legal proposals. Researchers can better assess the feasibility and potential impact of their legal proposals by combining knowledge from economics, political science and international relations. For instance, when studying international environmental law in the context of the Digital Era 5.0, integrating knowledge from environmental science, economics, and international relations helps researchers propose legal solutions that are both environmentally practical and economically and politically feasible.^[28] In researching privacy rights in the digital age, the integration of computer science, psychology and ethics can help international legal scholars develop more comprehensive legal frameworks to protect privacy in the context of new technologies.^[29] When researching privacy rights in the digital age, integrating computer science, psychology, and ethics knowledge can help international law researchers develop more comprehensive legal frameworks to protect privacy in the context of new technologies.^[30] The development of business models based on e-commerce and digital platforms requires an understanding of law, digital economics and blockchain technology in international trade law. The multidisciplinary approach enables international law researchers to fully assess the impact of these new technologies on the global trading system and propose appropriate legal approaches.^[31]

²⁸ Bodansky, “The Paris Climate Change Agreement”.

²⁹ Catelijne Cath et al., “Artificial Intelligence and the ‘Good Society’: The US, EU, and UK Approach” *Science and Engineering Ethics*, No. 2 (2018): 505-528.

³⁰ Kuner, Bygrave, Docksey, *The EU General Data Protection Regulation (GDPR)*.

³¹ *Trade Governance in the Digital Age: World Trade Forum*, ed. Mira Burri, Thomas Cottier (Cambridge: Cambridge University Press, 2015).

3.4. Strengthening International Cooperation in International Law Research

The interdisciplinary approach promotes collaboration between researchers from different countries and cultures. This is particularly important in international legal research, where understanding different legal systems and cultures is essential. The interdisciplinary approach helps to build bridges between professional communities, promoting practical cooperation in addressing global legal challenges.^[32] For example, in international human rights law research, combining knowledge from anthropology, sociology, and comparative law helps researchers to better understand how human rights concepts are understood and applied in different cultures. This leads to the development of international human rights standards that are more comprehensive and culturally appropriate.^[33] In *Global Internet Governance*, Mueller shows how Internet governance poses novel and fascinating governance issues that give rise to global politics and new transnational institutions.^[34] Thus, he suggests combining knowledge from technology, public policy, and international law can facilitate the development of effective and widely accepted governance mechanisms. The prevalence of extensive data analysis in international relations and diplomacy provides new tools for predicting conflicts, assessing compliance with international agreements, and informing policy decisions. However, using big data also raises concerns about privacy, data protection, and the potential for algorithmic discrimination, requiring nations and researchers to increase cooperation to resolve this issue.^[35] One of the legal challenges and considerations surrounding cybersecurity in the context of the Internet of Things (IoT) is the combat against cybercrime. Therefore, international cooperation in combating cybercrime is essential,

³² Kenneth W. Abbott, Duncan Snidal, "The Governance Triangle: Regulatory Standards Institutions and the Shadow of the State", [in:] *Research Handbook on Global Governance*, ed. Ngaire Woods (Cheltenham: Edward Elgar Publishing, 2009), 44-88.

³³ Merry, *The Seductions of Quantification*.

³⁴ Milton L. Mueller, *Networks and States: The Global Politics of Internet Governance* (Cambridge, MA: MIT Press, 2010).

³⁵ Danah Boyd, Kate Crawford, "Critical Questions for Big Data: Provocations for a Cultural, Technological, and Scholarly Phenomenon" *Information, Communication & Society*, No. 5 (2012): 662-679.

but differences in national legal systems and definitions of cybercrime pose challenges to practical cooperation. The Budapest Convention on Cybercrime provides a framework for international cooperation, but its global application remains limited.^[36]

3.5. Enhancing the Ability to Resolve International Conflicts and Disputes

In the Digital Era 5.0, international conflicts and disputes are becoming increasingly complex, involving various fields such as technology, economics, and the environment. The multidisciplinary approach helps international law researchers develop more effective dispute-resolution mechanisms. For example, combining economics, international relations, and international law knowledge in international investment dispute resolution helps researchers develop fairer and more effective mechanisms.^[37] In his study, Mitchell cites that negotiators in the Northern Ireland peace process had to draw on skills from many fields, such as diplomacy (negotiation), psychology (building trust), and law (drafting agreements), leading to the signing of the Belfast Agreement (Good Friday Agreement) in 1998.^[38] In the effort to build peace in post-genocide Rwanda, combining methods from psychology (healing trauma), anthropology (understanding local culture), and law (establishing Gacaca courts) helped create a model that was unique and appropriate to the local context, according to Clark.^[39] According to Tessler, in the Israeli-Palestinian conflict, combining knowledge from history (the historical origins of the conflict), religion (the role of sacred sites), geopolitics (the interests of great powers), and economics (disputes over resources) helps to understand the complexity of this issue

³⁶ Weber and Studer, “Cybersecurity in the Internet of Things”.

³⁷ *International Investment Law and Development: Bridging the Gap*, ed. Stephan W. Schill, Christian J. Tams, and Rainer Hofmann (Cheltenham: Edward Elgar Publishing, 2015).

³⁸ George J. Mitchell, *Making Peace* (Berkeley: University of California Press, 2001).

³⁹ Phil Clark, *The Gacaca Courts, Post-Genocide Justice and Reconciliation in Rwanda: Justice Without Lawyers* (Cambridge: Cambridge University Press, 2010).

better.^[40] It is significant to note that combining approaches from multiple disciplines can also lead to new and innovative solutions, thus contributing to the peaceful and effective settlement of disputes. For example, in the Colombian conflict resolution effort, combining approaches from psychology (trauma treatment), economics (economic reintegration of ex-combatants), and transitional justice contributed to the 2016 peace agreement.^[41]

4 | Some Notes on Future Research Directions on International Law in the Digital Era 5.0 Context

As we move into the Digital Era 5.0, international law is rapidly evolving to meet new challenges and opportunities. This paper outlines some emerging trends and potential areas for interdisciplinary research in international law:

- **Quantum Computing and Cybersecurity Law:** The advent of quantum computing poses significant challenges to current cybersecurity measures and legal frameworks. Thus, there is a need for new legal frameworks for data protection and cybersecurity. Research in this area could focus on developing international standards for quantum-resistant encryption, adapting existing data protection laws (e.g., GDPR) to quantum computing capabilities, and analyzing the impact of quantum computing on international cybersecurity treaties. These efforts could lead to new international agreements on quantum technology governance and data protection standards.
- **Neurotechnology and Human Rights Law:** Advances in brain-computer interfaces and neurotechnology raise new questions about cognitive liberty, mental privacy, and the potential need for “neuro rights” in international human rights law.^[42] Research directions

⁴⁰ Mark Tessler, *A History of the Israeli-Palestinian Conflict* (Bloomington: Indiana University Press, 2009).

⁴¹ Virginia M. Bouvier, *Peace Talks with the ELN* (Washington, DC: United States Institute of Peace, 2015).

⁴² Marcello Ienca, Roberto Andorno, “Towards New Human Rights in the Age of Neuroscience and Neurotechnology” *Life Sciences, Society and Policy*, No. 1 (2017): 5.

may include developing legal frameworks to protect cognitive liberty and mental privacy, examining the legal and ethical implications of cognitive enhancement technologies, and establishing international governance structures for neurotechnology research and application. This research could lead to new categories of human rights and international guidelines for the development and use of neurotechnologies.

- **Synthetic Biology and International Biosecurity:** Synthetic biology is an interdisciplinary area that involves redesigning organisms for valuable purposes by engineering them to have new abilities. The democratization of biotechnology through synthetic biology techniques poses new challenges for international biosecurity regulations and governance regarding dual-use research.^[43] Research topics might include developing international legal frameworks for governing dual-use research in synthetic biology, analyzing the legal implications of the DIY bio movement, and addressing the tension between patent protection and open science in synthetic biology. This research could inform new international biosafety and biosecurity protocols and shape global governance structures for synthetic biology research.
- **Space Law in the Era of Commercial Space Exploration:** The increasing involvement of private actors in space exploration and the deployment of mega-constellations requires an update of existing space law frameworks.^[44] Research areas could include examining the legal implications of private ownership and resource extraction in space, developing legal frameworks for managing satellite mega-constellations, and proposing international regulations for passenger rights and safety for space tourism. This research could lead to new international agreements on resource utilization and comprehensive legal frameworks for commercial space activities.
- **Legal Frameworks for Human Enhancement Technologies:** As human enhancement technologies advance, international law must address issues of equity, access, and potential changes in the nature of human

⁴³ Benjamin D. Trump et al., *Synthetic Biology 2020: Frontiers in Risk Analysis and Governance* (Cham: Springer, 2020).

⁴⁴ Frans G. von der Dunk, "Effective Exercise of 'In-Space Jurisdiction': The US Approach and the Problems It Is Facing," *Journal of Space Law*, No. 1-2 (2015): 147-185.

rights.^[45] Research might focus on examining the legal implications of human enhancement technologies on equality principles, developing frameworks to ensure equitable access to enhancement technologies, and analyzing how enhancement technologies might necessitate changes to existing human rights frameworks. This research could inform international guidelines on human enhancement technologies and potentially expand human rights frameworks.

- Regulation of Artificial General Intelligence (AGI): The potential development of AGI raises profound questions about governance, ethics, and the future of international legal systems.^[46] Research topics could include examining the legal status of AGI entities and their rights and responsibilities under international law, developing international governance structures for AGI development and deployment, and analyzing the implications of AGI for international security and military contexts. This research could establish international AGI development guidelines and shape the future of human-AGI relations in legal contexts.
- Addressing these new challenges requires new methodological approaches to interdisciplinary legal research. Integrating data science methods into legal analysis, developing collaborative research models across disciplines, and addressing ethical considerations in interdisciplinary legal research will be crucial.^[47]

5 | Conclusion

Applying an interdisciplinary approach to international law research in the Digital Era 5.0 technology is proving to be a promising and rapidly developing field of study. By combining knowledge from diverse fields such as information technology, artificial intelligence, ethics, and social

⁴⁵ Han Somsen, *Regulating Human Genetics in a Neo-Eugenic Era* (Cambridge: Cambridge University Press, 2009).

⁴⁶ Olivia J. Erdélyi, Judy Goldsmith, "Regulating Artificial Intelligence: Proposal for a Global Solution", [in:] *Proceedings of the 2018 AAAI/ACM Conference on AI, Ethics, and Society* (New York: ACM, 2018), 95-101.

⁴⁷ *Law as Data: Computation, Text, and the Future of Legal Analysis*, ed. Michael A. Livermore, Daniel N. Rockmore (Santa Fe: Santa Fe Institute Press, 2019).

sciences, researchers have opened up new and creative approaches to address complex international legal issues in the digital age.

Despite facing many challenges, including the complexity of multidisciplinary knowledge, language, and methodological barriers, and the rapid development of technology, the multidisciplinary approach still brings significant benefits. It equips researchers with a more comprehensive view of international legal issues, encourages innovation and creativity, and provides a stronger foundation for policy planning and implementation. Current research trends, such as the integration of artificial intelligence and machine learning, research on Internet governance and cybersecurity, and big data analysis, demonstrate the multidisciplinary approach's great potential in addressing emerging legal challenges in the context of 5.0 technology.

In the future, the continuous development and refinement of multidisciplinary research methods will play a key role in effectively responding to international legal challenges in the Digital Era 5.0. This effort promotes progress in international law and contributes to building a fair, effective, and appropriate global legal framework for the digital age.

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