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Traditional Knowledge and TWAIL

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TRADITIONAL KNOWLEDGE AND THIRD WORLD APPROACHES TO INTERNATIONAL LAW

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Abstract

In the Indian culture, traditional knowledge (TK) become a deep-rooted notion passed on over generations because it is governed by customary laws. This TK tends to be useful in food storage, agriculture, medicine, and preservation of the environment. Traditional knowledge including turmeric, amla, and neem which are protected by national or regional laws become patented outside India. TK become the base of modern science and technology because it is derived from a strong cultural heritage. Currently, the protection of this knowledge on a global scale is being demanded by third-world countries. This study unfolds various aspects of legal and economic dimensions for safeguarding TK. Also, it aims to analyze the paradox that traditional knowledge is relevant to the Global South if the regions failed to find innovative ways of commercializing these products. Hence, international protection is needed to enable the rights allocated to the inventions to be based on TK and genetic resources. This study uses the aspects of place-based IP-intensive goods in global consumer markets. Moreover, it emphasizes the idea of TK becoming a cultural heritage respected and protected throughout the world bringing issues that need to be resolved through mutually agreed terms.

Keywords*: Intellectual Property Rights (IPR), Traditional Knowledge (TK), TWAIL*

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I. INTRODUCTION

Universally, traditional knowledge (TK) has no accepted definition, indicating it is explained in different ways. According to WIPO, "TK which helps in developing a community's cultural or spiritual identity is regarded as know-how, skills, and practices that are sustained and passed on over generations."[1] Previously, people used traditional knowledge to show their flora and fauna. This knowledge becomes a product of learning that is passed down for generations through oral traditions. Furthermore, TK is strengthened with the help of rituals, human interaction, experience, oral history, and languages in the community. For instance, the use of cow-dung acts as a cheap thermal insulator to keep house temperature under control during the summer period.

[1] "Traditional Knowledge," World Intellectual Property Organization (WIPO), accessed 30 January 2022, https://www.wipo.int/tk/en/tk/.

Indian citizens rely on Traditional Medicinal Knowledge because they can't afford healthcare services. Several examples of the TK include the following:

- Using Palash flowers or *Butea monosperma* to create natural color.
- The consumption of Tulsi[2] leaves boosts immunity.
- Using Camphor or Neem for its antibacterial properties.
- The use of turmeric as a healing agent.

Traditional knowledge[3] is also known as living or breathing knowledge because it is continuous in nature. However, TK is not protected from the exploitation, commercialization, and extraction of biodiversity in third-world countries. This brings about the implementation of intellectual property rights (IPR) which typically protects people's original inventions and works. The IPR promotes the co-modification of TK without sharing any benefit to the indigenous communities because it believes in private ownership.[4] Traditional knowledge extracted from agricultural products makes India influential and rich. This country is not fully using its potential in developing and protecting the TK that is being patented abroad. Currently, this deep-rooted knowledge that is meant for commercial benefit is threatened by globalization.

According to the United Nations Department of Economic and Social Affairs (UNDESA),

> *"Traditional knowledge is the foundation of people's identities, cultural heritage, civilizations, livelihoods, and coping strategies over generations. The promotion, protection, and preservation of TK are fundamental because it makes the community resilient to human-made and natural disasters. Also, it is at the core of the rights of indigenous peoples."*[5]

The UNDESA explains that the main cause of TK loss includes colonization, exploitation, dispossession, and discrimination.[6] Scientific studies showed traditional knowledge has high potential but it is only benefited a few communities.[7]

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[2] Mahtab A. Khan, 2016. "Raihan/ Tulsi," National Health Portal, 2016, https://www.nhp.gov.in/Raihan-Tulsi_mtl.
[3] Convention on Biological Diversity, opened for signature 5 June 1992, 1760 UNTS 79 (entered into force 29 December 1993).
[4] Bhawani Shanker Mishra, *Huge Commercial Implications of GI in Third World* (2003), 202.
[5] "Traditional knowledge – An Answer to the Most Pressing Global Problems?" United Nations Department of Economic and Social Affairs, accessed 20 January 2022, https://www.un.org/development/desa/en/news/social/permanent-forum-on-indigenous-issues-2019.html.
[6] *Ibid*.
[7] *Ibid.*

Currently, about 2700 languages are on the verge of disappearing[8] because they lost their cultural system.[9] These cultural systems help in answering most of the world's biggest problems. Therefore, it is important to protect indigenous languages to preserve traditional knowledge in the community. In the late 1950s, Indian intellectual property rights revolved around the one practiced by their colonizer. The colonizers negotiated the Paris[10] and Berne Conventions on behalf of the colonies to increase their empire.[11] Historically, the emergence of liberalization, privatization, and globalization helped to prompt an institutional framework in India.[12] In 1995, private actors made several efforts like introducing Trade-Related Aspects of Intellectual Property Rights (TRIPS) in the country.[13] This is because the global north failed to consider the interest of the south[14] and MNCs, as well as industry associations.[15] The only option meant for the community is to take the deal or leave the global market.[16] However, TRIPS revolves around the global north to enable the colonial markets[17] to be controlled through the uniformity of laws in their empire. [18]

Several rulers and the East India Company (EIC) exploit the traditional knowledge because it serves as the beginning of the north. Therefore, it is important for the country to re-tell the colonial history of oppression and misuse faced.

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[8] *Ibid.*

[9] Adrija Roychowdhury, "There are 600 Potentially Endangered Languages in India Each Dead Language Takes Away a Culture System," The Indian Express, accessed 20 January 2022, https://indianexpress.com/article/research/international-mother-language-day-2018-ganesh-devy-indian-languages-5072487/.

[10] Ruth L. Okediji, "The International Relations of Intellectual Property: Narratives of Developing Country Participation in the Global Intellectual Property System," *Singapore Journal of International & Comparative Law* 7 (2003): 315–385.

[11] Sam F. Halabi, *Intellectual Property and the New International Economic Order: Oligopoly, Regulation, and Wealth Redistribution in the Global Knowledge Economy* (United States: Cambridge University Press, 2018), 70.

[12] John D. Haskell, "TRAIL-ing TWAIL: Arguments and Blind Spots in Third World Approaches to International Law," *Canadian Journal of Law and Jurisprudence* (2014), 27 (2): 389, doi: 10.1017/9781316823088.

[13] Susan K. Sell, *Private Power, Public Law: The Globalization of Intellectual Property Rights* (United States: Cambridge University Press, 2003), 6.

[14] Peter K. Yu, "TRIPS and Its Discontents." *Marquette Intellectual Property Law Review* (2006), 10 (2): 372.

[15] Sell, *Private Power, Public Law*, 6. See also Graeme B. Dinwoodie and Rochelle C. Dreyfuss, *A Neofederalist Vision of TRIPS: The Resilience of the International Intellectual Property Regime* (United States: Oxford University Press, 2012).

[16] Sell, *Private Power, Public Law*, 6.

[17] Okediji, "The International Relations of Intellectual Property," 315–385.

[18] Alexander Peukert, "The Colonial Legacy of the International Copyright System," in *Staging the Immaterial Rights, Style and Performance in Sub-Saharan Africa*, Mamadou Diawara & Ute Röschenthaler, eds., (Oxford: Sean Kingston).

II. EXPLOITATION OF TK BY EAST INDIA COMPANY (EIC)

The indigenous community serves as the custodian of the forest, biological diversity, and traditional knowledge. In the colonization era, people lost their livelihood and rite of passage in using TK when the colonizers eroded and claimed de jure control over India. This decrease the use of this knowledge because the indigenous community is being migrated to another place. However, the Indian TK tends to become patented in various parts of the world since it has no international legal framework or recognition. Traditional knowledge is exploited to enable countries to develop an international recognition for those that are faced with superpowers. This makes developing nations aggressively work toward highlighting and justifying their issues as real concerns. Meanwhile, there was no particular framework to justify basic cultural rights[19] which the colonizers have been exploited for over 70 years before the existence of UDHR.[20] This brings about the need to recognize and address the issues faced by the Global South in the world. Therefore, the indigenous communities become the true holders of the traditional knowledge because they are only meant to enjoy the benefits attached to it.

According to John Sullivan, colonization affects Indian wealth and resources since it is working like a sponge draining from the Ganga and depositing on the bank of the Thames.[21] The country is not only restricted to textile or agricultural yield but also the EIC select the cheapest cotton traders to enable them to make duty-free industrial goods in the British Mills.[22]

Colonization causes India to become a dominant player by exporting 25% of the world's trade[23] which is currently more than China's own.[24] Therefore, there is no need to say the country was primitive in the pre-

[19] General Assembly resolution 217(III), *Universal Declaration of Human Rights*, A/RES/217A(III) (10 December 1948).

[20] "East India Company and Raj 1785-1858," UK Parliament, accessed 30 January 2022, https://www.parliament.uk/about/living-heritage/evolutionofparliament/legislativescrutiny/parliament-and-empire/parliament-and-the-american-colonies-before-1765/east-india-company-and-raj-1785-1858/.

[21] "India's exploitation under British rule – Sentinelassam," Sentinel Digital Desk, accessed 30 January 2022, https://www.sentinelassam.com/editorial/indias-exploitation-under-british-rule-495361.

[22] *Ibid.*

[23] Aditya Mukherjee, "Empire: How Colonial India Made Modern Britain," Economic and Political Weekly 45, no. 50 (2010): 73–82.

[24] World Bank, "China Trade Statistics WITS," World Integrated Trade Solution (WITS), accessed 30 January 30 2022, https://wits.worldbank.org/countryprofile/en/chn.

colonization era. The knowledge of economics and medicine exploited by the EIC makes India have a rich heritage. However, trade share decreased from 25% to 2% immediately after the country became independent.[25]

III. INTERSECTION OF TWAIL AND TK

A. WHY INDIA'S EXPERIENCE AND APPROACH IS IMPORTANT TOWARDS REGIME MAKING OF TK

Historically, traditional knowledge is not recognized as intellectual property because it tends to only be examined from a colonizer's perspective. The IPR becomes a vehicle of imperialism since it indicates the need to accommodate the Global South voices with the north. This makes the TWAIL which its deconstruction show power dynamic to emerge to analyze international law and institutions.[26] Subsequently, the 'international law evolved from being a language of oppression into emancipation'[27] to advocate global justice.[28]

The influential global north opposed the patent proposal and highlighted the sovereign 'inequalities' for the benefit of least developed countries during covid-19.[29] This causes the emergence of the "Eurocentric approach to intellectual property rights which is exclusionary, capitalistic and imperial in nature."[30] Meanwhile, the non-Eurocentric framework or culture is isolated because the IPR practice led to the non-inclusion of traditional knowledge at various stages. This shows that there is a need to critically analyze the standing of TK in intellectual property rights. The study aims to indicate a TWAILer's perspective on creating legitimate traditional knowledge. This TWAIL framework tends to critically contextualize the future discourse of TK

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[25] Sentinel Digital Desk, "India's exploitation under British rule – Sentinelassam," *The Sentinel Assam* (2020), accessed 30 January 2022, https://www.sentinelassam.com/editorial/indias-exploitation-under-british-rule-495361.

[26] Obiora C. Okafor, "Critical Third World Approaches to International Law (TWAIL): Theory, Methodology, or Bo." *International Community Law Review* 10 (2008): 371, 376.

[27] B.S. Chimni, "Third World Approaches to International Law: A Manifesto," *International Community Law Review* 8 (2006):17.

[28] *Ibid.*

[29] Adithya A. Variath, "Decolonising Intellectual Property in the Post-Colonial World: COVID and the Geopolitics of IP," The Geopolitics, accessed 10 February 2022, https://thegeopolitics.com/decolonising-intellectual-property-in-the-post-colonial-world-covid-and-the-geopolitics-of-ip/.

[30] *Ibid.*

by remodeling the crises and creating a place in the TRIPS ecosystem. According to A. Variath "the answer lies in decolonization, regional incorporation, and global justice."[31] The political or colonial superiority needs to protect the traditional knowledge through the norm of 'Global Justice'. However, the south that is based on colonial history, power dynamics, arbitrariness, inequality, and discrimination needs to be understood to achieve this justice.[32] The TWAIL framework failed to reject international law[33] or the institutions because it believes in an inclusive regime.[34] This study aims to regain control over the recognition and importance of TK and the rights associated with it in the global north. Also, it shows the ideology of the south in creating an all-inclusive traditional knowledge.

According to O. Tutu and J. Janewa, there is a cultural disperse in global intellectual property rights.[35] Also, Vat directly uses "Whiteness as property"[36] for traditional knowledge because it discusses the decolonization of the IPR by addressing various cultural formations and ideologies. This decolonization needs to be performed by confronting "the role of the nation-state and complicity in its epistemic violence and white supremacy".[37]

In the South, over 75% of the 'Global Biological Resources' are habited by Indigenous People and Local Communities (IPLC).[38] India has been an agrarian society having fertile ground that later get affected due to industrialization. For instance, Genetically Modified Organisms (GMOs), the Green Revolution, and High Yielding Varieties (HYVs)

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[31] *Ibid.*

[32] Pratyush N. Upereti, "A TWAIL Critique of Intellectual Property and Related Disputes in Investor-State Dispute Settlement," *Journal of World Intellectual Property* 25, no. 1 (2022): 220.

[33] Wang Tieya, "The Third World and International Law," in *The Structure and Process of International Law: Essays in Legal Philosophy, Doctrine, and Theory*, Ronald Macdonald and Douglas M. Johnston, eds. (Netherlands: Springer, 1983), 993.

[34] Luis Eslava and Sundhya Pahuja, "Beyond and the (Post) Colonial: TWAIL and the Everyday Life of International Law," *Journal of Law and Politics in Africa, Asia and Latin American* 45, no. 2 (2012): 195.

[35] J. Janewa Osei-Tutu, "Denying Cultural Intellectual Property: An International Perspective on Anjali Vats's The Color of Creatorship," *New England Law Review* 55, no. 2 (2021): 79.

[36] Anjali Vats, *The Color of Creatorship: Intellectual Property, Race, and the Making of Americans* (United States: Stanford University Press, 2020), 112.

[37] Marsha S. Cadogan, "A TWAIL-Constructivist critique of the IP and development divide in the age of innovation – has the protection of place based goods changed the narrative for the Caribbean?" in *The Object and Purpose of Intellectual Property*, Susy Frankel, ed. (United States: Edward Elgar Publishers, 2019), 58.

[38] Chidi Oguamanam, "Towards a Tiered or Differentiated Approach to Protection of Traditional Knowledge (TK) and Traditional Cultural Expressions (TCEs) in Relation to the Intellectual Property System," *African Journal of Information and Communication* 23, (2019): 4, doi: 10.23962/10539/27533.

tend to cause harm to fertile soil.[39] This makes farmers or kisan who are the nation builders secure food in the country and become bothered due to these imbalanced practices that are pushing them into poverty and vulnerability. This shows there are unacceptable inequalities between the global north and south.

B. THEORIES

The utilitarian or labor theory of the first appropriation was used to explain intellectual property while addressing the issues of individual rights vs public access. However, the behavior of the colonizers was inhumane even though human rights were not introduced. The Indian cultural text "*karmany evadhikaras te ma phalesu kadachana*" shows that one needs to fulfill their duties without thinking about any reward. Also, the texts refer to the equality and treatment of people with compassion and dignity. The Indian traditions believed in sharing knowledge but restrict it to those that are reputable. According to the Guru or teacher's tradition, the Shishya or students need to pass a test and work hard to achieve the greatest heights of knowledge. This shows the student needs to consider the physical and mental labor to obtain this knowledge. People belonging to this type of society are governed by international laws.

C. TRIPS ASPECT

Trade-Related Aspects of Intellectual Property Rights is a comprehensive multilateral agreement that came into force on 1st January 1995. The main features of this TRIPS include the minimum standards of enforcement and dispute settlement. This kind of agreement explains the protection of copyright and related rights, patent, trademarks, geographical indications, layout designs, and trade secrets. Article 27.3b refers to the inventions regarding plants and animals, as

[39] *In this regard* (Hsaio 2015) *observed that "Despite their agricultural, economic, and safety, pesticides can also have negative impacts on our health. Many conventional pesticides are synthetic materials that kill or inactivate the pest directly. These chemical pesticides include compounds such as organophosphates, carbamates, pyrethroids, and sulfonylureas. Short-term exposure to a large amount of certain pesticides can result in poisoning. Exposure to large amounts of pesticides is usually more likely for people such as farmers who may frequently touch and/or breathe in pesticides. The efects of long-term exposure to small amounts of these pesticides are unclear, but studies have linked them to a variety of chronic health conditions such as diabetes, cancer, and neurological defects"; Also see,* Reinhardt (1999: 149– 149).

well as their patentability and non-patentability.[40] Also, it discussed Anti-Competitive Practices in Contractual Licenses. TRIPS provides civil, criminal, and administrative remedies for developing and least developed countries.

The negotiators and implementors of the Trade-Related Aspects of Intellectual Property Rights include the United States, Japan, and members of the European Union.[41] This shows there is inequality between the north and south based on scientific and technological advancement. Therefore, this study explains that several countries in the Global South failed to have[42]: the human resource or capital to transform TK into a significant IP regime.[43] The Trade-Related Aspects of Intellectual Property Rights tend to aggravate or increase human inequalities due to the inflexibilities of the Global South. In this study, the important question is how TRIPS reacts to local communities that have the potential power to create wealth.[44]

From August 1999[45] to January 2006[46], there have been several

[40] Annex 1C of Marrakesh Agreement establishing the World Trade Organization, opened for signature 15 April 1994, 1867 1868 1869 UNTS, (entered into force 1 January 1995), Art. 27.3b.

[41] Sell, *Private Power, Public Law*: The United States, Europe, Japan, and their respective intellectual property industries are the strongest proponents of TRIPs. See Also Susan K. Sell "Post-TRIPS Developments: The Tension between Commercial and Social Agendas in the Context of Intellectual Property," *Florida Journal of International Law* 14, no. 2 (2002): 193. Discussing American intellectual property industry lobbying groups that "played a major role in drafting and insuring the adoption of TRIPs".

[42] Noting that the OECD countries spend far more on research and development than India's national income. Noting that with the exception of the relatively recent emergence of a few East Asian countries and newly industrialized countries, developed countries continue to retain economic power and developing countries and least developed countries continue to face economic marginalization. See Government of India Ministry Of Science & Technology, *Research and Development Statistics 2019-2020*.

[43] Naomi Roht-Arriaza, "Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities." *Michigan journal of international law* 17 (1996): 919, 961. Commenting that "so long as communities in Southern countries continue to act as mere providers of raw materials for processing elsewhere, they forfeit the value-adding possibilities of in-country processing of such materials"); See also Alan S. Gutterman, "The North-South Debate Regarding the Protection of Intellectual Property Rights," *Wake Forest Law Review* 28, (1993): 121. Noting that Third World countries are more interested in technology transfer than in encouraging domestic innovation because they lack scientific and financial infrastructure to create patent-induced innovations.

[44] Donald G. Richards, *Intellectual Property Rights and Global Capitalism: The Political Economy of the TRIPS Agreement* (New York: M.E. Sharpe, 2004), 24. O. Arewa, "Trips and Traditional Knowledge: Local Communities, Local Knowledge, and Global Intellectual Property Frameworks (TRIPs Symposium)," *Marquette Intellectual Property Law Review* 10, (2006): 156.

[45] Council for Trade-Related Aspects of Intellectual Property Rights, "The Relationship Between the TRIPS Agreement and The Convention on Biological Diversity," Ministry of Commerce and Industry of India, 2006, accessed 20 January 2022, https://commerce.gov.in/international-trade/india-and-world-trade-organization-wto/indian-submissions-in-wto/trade-related-aspects-of-intellectual-property-rightstrips/the-relationship-between-the-trips-agreement-and-the-convention-on-biological-diversity-and-the-protection-of-traditional-knowledge-2/#:~:text=We%20believe%20that%20the%20TRIPS,the%20objectives%20of%20the%20CBD.

[46] World Trade Organization, Council for Trade-Related Aspects of Intellectual Property Rights, "Minutes

discussions on traditional knowledge and its protection. The Kisan of the country is burdened and pushed into poverty due to TRIPS and the free trade regime, as well as its inflexibilities. [47] From 1996 to 2016, more than 30 lakh farmers committed suicide because of the effect of Free Trade Agreements and Regional Comprehensive Economic Partnership. The global north needs to acknowledge and accept that traditional knowledge tends to be the answer to all the above-mentioned problems.[48]

D. SUSTAINABLE DEVELOPMENT GOALS (SDG)

Traditional knowledge is developed and passed over generations through the economic, social, political positions, and local environment. This makes it inclusive of other factors including climate change, inequalities, discrimination, medicines, and food insecurity that affect the community's livelihood. Under the 2030 Agenda of the Sustainable Development Goals (SDG), there are several of these issues based on a holistic principle of "leaving no one behind". Traditional knowledge provides solutions for people in areas such as medical research, conservation of forests, and land management. However, there are six specific areas where agricultural production is used to educate and empower the indigenous communities. Traditional knowledge becomes the key factor in achieving various sustainable development goals. This study is in line with Odhiambo that "Indigenous knowledge show missing ecological keys which help scientists develop alternative agricultural technologies on nonrenewable resources and environmentally damaging inputs such as fossil energy and chemical pesticides than the conventional."[49]

The act of promoting and preserving TK tends to bridge the gap between the rapid loss of natural resources and sustainable development in the post-COVID-19 era. This protection leads to a financially stable and sustainable future that the Global South deserves. S. P. Chakrabarty

of Meeting Held in the Centre William Rapand on 17-19 September 2002," IP/C/M/24-35, 36/Add.1, 37/Add.1, 38-40 and 42-49.

[47] K, Nagaraj, K. Sainath, P. R. Rukmani, and R. Gopinath, "Farmers' suicides in India: Magnitudes, trends, and spatial patterns," *Review of Agrarian Studies* 4 (2): 53.

[48] Biju K. V, "Don't drive Indian farmers to suicide through rcEP." *John Hopkins Advanced School of Advanced International Studies*, (November) https://www.downtoearth.org.in/blog/economy/don-t-drive-indian-farmers-to-suicide-through-rcep-67565.

[49] Odhiambo, Ran Kamp, Thomas, and Johan Kamp, "You cannot fix indigenous knowledge," *ILEIA Newsletter* 6, no. 1 (1990): 3.

and R. Kaur emphasized "this tends to be a masterstroke for India to lead this south region".[50] Meanwhile, the global north tends not to turn a blind eye to the information provided that more than 75% of modern medicines have a natural and indigenous origin.[51] The next part of this study discusses the existing policies and laws regarding TK.

E. PROTECTION IN DIFFERENT COUNTRIES

Traditional knowledge tends not to have any international protection but only a few countries have digital libraries to safeguard it from patenting. This study discusses the laws of India, the United Kingdom (UK), and China to understand the position of the TK and why there is a need to use the TWAIL framework. The Indian laws are used to understand the global north, while the UK is studied to show the position of a colonizer. Also, this study discusses the position of China as one of the 12 mega-biodiversities and the second-largest economy.

1. INDIA

In India, traditional knowledge tends not to have a sui generis[52] but it is protected using various legislations. The Patent Act helps to safeguard the TK through the prior art [53]which is any available information in the public domain.[54] This help to determine the licensing of an invention and protects the traditional knowledge in India. Therefore, the TK that belongs to the indigenous communities tends not to be patented or commercialized by a third party. The Patent Act provides the disclosure of the geographical origin and associated knowledge of that biological

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[50] Shambhu P. Chakrabarty and Ravneet Kaur, "A Primer to Traditional Knowledge Protection in India: The Road Ahead," *Liverpool Law Review* 42, no. 2021 (June): 422, doi: 10.1007/s10991-021-09281.

[51] Sen, S., and R. Chakraborty, "Revival, modernization and integration of Indian traditional herbal medicine in clinical practice: Importance, challenges and future," *Journal of Traditional and Complementary Medicine* 7, no. 2 (April 2017), doi: 10.1016/j.jtcme.2016.05.006.

[52] India, *Biological Diversity Act*, Act Number 18 of 2003, [trans. Legislative Department of Ministry of Law and Justice (India), The Biological Diversity Act, 2002, available at <[https://www.wipo.int/tk/en/databases/tklaws/articles/article_0011.html>].

[53] India, *The Patents Act*, Act Number 39 of 1970, [trans. Legislative Departmenrt of Ministry of Law and Justice (India), The Patents Act, 1970, available at <[https://legislative.gov.in/actsofparliamentfromtheyear/patents-act-1970>].

[54] India, The Patent Act, "For the purposes of this Act, a matter shall be deemed to have been disclosed in a basic application for protection in a convention country if it was claimed or disclosed (otherwise than by way of disclaimer or acknowledgement of a prior art) in that application, or any documents submitted by the applicant for protection in support of and at the same time as that application but no account shall be taken of any disclosure effected by any such document unless a copy of the documents is filed at the patent office with the convention application or within such period as may be prescribed after the filing of that application."

material. This disclosure is required while deciding the patentability of an invention. Also, the act grants the opposition the licensing if there is wrongful disclosure or non-disclosure of the biological material and the associated knowledge.

The biodiversity act contains a provision that safeguards the commercialization of TK as intellectual property within India. Therefore, this study needs to be approved by the national biodiversity Authority of India before using any IPR. This act helps intellectual property offices to determine the originality of an invention. Also, the biodiversity provision explains the equitable benefit-sharing arising from the use of those resources. The only issue with this act is that the government finds it difficult to identify the original holder to obtain consent.

Traditional knowledge needs to be copyrighted because it creates a problematic position regarding authorship. This type of protection tends not to be defined since it become impossible to mold TK into copyright. Similarly, a single act of recovery is not indicated to qualify traditional knowledge as a patent. TK tends not to be covered under trade secrets because it becomes a disgrace to the indigenous communities while being identified as a part of IP.

India is one of those 12 mega-biodiversities that has the richest biodiversity despite accounting for 2.4% of the world's surface.[55] The country holds 7 to 8% of the record species[56] wand inputs about 47,000 and 80,000 plants and animals despite having a 70% geographical area.[57] However, the Himalayas or Andaman and the Nicobar Islands are not included because these areas have rich biological diversity and associated TK. India has a diverse population-based since it has more than 2750 communities and various practices regarding farming, subsistence strategies food habits, and cultural traditions.[58] Local communities have developed a variety of vegetation management

[55] "Chapter 15 Biodiversity and Conservation," NCERTS, accessed 30 January 2022, https://ncert.nic.in/ncerts/l/lebo115.pdf.
[56] "India | IUCN." n.d. International Union for Conservation of Nature – IUCN," IUCN, accessed 30 January 2022, https://www.iucn.org/asia/countries/india.
[57] *Ibid.*
[58] N. V. Joshi, Madhav Gadgil and Suresh Patil, "Exploring Cultural Diversity of the People of India," *Current Science* 64, no. 1 (1993): 10–17.

that is still practiced in tropical Asia over centuries.[59] This vegetation becomes ethical and part of the daily routine while following the country's traditions. However, systems such as rainwater harvesting help to promote the diversity of the land through an extended growth of trees[60], specifically in areas facing drought issues. In India, several practices without any written record exist and people are still following them. This makes the government start a Traditional Knowledge Digital Library (TKDL) to curb this issue.

a. Traditional Knowledge Digital Library (TKDL)

In 1999, the Central Government through the planning commission constituted a "Task Force on Conservation and Sustainable Use of Medicinal Plants" after the patenting of turmeric in the United States.[61] This is to identify and safeguard the use of medicinal plants from licensing. The committee ensures the traditional knowledge recommends a digital library to help the world while granting a patent.[62] These recommendations tend to become a founding stone of the Indian TKDL. The database used under Ayurveda Siddha Unani and yoga in this country has over 250,000.[63] India become one of the largest producers of medicinal plants and related systems because these concepts were developed around 500 BC.[64]

The digital library was established to avoid the misappropriation of the country's traditional medicinal knowledge at the international level. However, the non-recognition of Indian traditional knowledge lead to 2000 wrong patents.[65] The TKDL facilitates a platform called Traditional Knowledge Resource Classification (TKRC) that is recognized under the International Patent Classification (IPC). Furthermore, the act of

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[59] Deep N. Pandey, *Ethnoforestry: Local Knowledge for Sustainable Forestry and Livelihood Security*, (Himanshu Publications: 1998).

[60] Deep N. Pandey, "Cultural Resources for Conservation Science." *Conservation Biology* 17, no. 2 (2003): 633-635. doi: 10.1046/j.1523-1739.2003.01578.x.

[61] V.K. Gupta, "An Approach for Establishing a Traditional Knowledge Digital Library," *Journal of Intellectual and Property Rights* (2000), http://nopr.niscair.res.in/bitstream/123456789/26010/1/JIPR%205%286%29%20307-319.pdf.

[62] Prashant Reddy T. and Sumathi Chandrashekaran, *Create, Copy, Disrupt: India's Intellectual Property Dilemmas*, (Oxford University Press: 2017), 271.

[63] TKDL, "About TKDL," http://www.tkdl.res.in/tkdl/langdefault/common/Abouttkdl.asp?GL=Eng,%20last%20visited%20on%204-4-2018, accessed January 30th 2022.

[64] M. M. Pandey, Subha Rastogi and A.K.S. Rawat, "Indian Traditional Ayurvedic System of Medicine and Nutritional Supplementation, Evidence-Based Complementary and Alternative Medicine," Hindawi, accessed January 30th 2022, https://www.hindawi.com/journals/ecam/2013/376327/cta/.

[65] *Ibid.*

developing a bridge and connecting the old Sanskrit slokas become examiners all over the world.[66]

The National Innovation Foundation is an agency that helps in the filing of patents for those unaware of the legal complexities regarding TK protection.[67] This agency is a great initiative but it failed to safeguard traditional knowledge from exploitation. India is one of the countries that has been working proactively to deliver justice to its citizen but these efforts were overlooked.

2. UNITED KINGDOM

The United Kingdom (UK) tends to make certain provisions to ensure the originality of an invention or work.[68] According to Section 169, the evidence of the work published is available in the public domain, indicating that it is copyrighted.[69]

Similarly, section 61 allows unknown authorship to record folksongs but the work is maintained by the designated authority without any infringement.[70] Section 2[71] explains the invention tends not to be made available to the public before the priority date that is either written or oral. This shows the information is communicated to the community while addressing the issue of TK patenting. The above Act is not designed to exclude traditional knowledge but to ensure the licensing is original. These provisions indirectly give negative protection to all the works that subsist.

3. CHINA

In China, there is no indirect/direct right or remedy made available to the owners of traditional knowledge.[72] The Copyright ordinance is similar to the Copyright of the United Kingdom regarding the recording

[66] B.L. Chauhan, *The Protection of Traditional Knowledge: Problems and Perspectives* (India, 2004), 346.
[67] Nation Innovation Foundation, "National Innovation Foundation-India," National Innovation Foundation-India. https://nif.org.in/, accessed June 21st 2022.
[68] World Intellectual Property, "Copyright, Designs and Patents Act 1988 (Chapter 48)," accessed 30 January 2022. https://www.wipo.int/tk/en/databases/tklaws/articles/article_0095.html.
[69] United Kingdom, *Copyright, Designs, and Patents Act 1988*, Cabinet Order No. 48 of 1988. Available at <[https://www.legislation.gov.uk/ukpga/1988/48/contents>].
[70] *Ibid.*
[71] United Kingdom, *Patents Act 1977*, Cabinet Order No. 37 of 1977. Available at <[https://www.legislation.gov.uk/ukpga/1977/37/contents>].
[72] World Intellectual Property, "List and Brief Technical Explanation of Various Forms in which Traditional Knowledge May be Found," WIPO, accessed 30 January 2022, https://www.wipo.int/meetings/en/doc_details.jsp?doc_id=147152.

of folksongs. [73]For instance, section 189 is in line with section 169 of the UK's Copyright Act[74] but the corporate Ordinance is restricted in Hong Kong.[75] According to Rule 26,[76] the patent application tends to disclose the source of genetic resources. These genetic resources are referred to as human, animal, plant, or organism with actual potential value. The department of examination tends to have the right to reject the patent application if the genetic resources are not specified.[77] Furthermore, Article 5 stipulates that licensing is not granted for non-compliance with the provision.[78]

China become one of the 12 Mega-biodiversity because it recognizes the importance of traditional knowledge and genetic resources. Therefore, the country restricts its application to maintain the originality and ensure the patent is patentable in nature. The next part discusses the case studies of biopiracy and the measures taken to defend the TK in India.[79]

F. CASE STUDY

1. TURMERIC PATENT CASE

Turmeric is an herb grown in India and it is traditionally used for cooking and medicine. In 1995, a patent[80] was awarded to Suman K Das and Hari Har P Cohley who are 2 US-based Indians that studied wound healing at the University of Mississippi Medical Centre. This licensing claimed that the use of turmeric promotes wound healing abilities while administered orally or locally. Two years after the discovery of this

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[73] Hong Kong, *Copyright Ordinance 1997*, Cap. 58 Copyright Ordinance. Available at <[https://www.elegislation.gov.hk/hk/cap528?m=1&pm=0&pmc=1>].

[74] *Ibid.*

[75] "Patent Law of the People's Republic of China (as amended up to the Decision of December 27, 2008, regarding the Revision of the Patent Law of the People's Republic of China)," WIPO, accessed 30 January 2022, https://www.wipo.int/tk/en/databases/tklaws/articles/article_0042.html.

[76] The People's Republic of China, *Patent Law 1984*. [trans. The State Council (China), Patent Law of the People's Republic of China], available at <[https://english.www.gov.cn/archive/laws_regulations/2014/08/23/content_281474983043612.htm>].

[77] *Ibid.*

[78] "Patent Law of the People's Republic of China (as amended up to the Decision of December 27, 2008, regarding the Revision of the Patent Law of the People's Republic of China)," WIPO, accessed 30 January, 2022, https://www.wipo.int/tk/en/databases/tklaws/articles/article_0042.html.

[79] "Patent Law of the People's Republic of China (as amended up to the Decision of December 27, 2008, regarding the Revision of the Patent Law of the People's Republic of China)," WIPO, accessed 30 January 2022, https://www.wipo.int/tk/en/databases/tklaws/articles/article_0045.html.

[80] "Patent Summary for US-5401504-A, Use of turmeric in wound healing," National Center for Biotechnology Information, accessed 30 January 2022, https://pubchem.ncbi.nlm.nih.gov/patent/US-5401504-A.

herb, the Indian Council of Scientific and Industrial Research (ICSIR) opposed the patent grant. The ICSIR submitted 32 references indicating that the country was aware of the wound healing ability years before this license. Sanskrit writings showed that turmeric is extensive use for several purposes and this makes the patent claim baseless. In 1997, the US Patent office revoked the data after investigation because they believe the legal bio piracy tends to cause devastating harm socially, economically, and culturally. This happened to be the first case where traditional knowledge was opposed successfully since it made a loud noise against biopiracy and theft by foreign nationals.

The landmark case brings about the development of the Traditional Knowledge Digital Library (TKDL) that cause the inclusion of TK. This become a classic example of colonization because the patentee and the USPTO re-examined were Indian.

2. NEEM PATENT CASE

Neem is a natural herb that has medicinal properties because it is used to control fungi. In 1994, W.R. Grace filed the European Patent Officer (EPO) for using the same method in extracting neem oil[81] but later grant the multinational agricultural business corporation in New York and United States Department of Agriculture, Washington D.C.[82]

Also, in 1995, Dr. Vandana Shiva in the Research Foundation for Science and Technology & Natural Resource Policy, New Delhi filed the German-based International Federation of Organic Agriculture Movements and Magda Aelvoet MEP on behalf of the Research Green group in the European Parliament, Brussels. The evidence was submitted and it showed that the extraction method was known and practiced by Indians for centuries. This country identifies neem to have antiviral and antibacterial properties. In Sanskrit, the neem tree which is regarded as the "curer of all ailments" is used for treating and making skin diseases and natural pesticides respectively.[83] Therefore, it is used

[81] "Patent Summary for US-5420318-A, Preparation of high purity neem seed extracts." National Center for Biotechnology Information, accessed 30 January 2022, https://pubchem.ncbi.nlm.nih.gov/patent/US-5420318-A.

[82] Vandana Shiva and Radha Holla-Bhar, "Intellectual Piracy and the Neem Tree," *Ecologist* 23, no. 6, (1993): 223-227.

[83] Girish K. and Shankara S. Bhat, "Neem – A Green Treasure." *Electronic Journal of Biology* 4, no. 3, (2008): 102-111.

in both traditional medicinal systems and agriculture.[84] In this study, the Patent application lacked two major steps including "inventive" and "novelty".

The EPO later accepted the argument that Indians have been using the neem for centuries and it is not patentable. This argumentation tends to become expensive and time-consuming because it lasted for 4 years.[85] Currently, several neem patents are registered throughout the world.

3. BASMATI RICE PATENT

Rice Tec Inc. is a US-based company that was granted a patent[86] on its aromatic rice grown outside India 'Basmati'. This company tries to sell 'Kasmati' and 'Texmati' on the international level just like the Basmati-type rice. The whiff of this patent reached the Indian market because the traders devasted 10% of the export to the US. This causes the loss of 45,000 tons of export leaving the merchants in panic. The traders moved their requests to the US government to revoke the patent. This revocation makes the continuous use of Basmati named aromatic rice in Punjab, Uttar Pradesh, and near the foothills of the Himalayas to be considered theft.

India is not in a position to defend every violation of TK because several licensing is not handled with care. Moreover, the third-world countries failed to have the financial capacity to defend patent applications in conflict with traditional knowledge. This brings about the failure of the global institution while trying to deliver justice.

There needs to be a distinction between the patents granted for scientific research and that of traditional knowledge. The issue under the TK licensing needs to be addressed by both developing and developed countries. For 2 years, the TKDL helped India successfully oppose 36 patent applications that lead to the withdrawal or cancellation of medicinal formulations under the EPO.[87] The Traditional Knowledge Digital Library is a database not entirely documented but has over

[84] Dr. Suresh Kumar, *Ethnobotany, Volume 2*, (*Kojo* Press: 2019).
[85] Shiva and Holla-Bhar, "Intellectual Piracy and the Neem Tree."
[86] "Patent Summary for US-5663484-A, Basmati rice lines and grains," National Center for Biotechnology Information, accessed 30 January 2022, https://pubchem.ncbi.nlm.nih.gov/patent/US-5663484-A.
[87] Dr. Sonia Jain, "Traditional Medicine and Intellectual Property Rights-an Indian perspective," accessed 28 January 2022 http://www.legalservicesindia.com/article/400/Traditional-Medicine-and-Intellectual-Property-Rights-An-Indian-Perspective.html. ISBN 978-81-928510-1-3.

"34 million pages about 2,260,000 medicinal formulations in multiple languages". [88]

An Indian expert group after 762 US examinations under A61K35/78 and IPC classes showed that there are 374 patents based on TK. This shows there is a need to limit the scope of patentability by removing non-original licensing in traditional knowledge. Also, the USPTO has to recognize TK to curb biopiracy to satisfy the criteria of non-obviousness, utility, and novelty. This tends to serve as a global justice for third-world countries.

Therefore, India needs to be an active member in the international law-making procedure through the use of TWAIL. Several works overlook the role of nation-states due to the multiplicity of other actors in this association.[89] Currently, little effort is used to make international intellectual property rights, specifically on issues of subsidiarity.[90] India plays an important role in WTO negotiations because its effort lead to sturdy resistance in the TRIPS.[91] Since 1995, the country's patent reforms have been demonstrated by various International Scholars.[92] It explored the innovation potential by making similar laws for other developing nations. The last part of this study explores the idea of constructing an international TK agreement or policy which helps India to be a leader in the Global South.

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[88] "Traditional Knowledge," World Intellectual Property Organization (WIPO), accessed 30 January, 2022, https://www.wipo.int/tk/en/tk/,

[89] "Though there are works that demonstrate the centrality of national autonomy throughout the history of international IP negotiations, they do not discuss how such autonomy operates at the national level and what. could be the implication of state practice emulated by other states in the international law. See, for example, Dinwoodie and Dreyfuss (2012: 192)."

[90] Feroz A. Khader, *The Access Regime: Patent Law Reforms for Affordable Medicines*, (Oxford University Press: 2016).

[91] Alan E. Boyle and C. M. Chinkin, *The Making of International Law*, (Oxford University Press: 2007).

[92] Jayashree Watal, "Intellectual Property Rights in the WTO and Developing Countries," *Springer Netherlands* (2001); Cynthia Ho, "Access to Medicine in the Global Economy: International Agreements on Patents and Related Rights," *OUP USA* (2011); Srividhya Ragavan, "Patent and Trade Disparities in Developing Countries," *OUP USA* (2012). "*(Watal 2001) covers the period of transition when the regime change had not taken full effect in India. (Ho 2011) presents a more recent view of the TRIPS flexibilities but does not detail the manner in which these flexibilities. have taken effect in a Member Country. The works by both Watal and Ho, while primarily focusing on the patent regime in India, do not offer an analysis of how the patent law works in practice. (Ragavan 2012) deals with the role played by India in redefining patent regime with an emphasis on trade disparities. This work too does not focus on regime creation by reorganizing patent laws at the international level."*

IV. CONCLUSION

A total of millions of people from various communities are facing economic challenges due to the non-recognition of traditional knowledge. The youth's responsibility to protect TK only lies on the old generation because they are displaced to always find means of surviving.[93]

There is a need for an international institution since the traditional knowledge is not fully protected in India. Therefore, various third-world countries joined together and called for a legal framework for TK. A holistic approach needs to be adopted toward this traditional knowledge by achieving two objectives including the following.

(1) Protection is meant for work or invention that is patent by discontinuing all unauthorized practices and (2) there needs for positive preservation of TK. Also, the traditional knowledge has to be introduced in a form of sui generis for it to be promoted and protected. The international agency needs to recognize TK and debar from being misused or commercially exploited in the community. This agency needs to license the work after consulting the government for benefit sharing to achieve Sustainable Development Goals. However, the unauthorized need to be differentiated from the legitimate users of the invention. The international agency has to suggest the necessary amendment to the laws to protect and recognize TK as intellectual property. Meanwhile, the government and indigenous communities have autonomy regarding the use of this traditional knowledge. This tends to help in giving the legitimate right to collective commercial exploration and protecting the TK. The international institutions need to provide the necessary legal support by removing the imbalance due to the "notion of absolute superiority which always ended in annihilation".[94] All sectors including the pharmaceutical industry, agriculture, chemicals, and environmental conservation have a threat to biopiracy because there are various frameworks in the laws regarding genetic resources.[95] Therefore the TK

[93] Shambhu P. Chakrabarty and Ravneet Kaur, "A Primer to Traditional Knowledge Protection in India: The Road Ahead," *Liverpool Law Review* 42, (2021): 401–427, https://doi.org/10.1007/s10991-021-09281-4.

[94] Chakrabarty and Kaur, "A Primer to Traditional Knowledge."
A notion of absolute superiority has played a dominant role in both the cases of German annihilation of Jews and modern scientific ideas over indigenous knowledge, especially during the colonial period and beyond in some jurisdictions

[95] Chidi Oguamanam, "Towards a Tiered or Differentiated Approach to Protection of Traditional Knowledge (TK) and Traditional Cultural Expressions (TCEs) in Relation to the Intellectual Property System,"

which is not converted into a liability of the Global South needs to be protected since the biopiracy commercially exploits the stakeholders. The International Framework and adoption of laws regulating the traditional knowledge tend to make India a leader in the Global South.

In conclusion, this study shows that the following factors including economic, human, and natural resources, as well as traditional and cultural heritage are used in protecting TK. The idea of TK becoming a cultural heritage respected and protected throughout the world bring issues that need to be resolved through mutually agreed terms. This cultural diversity makes India in the position of a change maker.

The African Journal of Information and Communication (2003), doi: 10.23962/10539/27533.

BIBLIOGRAPHY

Journal Articles

Arewa, O. "Trips and Traditional Knowledge: Local Communities, Local Knowledge, and Global Intellectual Property Frameworks (TRIPs Symposium)." *Marquette Intellectual Property Law Review* 10, (2006): 156-180.

Chakrabarty, Shambhu P., and Ravneet Kaur. "A Primer to Traditional Knowledge Protection in India: The Road Ahead." *Liverpool Law Review,* (2021), 42:401-427.

Chimni, B. S., and Antony Anghie. "Third World Approaches to International Law: A Manifesto." *International Community Law Review*, (2006), 8:17. https://www.researchgate.net/publication/265658579_Third_World_Approaches_to_International_Law_A_Manifesto.

Eslava, Luis, and Sundhya Pahuja. "Beyond and the (Post) Colonial: TWAIL and the Everyday Life of International Law." *Journal of Law and Politics in Africa, Asia and Latin American* 45 (2): 195-(2012) 221. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2034228.

Gutterman, Alan S. "The North-South Debate Regarding the Protection of Intellectual Property Rights." *Wake Forest Law Review* 28, (1993): 89-139.

Haskell, John D. "TRAIL-ing TWAIL: Arguments and Blind Spots in Third World Approaches to International Law." *Canadian Journal of Law and Jurisprudence* (2014), 27 (2): 389. DOI: 10.1017/9781316823088.

Joshi, N. V., Madhav Gadgil, and Suresh Patil. "Exploring Cultural Diversity of the People of India." *Current Science 64,* no. 1 (1993): 10–17. http://www.jstor.org/stable/24095541.

K, Nagaraj, K. Sainath, P. R. Rukmani, and R. "Gopinath. "Farmers' suicides in India: Magnitudes, trends, and spatial patterns," *Review of Agrarian Studies* 4 (2): 53-83.

K., Girish, and Shankara S. Bhat. "Neem – A Green Treasure." *Electronic Journal of Biology*, (2008) 4 (3): 102-111. https://ejbio.imedpub.com/neem--a-green-treasure.pdf.

Mukherjee, Aditya. "Empire: How Colonial India Made Modern Britain." *Economic and Political Weekly* 45, no. 50 (2010): 73–82. http://www.jstor.org/stable/25764217.

Oguamanam, Chidi. "Towards a Tiered or Differentiated Approach to Protection of Traditional Knowledge (TK) and Traditional Cultural Expressions (TCEs) in Relation to the Intellectual Property System." *The African Journal of Information and Communication* 23, (2019): 1-24, DOI: 10.23962/10539/27533.

Okafor, Obiora C. 2008. "Critical Third World Approaches to International Law (TWAIL): Theory, Methodology, or Bo." *International Community Law Review* 10 (2008): 371, 376.

Okediji, Ruth L. "The International Relations of Intellectual Property: Narratives of Developing Country Participation in the Global Intellectual Property System." *Singapore Journal of International & Comparative Law* (2003), 7:315–385. http://www.commonlii.org/sg/journals/SGJlIntCompLaw/2003/14.pdf.

Osei-Tutu, J. Janewa. "Denying Cultural Intellectual Property: An International Perspective on Anjali Vats's The Color of Creatorship." *New England Law Review*

55, no. 2 (2021): 79-90.

Pandey, Deep N. *Cultural Resources for Conservation Science, Conservation Biology,* 17(2), no. March 2003 (March): 633 - 635. 10.1046/j.1523-1739.2003.01578.

Roht-Arriaza, Naomi. "Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities.". *Michigan Journal of International Law* 17, no. 4 (1996): 919,961.

Sell, Susan K. "Post-TRIPS Developments: The Tension between Commercial and Social Agendas in the Context of Intellectual Property." *Florida Journal of International Law* 14, no. 2 (2002): 193-216.

Sen, S., and R. Chakraborty. "Revival, modernization and integration of Indian traditional herbal medicine in clinical practice: Importance, challenges and future." *Journal of Traditional and Complementary Medicine* 7, no. 2, (2017) (April). 10.1016/j.jtcme.2016.05.006.

Shiva, Vandana, and Radha Holla-Bhar. "Intellectual Piracy and the Neem Tree." *Ecologist 23* (6,1993): 223-227.

Shiva, Vandana, and Radha Holla-Bhar. "Intellectual Piracy and the Neem Tree." Ecologist 23 (6,1993): 361.

Upereti, Pratyush N. "A TWAIL Critique of Intellectual Property and Related Disputes in Investor-State Dispute Settlement." *Journal of World Intellectual Property* 25, no.1 (2022): 220-237.

Vats, Anjali. 2020. "The Color of Creatorship: Intellectual Property, Race, and the Making of Americans (Introduction)." https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4006651

Yu, Peter K. "TRIPS and Its Discontents." *Marquette Intellectual Property Law Review* (2006), 10 (2): 372.

Books and Chapters

Boyle, Alan E., and C. M. Chinkin, *The Making of International Law*. Oxford University Press, 2007.

Chauhan, B.L. *The Protection of Traditional Knowledge: Problems and Perspectives*. India, 2004.

Cadogan, Marsha S. "A TWAIL-Constructivist critique of the IP and development divide in the age of innovation – has the protection of place based goods changed the narrative for the Caribbean?" In *The Object and Purpose of Intellectual Property*, edited by Susy Frankel, 57-89. United States: Edward Elgar Publishers, 2019.

Dreyfuss, Rochelle C., and Graeme B. Dinwoodie. *A Neofederalist Vision of TRIPS: The Resilience of the International Intellectual Property Regime.* OUP USA. 2012.

Halabi, Sam F. *Intellectual Property and the New International Economic Order: Oligopoly, Regulation, and Wealth Redistribution in the Global Knowledge Economy*. Cambridge University Press.

Ho, Cynthia. *Access to Medicine in the Global Economy: International Agreements on Patents and Related Rights*. OUP USA, 2011.

Khader, Feroz A. *The Access Regime: Patent Law Reforms for Affordable Medicines*. Oxford University Press*,* 2016.

Pandey, Deep N., *Ethnoforestry: Local Knowledge for Sustainable Forestry and Livelihood Security*. Himanshu Publications, 1998.

Peukert, Alexander. *The Colonial Legacy of the International Copyright System*. Mamadou Diawara & Ute Röschenthaler (eds), Staging the Immaterial. Rights, Style and Performance in Sub-Saharan Africa. Oxford, Sean Kingston.

Prashant Reddy T., Sumathi Chandrashekaran. *Create, Copy, Disrupt: India's Intellectual Property Dilemmas.* Oxford University Press, 2017.

Ragavan, Srividhya. *Patent and Trade Disparities in Developing Countries*. OUP USA, 2012.

Richards, Donald G. *Intellectual Property Rights and Global Capitalism: The Political Economy of the TRIPS Agreement*. New York: M.E. Sharpe, 2004.

Sell, Susan K. *Private Power, Public Law: The Globalization of Intellectual Property Rights.* Edited by Steve Smith and Thomas Biersteker. Cambridge University Press, 2003.

Tieya, Wang. *The Structure and Process of International Law.*Edited by Ronald Macdonald and Douglas M. Johnston. *Springer Netherlands* (1983).

Vats, Anjali. *The Color of Creatorship: Intellectual Property, Race, and the Making of Americans*. United States: Stanford University Press, 2020.

Watal, Jayashree, *Intellectual Property Rights in the WTO and Developing Countries.* Springer Netherlands, 2001.

Legal Documents

Convention on Biological Diversity, opened for signature 5 June 1992, 1760 UNTS 79 (entered into force 29 December 1993).

General Assembly resolution 217(III), Universal Declaration of Human Rights, A/RES/217A(III) (10 December 1948), available from https://www.ohchr.org/en/human-rights/universal-declaration/translations/english.

Hong Kong. Copyright Ordinance 1997, Cap. 58 Copyright Ordinance. Available at <[https://www.elegislation.gov.hk/hk/cap528?m=1&pm=0&pmc=1>].

India. *Biological Diversity Act*. Act Number 18 of 2003. [trans. Legislative Department of Ministry of Law and Justice (India). The Biological Diversity Act, 2002, available at <https://www.wipo.int/tk/en/databases/tklaws/articles/article_0011.html>].

India. *The Patents Act*. Act Number 39 of 1970. [trans. Legislative Departmenrt of Ministry of Law and Justice (India). The Patents Act, 1970, available at < https://legislative.gov.in/actsofparliamentfromtheyear/patents-act-1970>].

The People's Republic of China. *Patent Law 1984*. [trans. The State Council (China), Patent Law of the People's Republic of China], available at <[https://english.www.gov.cn/archive/laws_regulations/2014/08/23/content_281474983043612.htm>].

United Kingdom. *Copyright, Designs, and Patents Act* 1988. Cabinet Order No. 48 of 1988. Available at <[https://www.legislation.gov.uk/ukpga/1988/48/contents>].

United Kingdom. Patents Act 1977, Cabinet Order No. 37 of 1977. Available at <[https://www.legislation.gov.uk/ukpga/1977/37/contents>].

Web Sources

Council for Trade-Related Aspects of Intellectual Property Rights. "The Relationship Between the TRIPS Agreement and The Convention on Biological Diversity." Ministry of Commerce and Industry of India, 2006, accessed 20 January 2022, https://commerce.gov.in/international-trade/india-and-world-trade-organization-wto/indian-submissions-in-wto/trade-related-aspects-of-intellectual-property-rightstrips/the-relationship-between-the-trips-agreement-and-the-convention-on-biological-diversity-and-the-protection-of-traditional-knowledge-2/#:~:text=We-%20believe%20that%20the%20TRIPS,the%20objectives%20of%20the%20CBD.

Hsaio, Jennifer. "GMOs and Pesticides: Helpful or Harmful? - Science in the News." Science In The News. *Harvard University*. Accessed 30 January 2022. https://sitn.hms.harvard.edu/flash/2015/gmos-and-pesticides/.

IUCN. "India | IUCN." n.d. International Union for Conservation of Nature - IUCN. https://www.iucn.org/asia/countries/india. Accessed June 20th 2022.

Jain, Dr. Sonia. Traditional Medicine and Intellectual Property Rights-an Indian perspective. http://www.legalservicesindia.com/article/400/Traditional-Medicine-and-Intellectual-Property-Rights-An-Indian-Perspective.html. ISBN 978-81-928510-1-3. Accessed January 28th 2022.

Khan, Mahtab A. "Raihan/ Tulsi." National Health Portal (2016). https://www.nhp.gov.in/Raihan-Tulsi_mtl.

National Center for Biotechnology Information. "Patent Summary for US-5663484-A, Basmati rice lines and grains." Accessed 30 January 2022, https://pubchem.ncbi.nlm.nih.gov/patent/US-5663484-A.

National Center for Biotechnology Information. "Patent Summary for US-5401504-A, Use of turmeric in wound healing." Accessed 30 January 2022, https://pubchem.ncbi.nlm.nih.gov/patent/US-5401504-A.

National Center for Biotechnology Information. "Patent Summary for US-5420318-A, Preparation of high purity neem seed extracts." Accessed 30 January 2022, https://pubchem.ncbi.nlm.nih.gov/patent/US-5420318-A.

National Innovation Foundation-India. "National Innovation Foundation-India." https://nif.org.in/. Accessed June 21st 2022.

NCERT. "BIODIVERSITY AND CONSERVATION." https://ncert.nic.in/ncerts/l/lebo115.pdf. Accessed June 20th, 2022.

Odhiambo, Ran Kamp, Thomas, and Johan Kamp, "You cannot fix indigenous knowledge," *ILEIA Newsletter* 6, no. 1 (1990): 3-5.

OECD. "IPR Common Report, Research and Development Statistics (RDS)." https://www.oecd.org/sti/inno/researchanddevelopmentstatisticsrds.htm. Accessed June 21st 2022.

Pandey, M. M., Subha Rastogi, and A.K.S. Rawat. "Indian Traditional Ayurvedic System of Medicine and Nutritional Supplementation, Evidence-Based Complementary and Alternative Medicine." https://www.hindawi.com/journals/ecam/2013/376327/cta/.

Roychowdhury, Adrija. "There are 600 potentially endangered languages in India each dead language takes away a culture system." The Indian Express (2020). https://indianexpress.com/article/research/interna tional-mother-language-day-2018-ganesh-devy-indian-languages-5072487/.

Sentinel Digital Desk. “India’s exploitation under British rule - Sentinelassam.” The Sentinel Assam (2020). https://www.sentinelassam.com/editorial/indias-exploitation-under-british-rule-495361.

TKDL. “About TKDL.” http://www.tkdl.res.in/. http://www.tkdl.res.in/tkdl/langdefault/common/Abouttkdl.asp?GL=Eng,%20last%20visited%20on%204-4-2018.

UK Parliament. “East India Company and Raj 1785-1858.” https://www.parliament.uk/about/living-heritage/evolutionofparliament/legislativescrutiny/parliament-and-empire/parliament-and-the-american-colonies-before-1765/east-india-company-and-raj-1785-1858/. Accessed January 30th 2022.

UNESCO. “Sustainable Development.” https://en.unesco.org/themes/education-sustainable-development/what-is-esd/sd. Accessed June 21st 2022.

United Nations. “#Envision2030: 17 goals to transform the world for persons with disabilities | United Nations Enable.” United Nations. https://www.un.org/development/desa/disabilities/envision2030.html. Accessed June 21st 2022.

United Nations. Department of Economic and Social Affairs. “Traditional knowledge – an answer to the most pressing global problems? | UN DESA | United Nations Department of Economic and Social Affairs.” the United Nations (2019). https://www.un.org/development/desa/en/news/social/permanent-forum-on-indigenous-issues-2019.html.

V, Biju K. “Don’t drive Indian farmers to suicide through rcEP.” *ohn Hopkins Advanced School of Advanced International Studies* (2019), (November). https://www.downtoearth.org.in/blog/economy/don-t-drive-indian-farmers-to-suicide-through-rcep-67565.

V.K., Gupta. An Approach for Establishing a Traditional Knowledge Digital Library (2000). http://nopr.niscair.res.in/bitstream/123456789/26010/1/JIPR%205%286%29%20307-319.pdf.

Variath, Adithya A. “Decolonising Intellectual Property in the Post-Colonial World: COVID and the Geopolitics of IP.” *The Geopolitics* (2021). https://thegeopolitics.com/decolonising-intellectual-property-in-the-post-colonial-world-covid-and-the-geopolitics-of-ip/.

WIPO. “List and Brief Technical Explanation of Various Forms in which Traditional Knowledge May be Found.” WIPO (2010). https://www.wipo.int/meetings/en/doc_details.jsp?doc_id=147152.

WIPO. “Patent Law of the People’s Republic of China (as amended up to the Decision of December 27, 2008, regarding the Revision of the Patent Law of the People’s Republic of China).” WIPO. https://www.wipo.int/tk/en/databases/tklaws/articles/article_0042.html. Accessed January 30th 2022.

WIPO. “Patent Law of the People’s Republic of China (as amended up to the Decision of December 27, 2008, regarding the Revision of the Patent Law of the People’s Republic of China).” WIPO. https://www.wipo.int/tk/en/databases/tklaws/articles/article_0045.html. Accessed January 30th 2022.

WIPO. “Traditional Knowledge.” WIPO. https://www.wipo.int/tk/en/tk/. Accessed January 30th 2022.

WIPO. n.d. “Copyright, Designs and Patents Act 1988 (Chapter 48).” https://www.wipo.int/tk/en/databases/tklaws/articles/article_0095.html. Accessed January 30th 2022.

World Bank. “China Trade Statistics | WITS.” World Integrated Trade Solution (WITS). https://wits.worldbank.org/countryprofile/en/chn. Accessed January 30th 2022

World Intellectual Property Organization (WIPO). “Traditional Knowledge.” https://www.wipo.int/tk/en/tk/. Accessed January 30th 2022.