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When John Locke Meets Lao Tzu: The Relationship Between Intellectual Property, Biodiversity and Indigenous Knowledge and the Implications for Food Security

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WHEN JOHN LOCKE MEETS LAO TZU: THE RELATIONSHIP BETWEEN INTELLECTUAL PROPERTY, BIODIVERSITY AND INDIGENOUS KNOWLEDGE AND THE IMPLICATIONS FOR FOOD SECURITY ^

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"Seed is the first link in the food chain and embodies millennia of evolution and thousands of years of farmers breeding as well as the culture of freely saving and sharing seed. It is the expression of earth's intelligence and the intelligence of farming communities down the ages."[1]

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ABSTRACT

This article aims to examine the relationship between the concepts of intellectual property, biodiversity, and indigenous knowledge from the perspective of food security and farmers' rights. Even though these concepts are interdependent and interrelated, they are in a State of conflict due to their inherently enshrined differences. Intellectual property is based on the need of protecting individual property rights in the context of creations of their minds. On the other hand, the concepts of biodiversity, indigenous knowledge and farmers' rights accentuate the aspects of equity and community. This article aims to analyse and critically assess the respective legal framework and identify the points of conflict. Taking into account the realities of the current globalized world, these concepts are explored in a broader context of the North-South divide and sustainable development. To examine the core divergences between these concepts, the article takes also into account their philosophical underpinnings and justification theories with the aim to confront them with the realities and needs of the current world. Being aware of the different cultural traditions in the East and West, this article intends to enrich the academic discourse in this field by looking at these issues through the lenses of the Eastern tradition.

I. INTRODUCTION

The issues related to seeds and agriculture stand at the crossroads of two diverging concepts. On the one hand, the private sector is looking at these matters from the profit-making, commercial perspective, making use of the intellectual property system based on private, individual rights. The philosophical underpinnings of the Western concept of intellectual property rights might be found in John Locke's understanding of private property rights, in which nature is enclosed through individual labour. It is based on the assumption of the so-called *terra nullius,* a world where the right to ownership is established by labour.[2]

International Biolaw Interest Group, the European Society of International Law (ESIL) Interest Group on International Environmental Law.

1. Navdanya International & International Commission on the Future of Food and Agriculture, The Law of the Seed, 3 (2013), https://navdanyainternational.org/publications/the-law-of-the-seed/ (last updated March 13, 2024).

2. Noah Zerbe, *Contested Ownership: TRIPs, CBD, and Implications for Southern African Biodiversity*, 1PERSPS. ON GLOB. DEV. AND TECH. 294, 308 (2002); *see also* Adam Moore, *A Lockean Theory of Intellectual Property Revisited*, 49 SAN DIEGO L. REV. 1069, 1071–72 (2012).

On the other hand, agriculture represents the sole source of livelihood for many small farmers, while traditional knowledge[3] and farming practices related thereto constitute a fundamental part of the farming communities' way of life and have contributed to agricultural biodiversity.[4] From the perspective of the Western philosophy, this brings to mind the thoughts of Jean Jacque Rousseau, who asserted that individual property rights find their limits in the society; the rights of an individual must be balanced against the needs of society.[5] He emphasized that property rights are relational phenomena defined by the society.[6] Although Rousseau was not against the idea of private property rights, he advocated for a society that would address inequalities and make efforts to remedy them, ensuring that "every citizen has at least a minimal share of private property".[7]

This article aims to critically assess the issues of intellectual property rights, biodiversity, and protection of traditional knowledge from the perspective of food security and farmers' rights, with the goal of identifying critical points and accentuating feasible approaches. To accomplish this, the article applies elements of the so-called mixed-methods research, combining deductive and inductive reasoning.[8] Deductive reasoning is employed to articulate expectations regarding the nature and characteristics of the analysed concepts. Inductive reasoning, on the other hand, is evident in the analysis of respective legislation, reports, or judicial decisions. A general hypothesis emerging from the characteristics of these concepts – intellectual property rights, biodiversity, and traditional knowledge – suggests that they are simultaneously interrelated and inherently conflicted.

As indicated above, this inherent conflict suggests that the

3. The terms "indigenous knowledge" and "traditional knowledge" are used interchangeably for the purposes of this article, despite the distinctions that exist between the two. These distinctions sometimes reflect regional preferences of one term over the other. For example, a study found that while there is often overlap in the scientific literature in the use of these terms, specific areas may favor one term, which influences how knowledge is organized and accessed. *See* Omwoyo Bosire Onyancha, *Indigenous Knowledge, Traditional Knowledge and Local Knowledge: What is the Difference? An Informetrics Perspective,* GLOBAL KNOWLEDGE, MEMORY AND COMMUNICATION, 251 (2022).

4. Clifton Makate, *Local Institutions and Indigenous Knowledge in Adoption and Scaling of Climate-Smart Agricultural Innovations among Sub-Saharan Smallholder Farmers*, 12 (2), INT'L J. OF CLIM. CHANG. STRATEG. MANAG., 270 280(2020).

5. Zerbe, *supra* note 2, at 310.

6. David Siroky & Hans-Jörg Sigwart, *Principle and Prudence: Rousseau on Private Property and Inequality*, 46 POLITY 381, 388 (2014).

7. *Id*. at 400.

8. Bruce Gay & Sue Weaver, *Theory Building and Paradigms: A Primer on the Nuances of Theory Construction,* 1 AM. INT'L J. OF CONTEMP. RSCH. 24, 27–28 (2011).

concepts are rooted in partially different understandings of realities – or perhaps different ontological assumptions - emphasizing various aspects of these interdependent issues.[9] Harmonizing these conflicting concepts requires understanding and interpreting them in the light of their philosophical underpinnings and justification theories. For this reason, the concepts are analysed in a broader context, drawing comparisons between the approaches adopted by Western and Eastern philosophies and cultures.

II. HUMAN RIGHTS PERSPECTIVE: RIGHT TO FOOD, FOOD SECURITY AND FOOD SOVEREIGNTY

Food security constitutes an inherent part of the right to food, which is internationally enshrined most notably in Art.11 of the International Covenant on Economic, Social and Cultural Rights as a part of a broader right to an adequate standard of living.[10] Art.25 of the Universal Declaration of Human Rights also stipulates that everyone has the right to a standard of living adequate for their health and well-being, with food perceived as an essential component of this right.[11] The right to adequate food is indivisibly linked to human dignity, implying "freedom from hunger, poverty eradication, food security, and food sovereignty."[12]

The content of the right to food is elaborated in detail in the General Comment No.12 adopted by the Committee on Economic, Social and Cultural Rights. This document, among other things, stipulates that the issue of hunger and malnutrition stems not from a lack of food, but from a lack of access to available food due to

9. Louis Howe, *Enchantment, Weak Ontologies, and Administrative Ethics*, 38 ADMIN. & SOC'Y 422, 423 (2006). For a case study on environmental ethics, Paolo D. Farah & Alessio Lo Giudice, *Climate Justice in the Anthropocene and Its Relationship with Science and Technology: The Importance of Ethics of Responsibility*, CONN. LAW REV. (2023).

10. A similar approach understands the right to food as a part of the right to an adequate standard of living. This perspective also applies to Article 25 of the Universal Declaration of Human Rights. *See generally,* Hans Morten Haugen, Manuel Ruiz Muller, & Savita Mullapudi Narasimhan, *Food Security and Intellectual Property Rights: Finding the Linkages*, INTELL. PROP. AND HUMAN DEV.: CURRENT TRENDS AND FUTURE SCENARIOS (Tzen Wong & Graham Dutfield eds., 2010). Apart from the International Covenant on Economic, Social and Cultural Rights, references to the right to food might be found also in the Convention on the Rights of the Child, the Convention on the Elimination of All Forms of Discrimination against Women and the Convention on the Rights of Persons with Disabilities. *See* Sharmin Tania & Jackbeth K. Mapulanga-Hulston, *Examining the Synergy Between the Right to Food and Agricultural Trade Policies,* 24 AFR. J. INT'L & COMP. L. 293, 294–95 (2016).

11. Tania & Mapulanga-Hulston, *supra* note 10.

12. *See* Chidi Oguamanam, *Intellectual Property, Agricultural Biotechnology and the Right to Adequate Food: A Critical African Perspective*, 23 AFR. J. INT'L & COMP. L. 503, 503 (2015).

poverty.[13] Food security is interpreted as a sustainable access to adequate food for present and future generations.[14] Accessibility consists of two components: economic and physical. Economic accessibility ensures that the costs related to acquiring food do not compromise or threaten the satisfaction of other basic needs. Physical accessibility implies that food should be accessible to everyone, regardless of social status or position.[15] The Food and Agriculture Organization of the United Nations (FAO) summarized their understanding of this concept, stating "[f]ood security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life."[16] This implies that food security is founded on the principle of equity[17], particularly in the realms of food production and distribution. Ensuring the nutritional needs of rural and urban underprivileged populations during periods of local food scarcity poses a critical challenge for sustainable agriculture.[18] The right to food should ensure that access to food is not compromised by other policies, thereby preventing the adverse effects, particularly on the most vulnerable groups in society.[19]

The FAO also issued Voluntary Guidelines in 2004 to support the progressive realization of the right to food in the context of national food security.[20] These guidelines are intended to assist States in

13. U.N. Comm. on Econ., Soc. & Cultural Rts., *General Comment No.12: Art. 11 (The Right to Adequate Food)* § 5, U.N. Doc. E/C.12/1999/5 (1999).

14. The adequacy in this relation is determined by prevailing social, economic, cultural, climatic, and other conditions, whereas sustainability accentuates long term availability and accessibility. *Id.* at § 7.

15. *Id*. at § 13.

16. *Sustainable Development Goals*, FOOD & AGRIC. ORG. OF THE U.N., (last visited Feb. 13, 2024). It has been widely recognized that the concept of food security includes four major aspects: availability, access, utilization and stability of food and food producing resources. *See* Tania & Mapulanga-Hulston, *supra* note 10.

17. In parallel with the concept of food security, scholars have extensively explored the concept of energy security as connected counterpart to food security. *See, e.g.*, Paolo D. Farah, *Strategies to Balance Energy Security, Business, Trade and Sustainable Development: Selected Case Studies*, 13 J. WORLD ENERGY L. & BUS. 95 (2020); R B Larson, *Reconciling Energy and Food Security*, 48 UNIV. RICH. L. REV. 929 (2013).

18. U.N. GAOR*, Our Common Future: Report of the World Commission on Environment and Development*, U.N. Doc. A/42/427, annex (1987).

19. Tania & Mapulanga-Hulston, *supra* note 10, at 297.

20. Food & Agric. Org. of the U.N., *Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food* (Nov. 2004), http://www.fao.org/docrep/meeting/009/y9825e/y9825e00.HTM. The International Covenant on Economic, Social and Cultural Rights requires that its Parties work towards the progressive realization of its rights, including the right to food. Debra M. Strauss, *The Application of TRIPs*

creating an enabling environment focused on realizing the right to food and ensuring food security with their respective individual jurisdictions. They emphasize the importance of good governance and effective policy formulation and administrative practices.[21] They stress, among other things, that the right to food cannot be realized sustainably outside the context of food security, which also encompasses food sovereignty. The concept of food sovereignty emphasizes the importance of food policies oriented towards the needs of local communities and markets, and based on local knowledge and agro-ecological production systems.[22] Moreover, they highlights that accessibility of food, rather than its adequacy - covering a broad range of issues, including the access to seeds – is the main issue in the efforts to combat hunger.[23] Carmen G. Gonzales, referring to the work of Nobel Prize-winning economist Amartya Sen, points out that deficiencies in the food distribution network and related economic inequalities, rather than food scarcity, are the main reasons for food insecurity.[24]

The concept of food security has also been discussed at the level of the World Trade Organization (WTO). The preamble of the WTO Agreement on Agriculture makes a reference to food security as a non-trade concern,[25] which is intricately linked to the situation in developing countries.[26]

> Food security must also be considered within the framework of sustainable development. Within agriculture, it extends beyond merely preventing the loss of germplasm to preserving traditional knowledge concerning plants.[27] Agricultural biodiversity is therefore

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to GMOs: International Intellectual Property Rights Regime and Biotechnology, 45 STAN. J. INTL. L. 287, 313 (2009).

21. BEN SAUL ET AL., THE INTERNATIONAL COVENANT ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS: COMMENTARY, CASES AND MATERIALS 884 (2014).

22. Oguamanam, *supra* note 12, at 510–11.

23. SAUL ET AL., *supra* note 21, at 884.

24. Carmen G. Gonzales, *Trade Liberalization, Food Security, and the Environment: The Neoliberal Threat to Sustainable Rural Development,* 14 TRANSNAT'L L. & CONTEMP. PROBS. 420, 428 (2004).

25. On the role of non-trade concerns in the existing global trading regime with a focus on China, *See* Paolo D. Farah, *Trade and Progress: The Case of China*, 30 COLUM. J. ASIAN L. 51, 53-60 (2016).

26. Tania & Mapulanga-Hulston, *supra* note 10, at 293.

27. Uchenna F. Ugwu, *Maximizing the Differentiation Principle in Regional IP Treaties to Advance Food Security: Limitations in West Africa´s Regional IP and Trade Regime,* J. WORLD INTELL. PROP. 1, 4 (2021).

regarded as essential for mitigating environmental degradation.[28]

The interplay between the right to food and intellectual property represents one of the most contentious issues in both international and national law, characterized by distinctive political facets.[29] Some argue for the need to approach intellectual property in the context of agriculture with caution, considering that "the existence of humankind is founded on life forms."[30] However, the right to food emphasizes also the need to "[i]mprove methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources."[31]

It has been argued that genetically modified crops "could make a significant contribution to a broader food security strategy."[32] At the same time, the UN Committee on Economic, Social and Cultural Rights emphasized the necessity of ensuring that "intellectual property rights do not lead to a denial or restriction of everyone´s access to productive resources like seeds, as such access is crucial for the right to food and farmers´ rights." [33] These different views demonstrate that "*one size does not fit all* in applying IPRs to attain the goal of food security."[34] Thus, for the purposes of this article, the right to food and food security perspective acknowledges that the issues elaborated

28. *Id.*

29. LAURENCE R. HELFER & GRAEME W. AUSTIN, HUMAN RIGHTS AND INTELLECTUAL PROPERTY, 364 (2011).

30. Temesgen Abebe Degu, *A Critical Examination of Breedes´ Monopoly Rights to the Detriment of Farmers under the Ethiopian Plant Breeders´Rights Law,* 2 J. L. & LEGAL REFORM, 401, 402 (2021).

31. Tania & Mapulanga-Hulston, *supra* note 10, at 295. In this respect, it might be mentioned that the issues discussed in the article address also the consequences of the so-called Green Revolution, which marked the introduction of industrial agriculture in developing countries. One of the aims associated with the Green Revolution was the reduction of world hunger by introducing science and technology in the agriculture in order to boost crop yields. However, its results have included strengthening the position of industrial farmers to the detriment of small farmers and rural poor, as well as leading to the loss of crop diversity, outbreaks of diseases, and increased use of pesticides. *See* Gonzales, *supra* note 24, at 440–46.

32. Li Jiang, *Commercialization of the Gene-Edited Crop and Morality: Challenges from the Liberal Patent Law and the Strict GMO Law in the EU,* 39 (2) NEW GENETICS AND SOCIETY 191, 192 (2020).

33. Mirka Fries et al., *Commentary: Monsanto's Legal Strategy in Argentina from a Human Rights Perspective*, 4 BUS. & HUM. RTS. J. 357, 362 (2019).

34. Uchenna F. Ugwu, *Maximizing the Differentiation Principle in Regional IP Treaties to Advance Food Security: Limitations in West Africa´s Regional IP and Trade Regime*, 24 J. WORLD INTELLECT. PROP. 1, 2 (2021).

further on are inherently cross-sectorial nature and have wide-ranging value-based implications. This approach enables us to analyze them through the lens of human rights and social justice.[35]

III. FARMERS' RIGHTS

The underlying idea behind the farmers' rights is based on the assumption that farmers, through their agricultural practices, contribute to agricultural innovations and deserve recognition for their efforts. From the perspective of food security in agriculture, farmers are particularly important in developing countries, as they often serve as the primary source of seed supply.[36] It is estimated that seed saving may account for 15-20% of the world´s food supply.[37] In most developing countries, a large portion of the population depends on agriculture for employment and income, with many of these farmers being smallholders. A common practice among these farmers is to save seeds from the harvest for further propagation, sale and exchange – a practice known as the farmers' privilege).[38]

FAO has played a key role in regulating and strengthening farmers' rights at an international level. In 1983, the FAO introduced the International Undertaking on Plant Genetic Resources for Food and Agriculture (Undertaking), which was based on the assumption of unrestricted availability of germplasm. This includes not only traditional landraces and wild plants but also plant varieties protected by breeders' rights, seen as a common heritage of mankind.[39]

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35. Comm. on Econ., Soc. and Cultural Rts., *supra* note 13; *see* Laurence Helfer, *Toward a Human Rights Framework for Intellectual Property*, 40 U.C. DAVIS L. REV. 973, 973 (2007) (arguing that the international intellectual property system has human rights implications).

36. Saksham Chaturvedi & Chanchal Agrawal, *Analysis of Farmer Rights: in the Light of Protection of Plant Varieties and Farmers' rights Act of India*, 33 EUR. INTELL. PROP. REV. 708, 709 (2011).

37. Audil Gull et al., *Terminator Technology: Concerns and Relevance to Seed Industry,* THE PHARMA INNOVATION 1444, 1445 (2022).

38. GRAHAM DUTFIELD, INTELLECTUAL PROPERTY RIGHTS TRADE AND BIODIVERSITY: SEEDS AND PLANT VARIETIES 29 (2000).

39. Since the broad concept of common heritage of mankind, which covers all types of germplasm, was too controversial for many countries, it was later revised in the so-called Keystone Principles. These principles stated that plants falling under the scope of protection of the UPOV Convention would not be treated as the common heritage of mankind. Apart from this, the Keystone Principles paved the way for recognizing the need to provide compensation for access to ancient landraces and wild crops, as well as for protecting farmers' rights. Michael Burger & Paul Frymer, *Property Law and American Empire*, 35 U. HAW. L. REV. 471, 516 (2012). In the context of the global North-South dynamics, the concept of 'cultural commons' and 'common heritage of mankind' are rather controversial. Historically, germplasm has been appropriated by developed countries without paying any form of remuneration to the developing

Subsequent resolutions, such as Resolution 4/89, amended the Undertaking to align it more closely with the UPOV Convention adopted by the International Union for the Protection of New Varieties of Plants (the UPOV Convention) and interests of agri-business. The resolution 5/89 explicitly acknowledged the role of farmers in improving and disseminating the plant genetic resources, while resolution 3/91 later clarified that the common heritage "is subject to the sovereign rights of States over the genetic resources within their jurisdictions".[40] It also suggested creating a mechanism to implement farmers' rights in practice, primarily through the proposal to establish an "international fund on plant genetic resources conservation and utilization in developing countries."[41]

The importance of plant genetic resources for food and agriculture has also been recognized in the legally binding International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), which revised the Undertaking. The ITPGRFA establishes a common pool of the world's major crops and forages falling under the public domain, known as the Multilateral System of Access and Benefit-Sharing (MLS). According to Art.12.3(a), the MLS provides an access to crops in this system "[s]olely for the purpose of utilization and conservation for research, breeding, and training for food and agriculture, provided that such purpose does not include chemical, pharmaceutical and/or other non-food/feed industrial uses."[42] This system also includes a benefit-sharing mechanism, which might be described as a limited compensatory mechanism. Recipients are required to share a portion of the commercial benefits generated from the sale of the plant and genetic resources products when they are not available for further research and breeding.[43] With respect to farmers' rights, the ITPGRFA might be seen as a step towards their realization.[44] It

countries from which it was taken. *See* Lara E. Ewens, *Seed Wars: Biotechnology Intellectual Property and the Quest for High Yield Seeds*, 23 B.C. INT'L & COMP. L. REV. 285, 289 (2000) (noting that the extracted genetic material is a "high-priced commodity" that has never been directly remunerated back to the Third World counties where they originate).

40. Chidi Oguamanam, *Farmers' Rights and the Intellectual Property Dynamic in Agriculture*, *in* THE SAGE HANDBOOK OF INTELLECTUAL PROPERTY 238, 244 (Matthew David & Debora Halbert eds., 2014).

41. *Id.*

42. International Treaty on Plant Genetic Resources for Food and Agriculture art. 12, Nov. 3, 2001, 2400 U.N.T.S. 303.

43. Christine Frison et al., *Intellectual Property and Facilitated Access to Genetic Resources under the International Treaty on Plant Genetic Resources for Food and Agriculture*, 32 EUR. INTELL. PROP. REV. 1, 2 (2010).

44. Oguamanam, *supra* note 40, at 244.

recognizes the contribution of local communities and indigenous peoples to "[c]onservation and development of plant genetic resources which constitute the basis of food and agricultural production throughout the world."[45] The ITPGRFA shifts the responsibility for the realization of farmers' rights on national governments. According to Art. 9.2, national government shall, in accordance with their national legislation, take measures to protect traditional knowledge, ensure equitable participation in benefit-sharing of plant genetic resources, and guarantee the right to participate in decision-making at national level on matters related to the conservation and sustainable use of plant genetic resources. Moreover, Art.9.3 clarifies that none of the provisions of the ITPGRFA shall be interpreted in a way that would restrict the farmers' privilege.

Farmers' rights, as enshrined in the FAO documents, are based on the idea of "trans-generational continuum of innovation and knowledge production", stemming from open and collective culture of knowledge production, sharing, and development.[46] The benefits can be seen not only in the fact that farmers and their communities can rely on a system of farmers' rights, but also in a greater variety of food and agricultural products and increased food security.[47]

The interests and practices of farmers often conflict with those of corporate agri-business stakeholders specialized in seed-breeding for commercial purposes. The protection granted to breeders is largely based on the assumption that biotechnological inventions are analogous to mechanical inventions.[48] Major points of conflict include "[t]he open, natural biological process of self-propagation of genetic resources, and the customary practices of seed exchange among farmers."[49] The plant-breeding industry is capable of developing seeds that produce higher yields with no regeneration or replanting value by using advanced technological methods and scientific knowledge, such as bioinformatics or genomics.[50] The distribution of such seeds thus enables the industry

45. International Treaty on Plant Genetic Resources for Food and Agriculture art. 9 Nov. 3, 2001, 2400 U.N.T.S. 303.

46. Oguamanam, *supra* note 40, at 247.

47. Anushka Verma, *Plant Breeders' Rights v Farmers' Rights: A Contradistinction Between the Indian Approach and International Protection*, 16 J. INTELL. PROP. L. & PRAC. 958, 958–967 (2021).

48. Degu, *supra* note 30, at 402.

49. Oguamanam, *supra* note 40, at 239.

50. Bioinformatics can be regarded as a core discipline of genomics, developing statistical and computational techniques to analyze biological information in a data-driven fashion. It may also be defined as research, development, and application of computational tools for the use of biological, medical, behavioural or health data (the acquisition, storage, and visualisation of such

to control and limit seed sharing to a certain extent.[51]

The so-called terminator technology represents an example of this trend, developed with the intention to "secure return on investments through the protection of plant varieties."[52] The terminator technology essentially involves the insertion of new genetic material into the genome of plants, which restricts and controls the seed's capacity to germinate under specific conditions. By rendering the subsequent generation sterile, terminator technology ensures that farmers are unable to reuse saved seeds. Moreover, there is also a risk that terminator seeds, when treated with chemicals, might adversely affect surrounding crops. From the perspective of farmers' rights and food security, terminator technology represents a serious risk, as it would render any legal guarantees resting in the possibility to save seeds meaningless.[53] On the contrary, by applying this technology, farmers would be compelled to purchase new seeds on a yearly basis. The consequent application of this technology would disproportionately impact small farmers in developing countries, whose survival largely depends on the ability to exercise their farmers' privilege.[54]As Jeremy Rifkin concludes more expressively, terminator technology might be considered pathological from a social perspective, as it raises questions concerning the control of the seeds of life.[55] However, in case the law does not provide sufficient checks and balances to prevent application of terminator technology, the public might exert an effective pressure on the industry.

The issue of terminator technology has also been addressed at international level. Referred to as Genetic Use Restriction Technologies (GURTs), its impact - particularly on small farmers, indigenous people and local communities - and related issues have

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data). Hub Zwart, *Genomics and identity: the bioinformatisation of human life*, 12 MED. HEALTH CARE & PHIL. 125, 126 (2009).

51. Oguamanam, *supra* note 40, at 240.

52. Gull, *supra* note 37, at 1444.

53. Kanchana Kariyawasam, *Terminator Technology as a Technological Means of Forcing Intellectual Property Rights in Plant Germplasm: Its Implications for World Agriculture*, 31 EUR. INTELL. PROP. REV. 37, 37–44 (2009).

54. Strauss, *supra* note 20, at 300. From a food security standpoint, the excessive protection of high-yield seeds and the overreliance on monocultures can potentially have adverse effects on the global food supply. In fact, the emphasis on high-yield seeds and monocultures may restrict access to, and reduce the diversity of, plant genetic resources that have historically sustained human agriculture for millennia. As James Boyle emphasizes, it might lead to "[u]nderutilization of genetic resources that have been in the cultural commons for over 10,000 years." Quoted in Strauss, *supra* note 20, at 302.

55. Jeffrey Kluger et al., *The Suicide Seeds*, TIME (Feb. 1, 1999), http://content.time.com/time/magazine/article/0,9171,18814,00.html.

been discussed and investigated within the framework of the United Nations' Convention on Biological Diversity. However, despite acknowledging the various issues related to the application of GURTs and their potentially negative impact on vulnerable communities, an explicit call for a ban on such technologies has not been made.[56]

According to the General Comment No.17, the issue of farmers' rights can also be viewed in the context of Art.15 of the International Covenant on Economic, Social and Cultural Rights, which recognizes, among other things, the right of everyone to enjoy the benefits of scientific progress and its applications, as well as to benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which they are the author. These interests "cannot be isolated from the other rights recognized in the Covenant […] [States] are therefore obliged to strike an adequate balance between their obligations under article 15, paragraph 1 (c), on one hand, and under the other provisions of the Covenant, on the other hand, with a view to promoting and protecting the full range of rights guaranteed in the Covenant."[57] This indicates that core obligations covered by the right to food should be incorporated. As the General Comment No.17 further notes, "intellectual property is a social product and has a social function."[58] For this reason, States should take steps to prevent prohibitive costs including those for plant seeds and other means of production, as well as for other essential products, such as medicines.[59]

IV. TRADITIONAL KNOWLEDGE

The ITPGRFA operates with the concept of traditional knowledge. In this regard, it is appropriate to examine the relationship between the ITPGRFA and the Convention on Biological Diversity

56. Strauss, *supra* note 20, at 300. *See also* Sheila Jasanoff, *Biotechnology and Empire: The Global Power of Seeds and Science*, 21 OSIRIS. 273, 284–85 (2006). The fears concerning the use of genetically modified crops are also related to the so-called genetic erosion, in which involves the depletion of the gene pool. This form of erosion could lead to the extinction of plant species and the loss of their beneficial traits, which enable resistance to diseases and pests. Together with genetic uniformity, these factors could increase the risk of large-scale crop failure. Ewens, *supra* note 39, at 296. Another factor to consider is that the increased use of biotechnology goes hand in hand with the increased use of pesticides. *See* Gonzales, *supra* note 24, at 452.

57. Comm. on Econ., Soc. and Cultural Rts., General Comment No. 17, ¶ 35, U.N. Doc. E/C.12/GC/17 (Jan. 12, 2006); *see also* SAUL ET AL., *supra* note 21, at 1019.

58. Comm. on Econ., Soc. and Cultural Rts., *supra* note 58, at ¶ 35; *see also* SAUL ET AL., *supra* note 21, at 1019–20.

59. Comm. on Econ., Soc. and Cultural Rts., *supra* note 58 at ¶ 35; *see also* SAUL ET AL., *supra* note 21, at 1020.

(CBD), including provisions intended to protect traditional knowledge. The ITPGRFA is a subsequent agreement to the CBD, focusing on agriculture and food rather than biodiversity in general. Hence, it might be concluded that the ITPGRFA and the CBD represent a form of *lex specialis* and *lex generalis*. The ITPGRFA should thus be implemented in harmony with the CBD, and the provisions regulating the protection of traditional knowledge in the CBD should be considered when discussing about the traditional knowledge of farmers.[60]

According to Art.8 (j) of the CBD, States shall "[s]ubject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practice." [61] Traditional knowledge of farmers contributes to the sustainable use of plant genetic resources, as well as to biodiversity in agriculture.[62] Consequently, traditional knowledge in

60. Executive Secretary of the U.N. Convention on Biological Diversity, *Study on the Relationship Between an International Regime on Access and Benefit-Sharing and Other International Instruments and Forums that Govern the Use of Genetic Resources* §3.3.3, UNEP/CBD/WG-ABS/7/INF/3/Part.1 (Mar. 3, 2009), https://www.cbd.int/doc/meetings/abs/abswg-09/information/abswg-09-abswg-07-inf-03-part1-en.pdf.

61. According to Article 2 of the Convention on Biological Diversity, "[b]iological diversity means the variability among living organisms from all sources, including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between the species and of ecosystems." U.N. Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79 (entered into force Dec. 29, 1993).

62. Moreover, genetically diverse plants are more resistant against diseases and extreme changes in weather than monocultures, which means that they might be also regarded as one of the necessary preconditions for ensuring food security. *Biodiversity and Agriculture,* Harv. Sch. of Pub. Health. (Nov. 30, 2022, 1:15 AM), https://web.archive.org/web/20230605025649/https://chgeharvard.org/genetically-modified-foods/. The focus on biofuels in developed countries has wide-ranging global implications for food security and food prices, which also contributed to the food crisis in 2007-2008. The use of monocultures, such as energy crops for biofuels, is growing in importance in developing countries as well. For example, Brazil grows large amounts of sugar for ethanol production. See United Nations Conference on Trade and Development, *Addressing the global food crisis: Key Trade, Investment and Commodity Policies in Ensuring Sustainable Food Security and Alleviating Poverty*, 8-9, (2008), https://unctad.org/publication/addressing-global-food-crisis (last updated March 13, 2024); Erik Bluemel, *Biomass Energy: Ensuring Sustainability through Conditioned Economic Incentives*, 19 GEO. ENVTL. L. REV.. 673, 678 (2007). For an assessment of antitrust and competition issues within the context of sustainable development as applied to the energy sector, *See generally* Paolo D. Farah & Tivadar Ötvös, *Competition Law and Trade in Energy vs. Sustainable Development:*

agriculture undoubtedly falls under the scope of the Art.8 (j) of the CBD.

To prevent definitional problems, it is appropriate to clarify the concept of traditional knowledge. One definition mentions that traditional knowledge refers to the accumulated knowledge, practices, and beliefs passed down through generations within a community

The WIPO, Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore

> "refers to the content or substance of knowledge resulting from intellectual activity in a traditional context, and includes the know-how, skills, innovations, practices and learning that form part of traditional knowledge systems, and knowledge embodying traditional lifestyles of indigenous and local communities, or contained in codified knowledge systems passed between generations. It is not limited to any specific technical field, and may include agricultural, environmental, and medicinal knowledge, and knowledge associated with genetic resources."[63]

Traditional knowledge represents a system of self-management use of the resources, embedded in the social and cultural practices of the community. Examples of activities related to genetic resources include the preparation or processing of useful species and varieties for medical purposes, as well as agricultural management techniques, such as seed treatment or methods for creating new resilient plant varieties.[64] Moreover, traditional knowledge is subject to continuous evolution and generational improvement, mainly orientated towards practical solutions and survival.[65] Hence, traditional farming practices that have evolved within farming communities over generations undoubtedly satisfy the criteria stipulated in this definition.

This indicates that a community might be defined by the ongoing evolution and contemporary identity of an indigenous group, which serve as its defining traits. To deny these communities the acknowledgment of their traditions would undermine the nature of the

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A Clash of Individualism and Cooperative Partnerships, 50 ARIZ. STATE LAW J. 497 (2018).

63. WIPO, Intergovernmental Comm. on Intell. Prop. and Genetic Res., Traditional Knowledge and Folklore, *The Protection of Traditional Knowledge: Revised Outline of Policy Options and Legal Mechanisms,* art. 3.2, U.N. Doc. WIPO/GRTKF/IC/9/INF/5 (Mar. 27, 2006), http://www.wipo.int/meetings/en/details.jsp?meeting_id=9765.

64. Guardial Singh Nijar, *Incorporating Traditional Knowledge in an International Regime on Access to Genetic Resources and Benefit Sharing: Problems and Prospects*, 21 EURO. J. INT'L L. 457, 462 (2010).

65. Davide Vivas Eugui, ISSUES LINKED TO THE CONVENTION ON BIOLOGICAL DIVERSITY IN THE WTO NEGOTIATIONS: IMPLEMENTING DOHA MANDATES 9, Ctr. for Int'l Env't L. (2002), http://www.ciel.org/Publications/Doha_CBD-10oct02.pdf.

community as legal actors.[66] For this reason, it is appropriate to understand the protection of traditional knowledge in the broader context of indigenous peoples' rights, based on the recognition of self-autonomous status of indigenous communities. The inherent relationship of indigenous people with their traditional knowledge needs to be recognized as a human right.[67] For instance, the UN Declaration of the Rights of Indigenous Peoples, in its Art.31, stipulates that States shall take measures to recognize and protect the exercise of rights of indigenous people. These rights encompass their cultural heritage and traditional knowledge, as well as the manifestations of their sciences, technologies, and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of flora and fauna, and oral traditions.[68] Instructive in this regard is also the framework regulating cultural heritage. According to the definition of cultural heritage included in Art.2.1 of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (UNESCO Convention), intangible cultural heritage includes "[p]ractices, representations, expressions, knowledge, skills - as well as the instruments, objects, artefacts and cultural spaces associated therewith - that communities, groups and, in some cases, individuals recognize as part of their cultural heritage." According to the Art.2(2) of the UNESCO Convention, cultural heritage might be manifested *inter alia* in "knowledge and practices concerning nature and the universe".[69] As clarified, knowledge falling within the scope of intangible cultural heritage encompasses expertise, skills, innovations, practices, traditional lifestyles, and distinctive signs and symbols related to traditional knowledge.[70]

Apart from the UNESCO framework, the International Labour Organization Convention 169 on Indigenous and Tribal Peoples in Independent Countries requires that States give due regard to customary laws of indigenous people when applying laws and

66. Siegfried Wiessner, *The Cultural Rights of Indigenous Peoples: Achievements and Continuing Challenges*, 22 EUR. J. INT'L. L. 121, 121–140 (2011).

67. Valmaine Toki*, An Indigenous Right to Intellectual Property?*, 4 INTELL. PROP. Q. 370, 383 (2015).

68. Nijar, *supra* note 64, at 460.

69. Paolo D. Farah & Riccardo Tremolada, *Conflict Between Intellectual Property Rights and Human Rights: A Case Study on Intangible Cultural Heritage*, 94 OR. L. REV. 125, 133 (2015).

70. *Id.* at 139 - 140.

regulations,[71] as well as the rights over their lands,[72] and use, management, and conservation of their natural resources.[73] Hence, this document imposes obligations on States to respect rights of indigenous peoples over their genetic resources and traditional knowledge.[74] Also worth mentioning is the 'United Nations Convention to Combat Desertification in those Countries Experiencing Drought and/or Desertification, Particularly in Africa' which in its Art.17 and 18 explicitly refers to traditional knowledge and imposes on States the obligation to introduce adequate benefit-sharing mechanisms.[75]

One of the crucial aspects related to the topic of traditional knowledge is the question of its protection. The CBD shifts the responsibility to States, as it is based on the idea of sovereign rights of States over their natural resources.[76] Moreover, it introduces the principle of equitable sharing of benefits with respect to the use and exploitation of biological resources or traditional knowledge.[77] Access

71. ILO, Convention Concerning Indigenous and Tribal Peoples in Independent Countries (ILO No. 169), June 27, 1989, 1650 U.N.T.S. 383, art. 8.

72. *Id.* at art.16.

73. *Id.* at art.15.

74. Brendan Tobin, *Biopiracy by law: European Union draft law threatens indigenous peoples' rights over their traditional knowledge and genetic resources*, 36 EUR. INTELL. PROP. REV. 124, 129 (2014).

75. Henrietta Marrie, *The UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage and the protection and maintenance of the intangible cultural heritage of indigenous peoples*, *in* INTANGIBLE HERITAGE: KEY ISSUES IN CULTURAL HERITAGE 169, 185–86 (Laurajane Smith & Natsuko Akagawa eds., Routledge 2009).

76. U.N. Convention on Biological Diversity, *supra* note 61, art.3. International treaties might have a profound impact not only on the parties to the treaty but on non-parties as well. However, it should be noted that only bilateral and multilateral treaties containing generalizable rules are capable of producing such effect. The requirement of prior informed consent seems to be general enough to form part of international customary law. *See* ANTHONY D'AMATO, THE CONCEPT OF CUSTOM IN INTERNATIONAL LAW 105–06 (1975).

77. U.N. Convention on Biological Diversity, *supra* note 61, at art.15 ¶ 7. This can be realized in a form of bioprospecting agreements concluded between private companies on one hand, and State governments and community representatives on the other. When carefully drafted, they might be beneficial for both parties. An example is the agreement concluded between the company Merck and Costa Rica's National Biodiversity Institute, according to which Merck agreed to pay the National Biodiversity Institute $1 million up front and share the profits from the drugs stemming from the collaboration, whereby ten percent of these royalties is meant to be directly for conservation. Tom Reynolds, *Drug Firms, Countries Hope to Cash in on Natural Products*, 84 J. NAT'L CANCER INST. 1147, 1148 (1992). However, it needs to be also taken into account that the contracting parties to bioprospecting agreements are often in unequal position based on their financial resources and access to information about potential values coming from such deals. Whereas patent seekers are in a favorable position, requiring often only an investment of a relatively small sum compared to the potential profits, indigenous people and local communities might be put under pressure, which might negatively impact the communities' internal dynamics. Burger & Frymer, *supra* note 39, at 512–13.

to biological resources and traditional knowledge shall be conditional upon obtaining prior informed consent, approval, and involvement of local communities.[78] Such prior informed consent shall meet the criteria of clarity, legal certainty, and transparency.[79] The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization reiterates the obligation imposed on States to ensure that access to and use of genetic resources and traditional knowledge is subject to their prior informed consent.[80] The ITPGRFA presumes the existence of prior informed consent when the resources included in centres of its multilateral system are accessed.[81] It might even be argued that prior informed consent to traditional knowledge associated with genetic resources has evolved to be a part of international customary law.[82]

V. INTELLECTUAL PROPERTY RIGHTS REGIME

International instruments relevant for the protection of traditional knowledge create a certain framework and requirements for its protection, reflecting its nature and specifics. However, many aspects related to traditional knowledge tend to become a subject of intellectual property which is based on the Western idea of individual private rights and is thus in an inherent conflict with the collective character of traditional knowledge. A simplified version of traditional knowledge taken out of its context might easily lead to misappropriation, irrespective of its use by indigenous peoples.[83] Since the international intellectual property regime favours monopolies in a certain way, it creates a danger of abuse, which might have negative

78. U.N. Convention on Biological Diversity, *supra* note 61, art.15 ¶ 5.

79. ALEXANDER GILLESPIE, CONSERVATION, BIODIVERSITY AND INTERNATIONAL LAW 508 (2011).

80. Tobin, *supra* note 74, at 130.

81. Nijar, *supra* note 64, at 467–68.

82. *Id.* at 460.

83. WEI SHI, INTELLECTUAL PROPERTY IN THE GLOBAL TRADING SYSTEM, EU-CHINA PERSPECTIVE 59 (2008). The misappropriation of traditional knowledge related to plant genetic resources might be also regarded as biopiracy, depriving the country and indigenous people of major economic values. According to Vandana Shiva, biopiracy in the Indian context might be also seen as a continuation of the British Empire's colonization and implementation of the Green Revolution. It might be even argued that the freedom the private companies enjoy through intellectual property rights to essentially claim the code of life enshrined in the plant genetic resources is the same freedom European colonizers enjoyed since 1492 with respect to land titles. *See* VANDANA SHIVA, BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE 2-16 (1999); VANDANA SHIVA, VIOLENCE OF THE GREEN REVOLUTION: THIRD WORLD AGRICULTURE, ECOLOGY AND POLITICS (Zed Books, 1991); Ewens, *supra* note 39, at 305.

social consequences on access to food or health.[84] A stronger intellectual property protection in agriculture affects both farmers' privilege and food security. From an economic perspective, strong patent protection might lead to underuse and underutilization of resources, including plant genetic resources. In the context of the global food market, over-protection of high-yield seeds could restrict farmers' ability to plant the most desirable crops.[85] The implications of intellectual property rights over seeds on farmers and food security were recognized and taken into account when evaluating factors leading to the global food crisis in the years 2007-2008.[86]

The tendency to export and impose the Eurocentric view of property over plant genetic resources can be traced back to the 16th century, when European colonial powers started to export and exploit plant genetic resources from Africa, Asia, and South America.[87] In the wake of relatively recent developments in biotechnology, the intellectual property law gradually extended its realm over plant genetic resources, shifting them from the public domain to individual private ownership and State control.[88] The assertion of Kenneth Burke that "what is biological is permanent, and what is social is changeable" no longer holds true.[89] These tendencies, visible, for instance, in the context of the WTO, have wide-ranging consequences on global North-South dynamics. This might be reflected in the growing inequality between different regions of the world.[90] As the negotiations undertaken within the framework of the United Nations' system – including, in particular, the World Intellectual Property Organization, FAO and the Secretariat of the CBD – illustrated, developing countries expressed resistance to the Western intellectual property regime. However, placing the intellectual property rights' issues under the highly legalized scope of the WTO and their articulation in the so-called hard law provisions significantly reduced the room for manoeuvring and discussion about their content.[91]

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84. WEI SHI, *supra* note 83, at 59.

85. Ewens, *supra* note 39, at 292.

86. U.N. Conference on Trade and Development, *supra* note 62, at 7, 15.

87. Burger & Frymer, *supra* note 39, at 495.

88. *Id.* at 498–499.

89. Kirk W. Junker, *A Strong Role for Custom in International Wildlife Litigation,* 17 J. OF INT'L WILDLIFE L. & POL'Y 32, 55 (2014).

90. Burger & Frymer, *supra* note 39, at 497–98.

91. *Id.* at 515. It could even be suggested that the idea of intellectual property rights, which limits access to certain knowledge and information, has the potential to undermine the principles of liberal democracy that rely on based on public debates and free access to information.

A. Agreement on Trade Related Aspects of Intellectual Property Rights

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs), adopted under the auspices of the WTO, is the most important document regulating intellectual property rights at the international level. This move was supported by the governments of developed countries as well as by large multinational companies, which had an interest in framing intellectual property protection as an inalienable individual property right and a trade issue.[92] The rationale behind placing the intellectual property rights within the WTO framework might be seen mainly in the intention to subject issues concerning intellectual property to the WTO's binding dispute resolution procedures. Consequently, violations of the TRIPs could justify the imposition of trade sanctions, significantly contributing to the enforceability of intellectual property rights at the international level.[93] TRIPs, creating a unified international system of intellectual property rights applying a one-size-fits-all approach, might be perceived as an element of globalization leading to the standardization of global culture around the Western pattern.[94] It might be described as one of the articulations of Western civilization dominance over the indigenous civilizations and identities of the global South.[95]

The final structure of the TRIPs Agreement stems from a framing of the intellectual property discourse by stakeholders representing the

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Moreover, it might also restrict the room for creativity, as the intellectual property protection runs in a certain way contrary to the common belief that new intellectual creations are based on pre-existing thoughts and ideas. Ewens, *supra* note 39, at 291–92.

92. Duncan Matthews, *When Framing Meets Law: Using Human Rights as a Practical Instrument to Facilitate Access to Medicines in Developing Countries,* 3 WIPO J. 113, 113 (2011).

93. MYWISH K. MAREDIA, APPLICATION OF INTELLECTUAL PROPERTY RIGHTS IN DEVELOPING COUNTRIES: IMPLICATIONS FOR PUBLIC POLICY AND AGRICULTURAL RESEARCH INSTITUTES 14–15 (2001). Interestingly, the idea of establishing an international intellectual property rights regime was initiated and supported by the Intellectual Property Committee, which consisted of the chief executive officers of major private companies such as Monsanto, DuPont, Merck, Pfizer and Bristol Myers Squibb. *See* Burger & Frymer, *supra* note 39, at 520.

94. Farah & Tremolada, *supra* note 69, at 141. The Westernization of intellectual property rights might be seen also in the light of a political battle for global power. In the words of Ugo Mattei: "[I]n the ages of colonialism such political battles for international hegemony were mostly carried on with an open use of force and political violence (in such a way that final extensive conflict between superpowers was unavoidable), in the age of globalization and of economic Empire political violence has been transformed into legal violence." Ugo Mattei, *A Theory of Imperial Law: A Study on U.S. Hegemony and the Latin Resistance,* 10 IND. J. GLOB. LEG. STUD. 383, 386–87 (2003).

95. Burger & Frymer, *supra* note 39, at 498-99; *see also* Strauss, *supra* note 20, at 305–06.

interests of developed countries and large multinational corporations. The discourse during the negotiations of the TRIPs Agreement advocated for enhanced protection of intellectual property rights. This approach was not sufficiently contested by developing countries; if they had, the text of the TRIPs Agreement could have been more sympathetic towards the interests of developing countries.[96] Observers of the development of intellectual property regime in Africa also note that "Africa´s involvement in Global IP treaty making is characterized by the formulation of intellectual property (IP) principles that are pro-West, rooted in Western ideologies, and promot[e] Western growth and development."[97]

Moreover, the tensions between the countries of the global North and South reflect practical nuances in the application of the multiscalar and multilateral governance concept.[98] The idea of intellectual property rights and the imposition of Western standards worldwide, as envisaged by the TRIPs Agreement, can also be evaluated from the perspective of the so-called Gramscian hegemony. According to Gramsci, hegemony can be established when a powerful group mobilizes material as well as non-material resources and aligns them under the flag of unified economic and political goals, grounding them in the common intellectual and moral basis. In this way, the aims pursued by the hegemonic group may claim universal nature, enabling it to present the interests of the hegemonic group as common interests,

96. Matthews, *supra* note 92, at 112.

97. Adebambo Adewopo et al., *Negotiating the Intellectual Property Protocol under the Agreement Establishing the African Continental Free Trade Area: Priorities and Opportunities for Nigeria*, 15(1) L. & DEV. REV. 33, 35 (2022).

98. The so-called multiscalar governance concept, originally applied in the field of geography, has found its application also in social sciences. Its effects might be observed in the lawmaking processes at the international level, where the legislative and governance framework in the era of globalisation is to a large extent characterized by global institutions, such as WTO. These institutions shape the realities at the national level through the imposition of international standards. In addition, the interplay among various stakeholders, not only between developed and developing countries, but also between - to a various extent - official and unofficial stakeholders, such as NGOs or corporations, is also a characteristic feature of the multiscalar governance concept. *See* Paolo D. Farah & Piercarlo Rossi, *National Energy Policies and Energy Security in the Context of Climate Change and Global Environmental Risks: A Theoretical Framework for Reconciling Domestic and International Law through a Multiscalar and Multilevel Approach,* 20 EUR. ENERGY AND ENV'T L. REV. 232, 238 (2011); *see also* Diana MacCallum, *Practising Governance: Multi-Party Decision Making in a Multiscalar Context,* 3 CRITICAL APPROACHES TO DISCOURSE ANALYSIS ACROSS DISCIPLINES 92, 94 (2009). State-owned enterprises also play an important role in multilevel governance. For an examination of China's SOEs *See*, Paolo D. Farah and Davide G. Zoppolato, *Public Ownership and the WTO in a Post-COVID-19 Era: From Trade Disputes to a 'Social' Function*, 125 W. VA. L. REV. 645 (2023).

which is a prerequisite for successful social transformation.[99] Seen in this light, the TRIPs Agreement might be regarded as a result of joint efforts of the countries and stakeholders forming a hegemony group in the Gramscian sense, determined to push through the Western concept of intellectual property rights as a common standard.

TRIPs gives patent holders broad, exclusive rights encompassing the right to prevent third parties from making, using, offering for sale, selling, or importing the patented products or process.[100] This enables patent holders to gain control over the patented products; from an economic perspective, this prospect for inventors might also serve as an incentive for innovation. The economic incentive related to this right is linked with the industrialization of the research: these rights are the corporations' decisive source of profit. These rights in this context are often utilized in an offensive manner, serving as "economic weapons" of corporations.[101]

Apart from agriculture, genetic resources are valuable in modern biotechnological, pharmaceutical, and cosmetic industries.[102] However, due to their nature and eventual connection to traditional knowledge, it might be problematic to grant patents on plants or plant products, resulting from traditional breeding practices.[103] Patented products need to be new, involve an inventive step, and be capable of industrial application.[104] In the case of traditional knowledge, it is difficult and often even impossible to satisfy the criteria of novelty or inventive step. Traditional knowledge has been used for a longer period and, as mentioned above, is collectively held. In contrast, patent law understands inventiveness as an achievement of individuals.[105] Libraries and databases of traditional knowledge serve an essential function in preserving and documenting traditional knowledge, ensuring that patents are not wrongly granted. The Traditional Chinese Medicine Patent Database in China, compiled in collaboration with the State Intellectual Property Office, represents an example of such a database. The Indian Traditional Knowledge Library performs a similar function. Another example is the database of the Tulalip Tribes

99. Jonathan S. Davies, *Network Governance Theory: A Gramscian Critique,* 44 ENV'T AND PLAN. A 2687, 2691 (2012).

100. Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994, Annex 1C art. 28, 1867 U.N.T.S. 154 [hereinafter Marrakesh Agreement].

101. Junker, *supra* note 89, at 57.

102. Adewopo et al., *supra* note 97, at 55.

103. Id.

104. Marrakesh Agreement, *supra* note 100, at Annex 1C art. 27 (1).

105. Farah & Tremolada, *supra* note 69, at 157–58.

of Washington State in the United States, which is a collection of traditional environmental knowledge. The fact that the database attempts to administer traditional knowledge in a manner sensitive to cultural and social practices and traditions of the respective tribes is interesting in this regard. Thus, the public and patent examiners have access only to selected parts of their repository of traditional knowledge.[106]

Art.27.3 (b) introduces a minimum threshold for the protection in the form of patents with respect to plant genetic resources. The pertinent provision enables Member States to exclude from patentability plants (including seeds) and animals in general on the grounds of *ordre public* or morality.[107] In this context, it is appropriate to take a look at the Chinese legislation. Art.25 of the Chinese Patent Law excludes plants and animals from patentability; however, this does not apply to processes for their production. The body of an individual plant as well as its seeds is understood as a plant. However, cells, tissues and organs of plants are essentially not considered as parts excluded from patentability if they do not maintain life by synthesizing carbohydrates and proteins from the inorganic substances through photosynthesis.[108]

On the other hand, TRIPs makes it clear that protection concerning processes for non-biologically or microbiologically developed plants or animals in the form of patents must be guaranteed.[109] From the perspective of the global North-South

106. V.K. Gupta, *Protecting India's Traditional Knowledge*, WIPO MAG. (June 2001) http://www.wipo.int/wipo_magazine/en/2011/03/article_0002.html; *see also* WORLD INTELL. PROP. ORG. – INTERGOVERNMENTAL COMM. ON INTELL. PROP. AND GENETIC RES., Traditional Knowledge and Folklore, *Update on Technical Standards and Issues concerning Recorded or Registered Traditional Knowledge* (June 6–10, 2005), http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_8/wipo_grtkf_ic_8_7.pdf; Preston Hardison, *Commentary: Traditional Knowledge Studies and the Indigenous Trust*, 27 PRACTICING ANTHROPOLOGY 42, 43 (2005).

107. For example, the Munich Convention on European Patents expressly prohibits the grant of patents in respect of plant or animal varieties or essentially biological processes for the production of plants. *See* Elina Paunio, *Plant Variety Rights Revisited: Balancing Conflicting Interests in the Case-Law of the Court of Justice of the European Union*, 36 E. I. P. R. 482, 482 (2014). The dynamics between the countries of the global North and South are also apparent in discussions concerning the Art. 27.3(b). Thus, a group of countries led by Brazil and India required the review of the pertinent provision and incorporation of disclosure requirements regarding the country of origin of genetic resources and traditional knowledge, obligation to obtain prior informed consent as well as evidence of fair and equitable benefit sharing. Burger & Frymer, *supra* note 39, at 521–22.

108. *Guidelines for Examination,* STATE INTELL. PROP. OFF. OF THE PEOPLE'S REPUBLIC OF CHINA 1, 347–48 (2010) (China).

109. Haugen et al., *supra* note 10, at 117. Intellectual property protection for this kind of plant-related innovation follows the same instrumentalist logic as the intellectual property protection

dynamics, treating plant genetic resources stemming from different production methods and modes of utilization differently might also be interpreted as an imposition and establishment of legal dominance of one, Western-like, culture over different concepts of indigenous cultures.[110]

The obligation imposed on States to provide patents assures an adequate level of protection of biotechnological, pharmaceutical, and agri-biotechnological inventions including genetically engineered plants and animals. Such protection, translated into national laws in many jurisdictions, has proved to be very effective, as explicitly demonstrated, for example, in the Canadian case of *Monsanto v. Schmeiser*.[111] However, this kind of exclusive protection might lead to situations where the farmers' privilege is interpreted restrictively.

In the pertinent case, the farmer saved and replanted seeds of Roundup Ready canola patented by the company Monsanto.[112] Tests conducted by Monsanto revealed a large presence of Roundup Ready canola in the field, whereas the farmer did not obtain a license to plant it.[113] One of the main questions the Supreme Court of Canada (Supreme Court) dealt with in this case was the issue of patent infringement and the extent of patent protection related to the canola. Monsanto's claims did not concern the genetically modified plant itself; one of the crucial points was whether the protection might be extended

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regime. Legal protection will foster investment into innovation, which ultimately benefits society as a whole. Such benefits might include, for examples the production of higher yields or enhanced drought tolerance in areas suffering from water scarcity. HELFER & AUSTIN, *supra* note 29, at 379–80.

110. Burger & Frymer, *supra* note 39, at 507.

111. Monsanto Canada Inc. v. Schmeiser, [2004] 1 S.C.R. 902 (Can.).

112. With respect to the company Monsanto, it is interesting to mention that as of 2009, more than 90% of the genetically modified seeds worldwide have been either sold by Monsanto directly or by its licensees. The case *Monsanto v. Schmeiser* has had wide-ranging consequences going beyond Canadian jurisdiction and contributed to the Monsanto's reputation as a particularly litigious company: for instance, in the aftermath of the case *Monsanto v. Schmeiser*, Monsanto has filed in the United States multiple patent infringement cases concerning seeds, which prompted some judges even to express critique on Monsanto's strategy (as of 2013, the number of lawsuits was around 150). The success rate of these actions before courts or in out-of-court settlements has been considerable. This strategy has contributed to the strengthening of Monsanto's dominant market position to the detriment of small farmers. *See* Strauss, *supra* note 20, at 290, 296–97; *see also* Rebecca K. Stewart, *Weeds, Seeds & Deeds Redux: Natural and Legal Evolution in the U.S. Seed Wars,* 18 STAN. TECH. L. REV. 101, 115 (2014) (discussing Monsanto's aggressive litigation strategy).

113. Monsanto, 1 S.C.R. ¶ 6. According to this license agreement, farmers undertake to use the seed for planting of a single crop and to sell that crop to a commercial purchaser authorized by Monsanto. The licensed farmers may not sell or give the seed to any third party, or save seed for replanting or inventory. *See id.* at ¶ 11.

to genes and modified cells making up the plant.[114]

One of the preconditions for determining patent infringement is whether the patented subject has been used.[115] For this reason, it needs to be determined whether cultivating plants containing the cell and gene may amount to infringement, or if a patent might be infringed only by "patented invention in isolation."[116] The Supreme Court pointed to the commercial nature of agriculture[117] and dismissed the farmer's argument that patent infringement should be interpreted narrowly because plants reproduce themselves "through the laws of nature, rather than human intervention."[118] The Supreme Court decided the dilemma between patent protection and property rights of farmers – invoking essentially the concept of farmers' rights – in favour of patent protection, extending it over genes as well as modified cells.[119]

The fact that, in the Supreme Court's reasoning, the patent might be infringed in a situation where the intent or use of the gene is absent seems to be important in this regard.[120] However, the dissenting opinion to the judgment suggests that enabling gene and cell claims to extend patent protection to plants might undermine the flexibility under Art.27.3(b) of the TRIPs Agreement.[121] Moreover, it is also suggested that applying the *sui generis* system of protection – which was already in place at that time in Canada – would be more appropriate, since the patent protection should not take precedence in cases where another, more tailored form of intellectual property protection is in place.[122] The term "*sui generis*" means "of its own kind"

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114. *Id*. at ¶ 17.

115. *Id*. at ¶¶ 42–43.

116. *Id*. at ¶ 77.

117. *Id*. at ¶¶ 87, 90.

118. *Id*. at ¶ 88.

119. *Id*. at ¶¶ 92–97.

120. Strauss, *supra* note 20, at 296. As Jeremy de Beer and Robert Tomkowicz point out, when looking at the case from the perspective of intellectual property law, it is quite peculiar that the Supreme Court adopted a significantly different approach in this case compared to other cases involving similar issues. In particular, the Supreme Court in the case completely omitted applying the exhaustion doctrine, which stipulates that the rights of intellectual property owners should not enable the control over uses of objects that represent a material articulation of intellectual property. Had the Supreme Court decided to apply the doctrine of exhaustion, it would have mattered whether Percy Schmeiser acquired the contested seeds unintentionally, for example by seed blowing. In such a case, he would have obtained the seed legally, as a subsequent acquirer of tangible property of different farmer, "[e]mbodying Monsanto's patented invention". Jeremy de Beer & Robert Tomkowicz, *Exhaustion of Intellectual Property Rights in Canada,* 25 CANADIAN INTELL. PROP. REV. 5, 15 (2009).

121. Monsanto, 1 S.C.R., at ¶ 166–67.

122. *Id*. at ¶¶ 128, 169.

and is often used to describe unique or specific systems or arrangements.[123] In the context of intellectual property rights related to biodiversity and traditional knowledge, a *sui generis* system refers to a framework tailored to address the unique characteristics and needs of traditional knowledge holders and indigenous communities.[124]

The dissenting opinion suggests that a more sensitive approach would contribute to a better balance between the interests of biotechnology and farmers.[125] However, the Supreme Court still managed to send a signal to biotechnology industry: even though it concluded the existence of patent infringement, it did not award any damages to Monsanto. In this way, the Supreme Court essentially removed the monetary incentive to initiate a lawsuit by making clear that not even the interpretation of patent law in favour of industry necessarily assures the award of damages.[126]

Nevertheless, the answer to the question essentially posed by Percy Schmeiser – where do Monsanto's rights end and his rights begin – was not answered in Schmeiser's favour. From the perspective of resilient food production, in Schmeiser's opinion, it is rather questionable whether bioengineered food crops protected by patents have substantially improved yields and resulted in reduced use of pesticides and herbicides. It is quite undisputable that these bioengineered products have considerably increased the profits of corporations holding patent rights over them. However, it has been suggested that the track record since the introduction and boom of patents over plants demonstrates a loss of biodiversity, extended use of pesticides and herbicides, as well as lower crop yields.[127]

Corporations usually direct their efforts "on developing only a few seed varieties."[128] Practical implications of this approach – underpinned by the system of intellectual property rights - may result in a decrease of genetic diversity of crops and limited opportunities of "local population to enjoy the

123. Michael Halewood, *Indigenous and Local Knowledge in International Law: A Preface to Sui Generis Intellectual Property Protection,* 44 MCGILL L. J. 953, 956 (1999).

124. *Id.*

125. However, it needs to be taken into account that the conflict between biotechnology industry and farmers' rights has often a different resonance and impact in developed countries - such as Canada - than in developing countries. For instance, the introduction of genetically modified seeds by multinational corporations in India contributed to the unsatisfactory situation of small farmers. *See* HELFER & AUSTIN, *supra* note 29, at 420.

126. Jasanoff, *supra* note 56, at 286.

127. Junker, *supra* note 89, at 58.

128. Mirka Fries et al., *Monsanto´s Legal Strategy in Argentina from a Human Rights Perspective,* 4 BUS.AND HUM. RTS.J., 357, 362 (2019).

benefits of scientific progress and its applications."[129] It is also relevant to note that the increased yields associated with genetically improved crops have also a darker side, resulting – for instance, in South-East Asia – in the loss of traditional crop diversity.[130]

B. Sui generis systems

Art. 27.3(b) of the TRIPs stipulates further that plant varieties need to be protected either in a form of patents, *sui generis* systems, or by any combination thereof. The possibility to adopt *sui generis* systems gives States flexibility and discretion to adjust their laws to reflect their specifics and focus on their socio-economic priorities.

The UPOV Convention serves as a prominent example of such *sui generis* system, which is attractive mainly for developed countries.[131] It has been argued that the revisions of the UPOV Convention gradually reinforced the rights of breeders, while attempting to "place the UPOV system on equal footing with the international patent system."[132] The UPOV standards, as well as a high level of protection of intellectual property rights, are exported also by the means of the trade agreements concluded, for instance, between the European Union and African countries.[133] This can be, to a certain extent, seen as justified, considering that breeders might have problems obtaining protection for their products and know-how in some countries due to "weak institutional procedures for ascribing ownership and sharing benefits."[134]

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129. *Id.*

130. Mahatab Uddin, *Impact of Intellectual Property Rights over Food Security in Developing and Least Developed Countries,* 20 J. OF JUD. ADMIN. TRAINING INST., 191, 194 (2021). However, it is also important to note research demonstrating that strengthened intellectual property rights and plan breeders´ rights in South Africa have contributed to "increased investments and release of wheat varieties." *See* Charity Ruramai Nhemachena et al., *The Effects of Plant Breeders´ Rights on Wheat Productivity and Varietal Improvement in South African Agriculture,* 11 SUSTAINABILITY 1, 14 (2019). Furthermore, it is crucial to recognize that countries in Africa differ significantly. For instance, industrial agriculture plays a significant role in South Africa and Egypt, while peasant agriculture" is more dominant in Nigeria and Mali. *See* Uchenna F. Ugwu, *Maximizing the Differentiation Principle in Regional IP Treaties to Advance Food Security: Limitations in West Africa´s Regional IP and Trade Regime,* J. OF WORLD INTELL. PROP. 1, 2 (2021).

131. DUTFIELD, *supra* note 38, at 28.

132. GAIA/GRAIN, *Ten Reasons Not to Join UPOV*, 2 Global Trade and Biodiversity in Conflict (1998), https://grain.org/article/entries/1-ten-reasons-not-to-join-upov (accessed 11 March 2019), in Mirka Fries et al., *supra* note 128, at 359.

133. Titilayo Adebola, *Access and Benefit Sharing, Farmers´s Rights and Pland Breeders´ Rights: Reflection on the African Model Law,* 9 (1) QUEEN MARY J. OF INTELL. PROP., 105, 108 (2019).

134. *Id.* at 117.

The original intent behind the UPOV Convention was to strengthen the rights of agri-business as the "real innovators" and subject traditional farmers' practices to interests of the industry.[135] It has been argued that strengthening of intellectual property rights and plant breeders´ rights through *sui generis* systems "is expected to provide incentives to stimulate investments in plant R&D and the development of the local seed sector."[136] However, it has been criticized for not sufficiently reflecting "two issues: traditional knowledge and farmers´ rights."[137]

The UPOV Convention enables the protection of plant varieties that are distinct, stable, uniform, and novel. Its provisions are formulated mainly to protect interests of plant breeders, not farmers. However, the UPOV Convention also encompasses minimum standard provisions concerning farmers' privilege. According to Art.15 of the 1991 version of the UPOV Convention, "[t]he breeder's right in relation to any variety may be restricted in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting".[138] Thus, parties to the UPOV Convention have discretion in defining the extent of the farmers' privilege.[139] For instance, the farmers' privilege in the European Union is limited to certain categories of plants, such as wheat or potatoes, listed in the Art.14 (2) of the Regulation No.2100/94.[140] The European Union's legislation also imposes certain obligations on farmers related to the use of the farmers' privilege. For example, farmers (with exception of small farmers) are obliged to pay the holders of plant variety rights equitable remuneration and provide them with relevant information concerning the use of farmers' privilege. From this, it follows that legal framework of the European Union recognizes the farmers' privilege and distinguishes in this regard between the interests of small and industrial farmers.[141] The system for protecting plant varieties, based on the UPOV model, was also adopted by China in a Regulation dated March 20, 1997 (Regulation). Even though the Regulation does not pay particular attention to farmers' rights, its Art.10 stipulates that the use of protected plant

135. DUTFIELD, *supra* note 38, at 28.

136. Nhemachena et al., *supra* note 130, at 1.

137. Adebola, *supra* note 133, at 111.

138. International Convention for the Protection of New Varieties of Plants, Dec. 2, 1961, as amended Mar. 19, 1991, art. 15(2).

139. DUTFIELD, *supra* note 38, at 28.

140. Council Regulation No. 2100/94 of 27 July 1994 on Community Plant Variety Rights, 1994 O.J. (L 227) 1, 6 (EC).

141. Paunio, *supra* note 107, at 484–88.

varieties needs neither authorization from the plant variety certificate holder nor payment of royalties in case it is used for scientific purposes or for farmers' own reproduction and cultivation.[142]

Developing countries demonstrate another approach, where the interests of farmers are of considerable importance. One example is India's Protection of Plant Varieties and Farmers' Rights Act. The Indian legislation grants formal rights to farmers to guarantee their self-sufficiency and is understood as a compromise between the interests of agri-business and farmers. Farmers' rights under the Indian legislation include the right to save, exchange, sell, or use seeds, however not in a packaged and labelled form; the right of farmers to register their varieties and gain rights similar to those of breeders; the right to reward and recognition; the right to benefit-sharing through a National Gene Fund; the right to information and compensation for crop failure; the right to compensation for undisclosed use of traditional varieties; the right to adequate availability of registered material; and the right to free services or protection from legal infringement in case of lack of awareness.[143] Laws such as this one are vital for the food security of small farmers.[144]

A similar approach was also chosen by Thailand, which passed the Plant Variety Protection Act. Like the Indian legislation, the Thai act aims to find a balance between the interests of farmers and breeders, promoting innovative plant breeding as well as interests of farmers. In comparison to the UPOV Convention, the term of protection for new plant varieties is shorter than the 20-year term of protection introduced

142. Int'l Union for the Prot. of New Varieties of Plants, *Regulations of the People's Republic of China on Protection of New Varieties of Plants*, 85 PVP GAZETTE Art. 10 (Oct. 1999).

143. For an overview and assessment of farmers' rights in the Indian context, Karine Peschard, *Farmers' Rights and Food Sovereignty: Critical Insights From India*, 41:6 J PEASANT STUD. 1085, 1085–1108 (2014).

144. Chaturvedi & Agrawal, *supra* note 36, at 712–13. In this regard it is appropriate to mention that India has historically adopted an approach centered on national and local when regulating intellectual property rights. The Committee on the Revision of the Patent Laws (1957-1959) – the so-called Ayyangar Committee – scrutinized poverty issues in this regard and noted the link between high mortality rates and the high price of patented products. For this reason, the Committee recommended to curtail granting of patents in sensitive areas such as food and medicines due to the fact that it could lead to violations of the right to life under Art.21 of the Indian Constitution. In order to protect the right to life, the Ayyangar Committee *inter alia* recommended that patent protection should be limited to the methods of making food, pharmaceuticals and chemicals, while leaving the final products free from patent protection in order to prevent local producers from being accused of patent infringements. In line with these recommendations, the terms of protection for process patents on food, pharmaceutical and chemical products under the Indian Patents Act of 1970 were timely limited. This system lasted in India until the TRIPs Agreement came into force. *See* Matthews, *supra* note 92, at 125–26.

by the latter. This approach is characteristic of plant variety laws in other Asian countries, such as India, Malaysia, or Laos. The intention is to ensure that the intellectual property system does not contribute to the creation of a monopoly over food.[145] This fact is an example of different priorities accentuated by developing countries compared to developed ones.

The Biodiversity Law of Costa Rica, "Ley de Biodiversidad" (Biodiversity Law) serves as an example of a law implementing the provisions of the CBD into national legislation. The Biodiversity Law refers to the core pillars of the CBD, such as the sovereign right of State over the natural resources and the protection of traditional knowledge.[146] It also introduces the obligation to obtain prior informed consent when accessing genetic resources or traditional knowledge[147] The Biodiversity Law requires that authorities responsible for granting any form of intellectual property rights consult the National Biodiversity Management Commission to ensure that traditional knowledge is protected and inventions derived from it do not become subject of intellectual property.[148] This also applies to inventions based, *inter alia,* on genetic resources, biological processes or plants and animals in general. Granting of intellectual property protection is based on proving the existence of prior informed consent and a certificate of origin.[149]

Moreover, as mentioned, the Biodiversity Law recognizes the system of the so-called *sui generis* intellectual property rights, which are expressly designed to protect knowledge and practices of indigenous people concerning the use of biodiversity related therewith. These rights do not require formal registration since their recognition is based solely on the existence of cultural practice or knowledge. They shall not be affected or appropriated by any other form of intellectual property rights.[150] The content and extent of these rights, as well as their use, shall be determined through a participatory procedure including representatives of indigenous peoples and small farmers.[151]

Sui generis systems aiming to implement the provisions of the

145. Pawarit Lertdhamtewe, *Intellectual Property Law of Plant Varieties in Thailand: A Contextual Analysis*, 46 IIC. 386, 393 (2015).

146. Biodiversity Law (Law No. 7788/ 1998) (Costa Rica) art. 2.

147. *Id*. at Art. 7, § 9.

148. *Id.* at Art. 14.

149. *Id*. at Art. 80; DUTFIELD, *supra* note 38, at 110–13.

150. Biodiversity Law, *supra* note 146, at Art. 82.

151. *Id*. at Art. 82–85.

CBD can also be found at the regional level. For example, the Andean Community Common System on Access to Genetic Resources (Andean System), goes even further than the CBD by stipulating that States have sovereign rights not only over their biological resources, but also over the derivatives (the so-called by-products) of these resources.[152] The system introduces the term "intangible component," which covers any knowledge, innovation, or practice associated with biogenetic resource or their derivative, irrespective of whether the knowledge is protected by intellectual property rights.[153] The recognition of intangible components strengthens the position of indigenous peoples and local communities contesting misappropriation of their traditional knowledge or negotiating terms of the agreement concerning their know-how with private companies.[154] To ensure that these aspects are respected in practice, the Andean System introduces access procedures that require filling of an application and signing of a contract between the State and an applicant, which must take into consideration the interests of indigenous communities and their intangible components.[155] The States involved in the Andean System might even require access contracts as a conditions for granting of intellectual property rights.[156]

Another example is the African Model Legislation for the Protection of the Rights of Local Communities, Farmers, and Breeders, and for the Regulation of Access to Biological Resources (African Model) that attempts to balance the interests of small-scale farmers and commercial breeders.[157] According to Prof. Ekpere, one of the drafters of the African model, one of its intentions was to serve as a framework mechanism to provide African negotiators with an understanding of the often conflicting interests revolving around the

152. The States originally involved in this system are Bolivia, Colombia, Ecuador, Peru, and Venezuela. DUTFIELD, *supra* note 38, at 108. A derivative is defined as a molecule or combination or mixture of natural molecules, including raw extracts of living or dead organisms of biological origin, derived from metabolism of living organisms. This kind of derivative is different from a synthetized product, which is a substance obtained through artificial process using genetic information or molecules. *See id.*38, at 108–09; Commission of the Andean Community, *Decision No. 391 Establishing Common Regime on Access to Genetic Resources*, Title IV, Chapter I, § 5 (July 2, 1996) (Peru).

153. *Id.* at Title 1, § 1.

154. DUTFIELD, *supra* note 38, at 109.

155. Decision No. 391, *supra* note 152, at §§ 32–34.; *see also* DUTFIELD, *supra* note 38, at 109.

156. DUTFIELD, *supra* note 38, at 110; *see also* Decision No. 391, *supra* note 152 at Complementary Provisions, Second.

157. Adebola, *supra* note 133, at 105.

topics it intended to address.[158] It was not thought to be fully implemented; its objective was to serve as guidance and a framework mechanism when some of the issues arouse at the national or international level.[159]

Similarly to the Andean System and in line with the provisions of the CBD, access to biological resources is made conditional upon granting of prior informed consent, both by the respective designated National Competent Authority and by concerned local communities.[160] Such access is subject to a written agreement, concluded between the National Competent Authority and concerned local community on the one hand, and applicant on the other.[161] An access agreement shall include certain commitments, stipulating, *inter alia*, that an application for intellectual property protection shall not be made over biological resources and traditional knowledge "without the prior informed consent of original providers."[162]

Moreover, access shall be contingent upon the commitment of the applicant to economically contribute to the State and relevant community in order to preserve biological resources and maintain traditional knowledge and innovations.[163] The African Model legislation strictly excludes granting of patents over life forms and biological processes.[164] However, it pays attention to the recognition of the rights of communities as legitimate custodians and users over their biological resources and traditional knowledge and their right to benefit from further utilization of the resources and knowledge, making it clear that State shall protect their community rights.[165] Moreover, like the Biodiversity Law of Costa Rica, it introduces the concept of community intellectual rights of the local communities, which are inalienable and correspondingly protected.[166] The content and extent of the protection shall be determined by the communities themselves, under their customary practices and law; protection provided by community intellectual property rights is not made

158. *Id.* at 113.

159. *Id.* at 115.

160. Organization of African Unity, *African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources*, Part III, § 5, (2000) http://www.wipo.int/wipolex/en/text.jsp?file_id=252153.

161. *Id*. at § 7.

162. *Id*. at § 8, ¶ v.

163. *Id*. at § 8, ¶ vii.

164. *Id*. at § 9.

165. *Id*. at part IV, §§ 16–17.

166. *Id*. at Art. 23.

conditional upon formal registration.[167]

The African Model legislation includes a separate section about the farmers' rights. It specifies that - contrary to the provisions of the UPOV Convention—a variety with specific attributes identified by the community shall be protected through exclusive intellectual property protection in form of a variety certificate, irrespective of whether it meets the criteria of distinction, uniformity, and stability.[168] The exclusivity of such protection is limited by the farmers' rights themselves; the farmers' privilege, benefit-sharing duties, protection of traditional knowledge, participation in the decision-making concerning the conservation and sustainable use of plant genetic resources, or use of new breeders' varieties to develop farmers' varieties shall not be compromised. Moreover, farmers' privilege shall not be misinterpreted to result in the violation of breeders' rights by selling the protected varieties on a commercial scale.[169]

Even though the African Model legislation recognizes the plant breeders' rights over new varieties, including the exclusive right to sell or license others to sell plants or propagating material of that variety and to produce or license to produce the variety for sale, these rights are limited by the farmers' rights.[170] The authors of the African Model legislation did not turn a blind eye to reality; instead, they acknowledged the existence of the biotechnology industry focused on commercial plant-breeding and made a deliberate attempt to regulate it while balancing industry interests with those of farmers. Simultaneously, they considered the socio-economic specifics and priorities of the African continent, including its vulnerable farming communities, as evidenced by another restriction placed on plant breeders' rights, in addition to farmers' rights. According to the African Model legislation, plant breeders' rights shall also be subject to restriction with the objective of protecting food security, health, biological diversity, or other relevant interests.[171]

Carefully designed *sui generis* systems have the potential to lead the way in reforming intellectual property systems to respect farmers' rights and protect traditional knowledge. They might also contribute to reframing the discourse concerning intellectual property rights from a trade issue centred on inalienable private property rights, as outlined

167. *Id*. at part IV, § 23.
168. *Id*. at part V, § 25.
169. *Id.* at part V, § 26.
170. *Id*. at part. VI, §§ 30–31.
171. *Id*. at part. V, § 26.

in the TRIPs Agreement, to a public interest issue with significant implications for development and human rights, particularly regarding the right to food and farmers' rights.[172] Moreover, certain requirements introduced by the CBD and related protocols can be effectively implemented into national or regional laws. For example, Norway adopted patent legislation that included specific disclosure requirements.[173] These requirements can be valuable in determining whether prior informed consent or benefit-sharing duties were respected.

Similarly, the EU Regulation No.511/2014 on Compliance Measures for Users from the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization in the Union mandates due diligence and a certificate of compliance with the provisions of the Nagoya Protocol. This includes ensuring that access to genetic resources is granted on mutually agreed terms.[174]

The option of incorporating disclosure requirements into patent legislation or adopting separate laws complementing patent legislation appears to be compliant with Art.62(1) of the TRIPs, which stipulates that States may condition the granting of intellectual property rights on meeting reasonable measures and procedures. Harmonizing patent laws with provisions of the CBD or the ITPGRFA also aligns with the objectives outlined in Art.7 and principles in Art.8 of the TRIPs. These articles recognize the need to balance intellectual property rights with the objectives of economic or social welfare, protection of health and nutrition, and promotion of the public interest in sectors vital to socio-economic and technological development. Undoubtedly, these objectives encompass food security and the interests of farmers. Moreover, *sui generis* systems appear to be in line with and contribute to the practical realization of Art.16 of the CBD, which states that patents and intellectual property rights should not conflict with the

172. Similar logic has been emphasized also in the case of public health and access to medicines. It has been widely argued that provisions of the TRIPs Agreement might have detrimental effect on access to medicines and public health-related issues. *See* Matthews, *supra* note 92, at 114–15.

173. Jonathan Carr, *Agreements That Divide: TRIPs vs. CBD and Proposals for Mandatory Disclosure of Source and Origin of Genetic Resources in Patent Applications*, 18 J. OF TRANSNAT'L L. & POL'Y 131, 152 (2008).

174. Regulation No.511/2014 of the European Parliament and of the Council of 16 April 2014 on compliance measures for users from the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization in the Union, art. 4, 2014 O.J. (L 150).

objectives pursued by the CBD. In practice, this suggests that the system of intellectual property rights may need eventual revision if it conflicts with the CBD's objectives.[175]

VI. CONCLUSIONS

The conflict between intellectual property rights, protection of traditional knowledge, biodiversity, and farmers' rights originates from the fact that these concepts emphasize divergent aspects of interdependent issues. These divergences are evident in the international treaties, which regulate and highlight various aspects of these interrelated topics. Different approaches to these issues reflect the distinct realities in developed and developing countries, which lie at the core of the global North-South divide. These conflicts suggest that investigating these issues is also relevant in the context of distributive justice.[176]

The key to bridging these differences may lie in integrating equity-based concepts, such as benefit-sharing, traditional knowledge protection, and farmers' rights, into the intellectual property framework and striking a balance among them. From the Western perspective, there is a tendency of adopting a one-size-fits-all approach that frequently falls short of yielding the same outcomes when implemented in the context of Global South nations.[177] As suggested by Wei Shi regarding the importation of intellectual property regimes into developing countries, the success of such endeavours is made conditional upon their recasting under indigenous tradition.[178] The fact that the enforceability of intellectual property regime depends on finding of an appropriate soil for its growth highlights the importance of indigenous tradition. In Wei Shi's understanding, this means that globalisation and the so-called indigenisation are two sides of the same coin: globalisation is a cause and prerequisite of indigenisation,

175. Strauss, *supra* note 20, at 309.

176. Ewens, *supra* note 39, at 304.

177. For an assessment of Global South countries in this context see for India, DeFries, Ruth S. and Chhatre, Ashwini, *Why India Needs a Unique Approach to Sustainability*, 2 (2) ECOLOGY, ECONOMY AND SOCIETY–THE INSEE JOURNAL (2019); for China; *See* Kevin Lo, *Authoritarian Environmentalism, Just Transition, and the Tension between Environmental Protection and Social Justice in China's Forestry Reform* (2021) 131 FOREST POLICY AND ECONOMICS 102574; Davide G. Zoppolato & Shisong Jiang, *China-MENA Energy Cooperation under the Belt and Road Initiative: Megaprojects, Economic Planning, and a Pragmatic Approach to the 'Green' Transition*, 16 J. WORLD ENERGY LAW BUS. 143 (2023). For a theoretical discussion on the connection between distributive and performative justice, *see*: Tazim Jamal and Rob Hales, *Performative Justice: New Directions in Environmental and Social Justice* 76 (2016) GEOFORUM 176.

178. Wei Shi, *supra* note 83.

whereas indigenisation represents the cultural guarantee of globalisation.[179]

Since the divergences described above reflect different realities in developed and developing countries between global North and South, it would be appropriate to examine these issues through the philosophies shaping the worldview in the non-Western parts of the world. Eastern philosophy might provide a feasible and attractive alternative in this regard. It is worth considering whether, for instance, the perspective of Confucianism, with its emphasis on harmony, balance, and social responsibility, could justify the reform of the intellectual property system to reflect the ideas of equity and protect the interests of farmers. Another viable approach might be the philosophy of *Yin-Yang*, based on the idea of existence of two contradictory elements: negative and destructive *yin* and positive and constructive *yang*.[180] *Yin-Yang* philosophy is characterized by the idea of perpetual change and dealing with uncertainty related to situations where there are two opposite but interrelated and interdependent ideas. The relationship between intellectual property on the one hand and issues of biodiversity, traditional knowledge, and farmers' rights on the other illustrates perpetual conflict between individualism and equity. Moreover, protection of genetic resources and traditional knowledge lies at the crossroads between past and present, and it needs to accommodate both of these aspects. The idea of intergenerational equity, which represents one of the defining aspects of sustainable development, underscores the necessity to protect the past, heritage, and traditional knowledge of indigenous people. At the same time, it intends to provide benefits and enhance living standards, including the food security, for present members of these communities. The *Yin-Yang* school of thought finds its reflection in the concept of sustainable development, offering a model based on unitary vision of heaven, humans, and earth, highlighting ideas of balance, harmony and sustainability.[181] This approach, rooted also in the very idea of

179. *Id.* at 283.

180. WING-TSIT CHAN, A SOURCEBOOK IN CHINESE PHILOSOPHY 244 (Princeton University Press 1963); Peter K. Yu, *Intellectual Property, Asian Philosophy and the Yin-Yang School*, 7 W.I.P.O. J. 1, 4 (2015); *see also* Paolo D. Farah, *L'Influenza della Concezione Confuciana sulla Costruzione del Sistema Giuridico e Politico Cinese*, in IDENTITÀ EUROPEA E POLITICHE MIGRATORIE 193, 193-226 (Giovanni Bombelli & Bruno Montanari eds., 2008); Paolo D. Farah, *The Development of Global Justice and Sustainable Development Principles in the WTO Multilateral Trading System Through the Lens of Non-Trade Concerns: An Appraisal on China's Progress*, in CHINA'S INFLUENCE ON NON-TRADE CONCERNS IN INTERNATIONAL ECONOMIC LAW 10, 17–18 (Paolo D. Farah & Elena Cima eds., 2016).

181. As the Zhuangzi points out, "[w]hen the *qi* of *yin* and *yang* are not in harmony, and cold

sustainable development, may provide a useful perspective when thinking about the reform of the intellectual property system, fostering innovation and creativity in a manner not compromising other issues relevant from the perspective of food security.[182]

The realities of the world and the issues the mankind needs to deal with in the current world have changed since the times of John Locke. To be able to react to the challenges of the globalized world and imbalances related therewith, Eastern philosophy might prove a useful and refreshing alternative with its emphasis on the values of harmony and community. This approach might strengthen and foster the development and human rights-based understanding of intellectual property rights and contribute to reframing the discourse about the future of the intellectual property system in a manner that would be sensitive to issues such as the right to food and farmers' rights.[183]

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and heat come in ultimate ways, all things will be harmed." On the other hand, "[w]hen the two have successful intercourse and achieve harmony, all things will be produced." Robin R. Wang, *Yinyang*, INTERNET ENCYCLOPEDIA OF PHIL.. In fact, traditional Chinese beliefs such as Daoism are nowadays increasingly gaining prominence in contemporary China and are interpreted in a way supporting sustainable and environmentally friendly ways of life and the concept of the so-called ecological civilization. However, it needs to be taken into account that the support of indigenous concepts as an antidote to Western style of life is often interpreted as a part of Chinese identity, reflecting the modern Chinese nationalism on one hand and creating a balance between technological development and a sustainable way of life in the Chinese population on the other. *See* also James Miller, *Is Green the New Red? The Role of Religion in Creating a Sustainable China*, 8 NATURE AND CULTURE 249, 249–63; JAMES MILLER, *Daoism and Development, in* HANDBOOK OF RESEARCH ON DEVELOPMENT AND RELIGION 113–23 (Matthew Clarke ed., 2013); Paolo D. Farah, *L'Influenza della Concezione Confuciana sulla Costruzione del Sistema Giuridico e Politico Cinese*, *supra* note 180.

182. Yu, *supra* note180, at 9–10.

183. Seen in a broader context of the Global South discourse, this perspective which takes due account of the local needs of respective communities also echoes the reasoning of the Buen Vivir concept, which has been developed and put in practice in Latin American countries, such as Ecuador and Bolivia. In the context of development, Buen Vivir concept might be seen as an alternative to the Western development strategies, which often have negative social, economic, and environmental impacts. The Buen Vivir concept adopts a holistic approach, emphasizing the need of the bottom-up approach, which in the context of the pertinent article might cover also farmers' communities. For an overview of the concept and its connection to climate and distributive justice, *see* Eduardo Gudynas, *Buen Vivir: Today's tomorrow*, 54 SOC'Y FOR INT'L DEV. 442, 442–43 (2011); Tara Ruttenberg, *Wellbeing Economics and Buen Vivir: Development Alternatives for Inclusive Human Security*, 28 FLETCHER J. HUM. SEC. 68, 70, 87 (2013).