Pandora Opened the Box—What Actually Followed?

A Twenty-One-Year Reckoning

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1. THE PROTECTION OF TRADITIONAL KNOWLEDGE AND GENETIC RESOURCES (TKGR); IN SEEK OF AN ENTITLEMENT

The topic I chose for my doctoral thesis did not fall within what would traditionally be considered a mainstream intellectual property subject. More precisely, it was not a topic that, at the time, would readily have come to the mind of a "traditional" IP scholar, particularly within the Nordic academic context.[1] I cannot recall with certainty what initially drew me to the subject, but in retrospect it seems likely that I first encountered it during my studies in the European Intellectual Property Law master's programme.

The beginning of my doctoral research coincided with the inauguration of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC). Its first meeting took place between 30 April and 3 May 2001, only a few months before I formally commenced my doctoral position at Stockholm University. This period was marked by a sense of optimism among those who believed in the adaptability of the international intellectual property system and in its capacity to accommodate interests and rightholder groups beyond those traditionally recognised in the Global North.

Embarking on a research journey at a moment when international developments appeared to be moving in a promising and inclusive direction was both motivating and encouraging. At the time, it seemed plausible that sustained multilateral engagement could lead to meaningful innovation in intellectual property law, opening space for new forms of protection and recognition within the existing system.

The main priority of the IGC was to bring the objectives of the Convention on Biological Diversity closer to the international IP standard-setting imposed by the TRIPS Agreement and to find appropriate ways to assist right holders in the enforcement of their rights. By the time the doctorate thesis was defended several years of negotiations had passed, yet these were marked by a lack of concrete output, perhaps unsurprisingly. Hundreds of documents were produced while the Members of the IGC had convened for at least 20 sessions in Geneva. During my time as a doctorate candidate I had the opportunity (or let's call it pure luxury), to participate as a member of the Swedish delegation to the IGC. This was an extremely interesting and valuable experience, even if at times it had a rather demystifying effect, for a young researcher who thought that such international negotiations are mainly concerned with actually solving complicated legal questions.[2]

At the time of the defence, the IGC had not yet delivered any concrete solutions to the problems it was established to address. The focus of the doctorate thesis was the question of the legal entitlement protecting TKGR, and how such an entitlement would relate to and interact with the established international IP norms. While the IGC had not produced any concrete output, there was a plethora of national and regional regulatory initiatives that had attempted to achieve just that, with some questionable results. At the same time, papers and reports produced at the time, either under the framework of the IGC, by national states, NGOs or scholars, had focused primarily on the practical aspects of a sui generis right covering TKGR or on the necessary adjustments that would be required in order for the "new" subject-matter to qualify as protectable subject-matter under one of the traditional IP rights[3].

1 This was a subject that mainly concerned legal scholars from the Global South.

2 While in fact a considerable part of these negotiations were impacted by what was going on in other international fora and the question of the protection of TKGR had become one more bit in the overarching international diplomatic arena.

3 See from the work of the Intergovernmental Committee: WIPO/GRTKF/IC/11/7 Recognition of Traditional Knowledge within the Patent System, WIPO/GRTKF/IC/11/8 (A) Genetic Resources: List of Options, WIPO/GRTKF/IC/11/8 (B) Genetic Resources: Factual Update of International Developments, WIPO/GRTKF/IC/13/5 (A). The Protection of Traditional Knowledge: Overview, WIPO/GRTKF/IC/13/5 (B) The Protection of Traditional Knowledge: Draft Gap Analysis: Revision, WIPO/GRTKF/IC/8/8 Recognition of Traditional Knowledge within the Patent System:

My thesis adopted yet another perspective, investigating the actual need for a legal entitlement as such as well as exploring the structure that such an entitlement could adopt, attempting thus to challenge the dominating view that TKGR protection would be possible only under the realm of property rights.[4] The thesis claimed that the challenges related to the protection of TKGR are not completely new and that some of the particularities of TKGR were also present in the evolution of land rights[5], as well as in the more recent case of the allocation of rights on deep sea resources[6]. While building upon past experiences (theoretical and practical) on resource allocation constitute a valuable starting point, TKGR protection has its particularities, the main one being that it rests upon two main objectives, access and conservation. The TKGR regulation should thus "reward" the initial holders of TKGR (indigenous communities as well as the national states of origin) and promote further conservation, while on the other hand external actors should be able to access TKGR of interest and include them in sequential innovations[7][8].

Regional and national implementation initiatives, introduced at the time the thesis was defended, had attempted to interpret and elaborate on the provisions of the CBD introducing layers of new legal entitlements and a list of different groups of right-holders, ranging from ministries to governmental authorities and indigenous peoples' representatives. National legislation provided for rather detailed schemes of contractual structures (bioprospecting agreements), designed to regulate access to TKGR.

These agreements were frequently modeled on the base of standard licensing arrangements, which typically presuppose the existence of a clearly defined legal entitlement in the subject matter being exchanged. However, both the text of the Convention on Biological Diversity (CBD) and the subsequent implementation initiatives had been strikingly silent on the nature and structure of the rights that were supposedly being traded. At the international level, the only entitlement that was explicitly recognized is that of State sovereignty over national genetic resources. While the acknowledgment of national sovereignty represented a significant normative development and had implications for the legal status and circulation of traditional knowledge and genetic resources (TKGR), it did not in itself provide a stable or operational legal foundation for transactional arrangements.

Despite this ambiguity, the regulatory framework appeared to assume the existence of an underlying legal entitlement in TKGR. This still undefined right had largely been situated within the broader intellectual property rights (IPR) discourse, and negotiations on the establishment of an international sui generis regime for the protection of TKGR had been ongoing for several decades.[9]

The thesis had as its ambition to test the following:

- The scope and content of the constraints and requirements placed on the elaboration of a TKGR entitlement on the basis of the binding international agreements.
- The national and regional initiatives in the elaboration of such an entitlement, the choices made, the outcome and the extent to which available flexibilities were taken into account.
- The possibility to proceed to a systematisation of the principles and objectives to rule the process of the elaboration of a new entitlement, in this case on TKGR.
- And to which extent would present objectives and principles assist in the process and what outcome would they inflict on the TKGR protection?

2. METHODOLOGICAL HURDLES AND THE CROSSROAD OF RAWLS AND COASE IN THE SEEK OF A LEGAL ENTITLEMENT FOR TKGR

Addressing the objectives of the thesis, in principle recommending an appropriate legal entitlement for the protection of TKGR presented two sets of difficulties from a methodological perspective. Firstly, the protection of TKGR had been a particularly politically loaded issue and as such it had been treated in international negotiations and in the public debate with very little reference to the actual legal challenges. A second methodological difficulty, closely related to the first one of course has been the lack of "traditional" legal sources, in terms of binding legal requirements, court cases or other legal documents that could potentially provide guidance as to the interpretation of legal provisions.

Thus, in order to proceed with an evaluation of alternative forms of entitlement for TKG and do that on the basis of transparent scientific criteria, the thesis had to, as a first step, construct an appropriate methodological

Interim Draft, WIPO/GRTKF/IC/8/11 Disclosure of Origin or Source of Genetic Resources and Associated Traditional Knowledge in Patent Applications.

4 See also Jerome H Reichman, 'Of Green Tulips and Legal Kudzu: Repackaging Rights in Subpatentable Innovation' (2000) 53 Vanderbilt Law Review 1743, 1750.

5 Regulated by Human Rights norms. See for instance the UN Human Rights Committee, Ominayak and the Lubicon Lake Band v. Canada, 1990, Annual Report of the Human Rights Committee, U.N. Doc. A 45/40, Bd. II AP. A (1990).

6 See for instance the "common heritage of mankind" principle, a principle to be discussed in further part of the thesis.

7 In the case of TKGR, the protection framework seems to be burdened with another task, that of environmental protection in the form of conservation and sustainable use of biodiversity.

8 Bernd Siebenhüner, Tom Dedeurwaerdere and Eric Brousseau, 'Introduction and Overview to the Special Issue on Biodiversity Conservation, Access and Benefit Sharing and Traditional Knowledge' (2005) 53 Ecological Economics 439–444.

9 See also Keith E Maskus, 'Intellectual Property and the Transfer of Green Technologies: An Essay on Economic Perspectives' (2009) 1 The WIPO Journal 133; see also Chidi Oguamanam, 'Localizing Intellectual Property in the Globalization Epoch: The Integration of Indigenous Knowledge' (Paper presented at the 4th Annual Doctoral Students Conference of the Association of Pacific Rim Universities, Mexico City, 24–29 August 2003).

framework. That was gradually provided by means of a combination of the Coase Theorem and Rawls' theory of Justice. Both these theories are built upon a hypothetical model of consensus resulting from bargaining. Coase on the one hand, bases his theoretical model on a costless bargaining scheme. Rawls' consensus model on the other hand, relates to society's constitutional framework and the recognition of human or fundamental rights[10], as well as to principles of encouraging liberty and at the same time addressing inequalities, which are also based on a hypothetical model of consensus[11].

A major difference between the two models is the importance of rational empathy in the Rawlsian model and its total absence in the Coase Theorem. The Rawlsian veil of ignorance presupposes that individuals will take into consideration the importance and need of a "security net for all". The rational individuals in Rawls' original position would opt for the most efficient use of available resources in order to create the highest expected outcome. Risk aversion will have a balancing effect. Individuals will be willing to accept a lower-than-expected possible outcome in order to ensure the actual outcome. Rawls' "constructive empathy" is more than an emotion; it is rather a rational choice. Constructive empathy is not a result of pity and compassion but rather a strategic choice[12].

The two objectives of fairness and efficiency reflected in the combination between Coase and Rawls are obviously of paramount importance with regard to the elaboration of a legal entitlement covering TKGR and these were also equally present in the combination between the two theoretical models.

It is impossible to overlook the central role that traditional knowledge and genetic resources (TKGR) play in the lives of their holders, particularly given their close connection to spiritual and religious traditions as well as to the physical survival of the communities concerned. This profound relationship underscores the relevance of a *moral rights* perspective in any discussion of a potential legal entitlement to TKGR. Such a perspective highlights interests that extent beyond purely economic considerations and points to the need for recognition, respect, and continued control by the communities concerned.

Moreover, the pronounced asymmetry between the actors involved in the TKGR market further reinforces the importance of equity considerations. The providers or original holders of TKGR are typically local and Indigenous communities with limited economic resources and, in many cases, acute health and nutritional challenges. By contrast, the users—and often free-riders—are frequently multinational corporations based in the industrialised world, possessing significant financial and technological capacity. This imbalance accentuates the need to restore a measure of equity within the market and shapes the expectations placed on any legal protection regime for TKGR, expectations that may extent beyond the strict legal scope of such a regime.

Principles of fairness and equity are explicitly embedded in both the text and the underlying rationale of the Convention on Biological Diversity (CBD). Indeed, the Convention itself reflects a political and legal commitment to redress historical imbalances by compensating Indigenous peoples and developing countries and by rebalancing the TKGR market. One of the Convention's core objectives, set out in Article 1, is the "fair and equitable sharing of the benefits arising out of the utilisation of genetic resources." Notably, the terms "fair" and "equitable" are not used synonymously but rather in a complementary and reinforcing manner, referring to both the processes through which benefits are distributed and the outcomes of that distribution. Through this framing, countries of origin and developing countries are recognised as having a legitimate claim to compensation for the conservation, development, and provision of access to TKGR for third-party use.

The concept of equity/fairness is often employed with regard to the relationship between the relevant players that is the relationship between the providers of TKGR and the purchasers of TKGR[13]. Though both the CBD and the ITPGRFA use the term "equity", they fail to provide for its definition. Though "equity" is a keyword in the discussion on TKGR protection, it is frequently used in an intuitive and non-specific manner. It could be assumed that it relates to issues of economic and political distributive justice. This is also one of the major objectives with choosing Rawls' fairness theoretical framework, since this guides as into deciding what equity and fairness is to entail in the TKGR protection.

Efficiency, though not as explicitly mentioned in the CBD provisions, functions as an overriding principle and objective. The shift from "commons" to "rights" by means of the CBD is motivated by an "efficiency argument". The objective to "facilitate access" and to provide for the "sustainable use of genetic resources" incorporates an efficiency perspective. The concept of "sustainability" itself is understood as integrating the different components that define the interrelationship between humanity and nature – that is, the economic, social and ecological factors[14]. The text of the CBD, and in particular Articles 11 and 15, link conservation and sustainable use of the components of biological diversity with economic issues, such as the creation of incentives for conservation and benefit sharing.

10 See also David Elkins, 'Responding to Rawls: Toward a Consistent and Supportable Theory of Distributive Justice' (2007) 21 BYU Journal of Public Law 267–323.

11 See Russell B Korobkin and Thomas S Ulen, 'Efficiency and Equity: What Can Be Gained by Combining Coase and Rawls?' (1998) 73 Washington Law Review 329–349.

12 Individuals are thus willing to give up part of the wealth surplus in order to guarantee that their actual welfare will not fall under a specific level.

13 The term "equity" was also of central importance in the United Nations Convention on the Law of the Sea (1982) where it was stated that "marine resources are to be used in an equitable and efficient manner".

14 Susette Biber-Klemm and Dorothee Szymura Berglas, 'Problems and Goals' in Susette Biber-Klemm and Thomas Cottier (eds), Rights to Plant Genetic Resources and Traditional Knowledge: Basic Issues and Perspectives (CABI 2006).

Article 8(j) states that national legislation should "encourage the equitable sharing of the benefits arising from the utilization" of traditional knowledge, innovations and practices. The Article provides for the "approval and involvement of the holders of such knowledge" promoting, in that way, the participatory aspect of fairness. The same participatory aspect of "fairness and equity" elements in the text can be found in Article 15 of the CBD. According to Article 15.4 and 15.5 access to genetic resources shall be granted "on mutually agreed terms", and under the precondition of "prior informed consent" of the country of origin.

Considering the increased transaction costs in the TKGR market, it is of utmost importance to choose the right type of entitlement, the appropriate rightholders and the most efficient managerial structure. Transaction costs include lengthy procedures, multiple permits, PICs, multiple fees, and overlapping procedures. Another important factor contributing to the increased transaction costs and consequently to the market failures in the field of TKGR, is of course the limited legal certainty. The entitlement and the overarching principles and procedures surrounding it should abide by the fundamental rule of legal certainty, now a principle provided for in the Nagoya Protocol[15]. Legal certainty and the limitation of transaction costs require a careful specification of the market failures the new entitlement is to remedy. North/South considerations should be taken into account only to the extent they are of relevance for the specific subject-market.

15 See, paragraph 3(a) of the Nagoya Protocol.

Since TKGR is found in various forms it could be plausible to provide different entitlements for different forms of TKGR. It would also be recommended to employ different entitlements in intra-national arrangements (relation between the state in the country of origin and the indigenous communities), as opposed to the relations of the country of origin with bioprospectors.

3. WHAT DID PANDORA KEEP IN THE BOX? THE RESEARCH RESULTS.

The thesis concluded that when it comes to the protection of TKGR, it would not be possible to apply an "One size does not fit all" model, and that the variations in innovative contribution as well as in the customary status of TKGR (sacred or not) should have an impact on the entitlement to be introduced.

The research questions posed in the thesis were responded in the following way:

What is the scope and content of the constraints and requirements placed on the elaboration of a TKGR entitlement by means of binding International Agreements?

An examination of binding international agreements lends a cautiously optimistic perspective to the discussion on the development of a legal entitlement for traditional knowledge and genetic resources (TKGR). The principal international instrument in this field, the Convention on Biological Diversity (CBD), sets out the overarching

objectives relevant to such an entitlement, including the recognition of the sovereign rights of states over genetic resources, the fair and equitable sharing of benefits arising from their utilisation, and the protection of Indigenous peoples and local communities. At the same time, the CBD does not define the nature, scope, or legal form of any such entitlement, nor does it provide concrete mechanisms for enforcement, as non-compliance with its provisions is not subject to sanctions.

In contrast, an analysis of intellectual property–related treaties makes clear that any proposed entitlement for TKGR would need to be compatible with the existing international intellectual property system, if not integrated within it. Fundamental reforms of the IP system to accommodate the particular characteristics of TKGR appear largely unrealistic. Proposals such as the introduction of a mandatory disclosure requirement have so far been limited in scope and effectiveness, functioning primarily as tools for monitoring use rather than as mechanisms of substantive protection. Nonetheless, the current text of the TRIPS Agreement contains a degree of flexibility that could, at least in part, accommodate TKGR-related concerns.

Within these flexibilities, several TRIPS-compliant options remain available, including the recognition of TKGR as prior art, its protection through sub-patentable forms of protection, or the establishment of liability-based regimes rather than exclusive rights. In this sense, compatibility with the existing international IP framework constitutes the most concrete constraint on the development of a TKGR entitlement. At the same time, the indeterminacy and flexibility embedded in international treaties on TKGR protection create both opportunities and challenges: while they allow for a wide range of regulatory approaches, they also contribute to uncertainty and difficulty in implementation.

What are the experiences of the national and regional initiatives in the elaboration of a TKGR entitlement, which were the choices made, what was the outcome and the extent to which available flexibilities were taken into account?

An internationally recognised and harmonised protection regime for traditional knowledge and genetic resources (TKGR) is of fundamental importance. The value of any legal entitlement in this field is inherently linked to its international character, since the market failures and instances of biopiracy that have prompted calls for protection typically arise in cross-border contexts. Experiences at the national and regional levels nonetheless provide valuable insights into how the Convention on Biological Diversity (CBD) has been implemented in practice, the challenges and opportunities encountered, and the ways in which TKGR-related measures interact with existing intellectual property systems.

A recurring observation from national and regional initiatives is that protective frameworks are often developed without a systematic examination of the overarching objectives of TKGR protection or the practical implications of the requirements imposed. In many cases, national and regional TKGR regimes are directly or indirectly linked to domestic patent systems, thereby creating functional connections between TKGR protection and intellectual property law. At the same time, responsibility for TKGR-related matters is frequently allocated to authorities other than national patent offices, involving a range of governmental bodies. In such systems, protection of TKGR often emerges as an indirect consequence of strict access and benefit-sharing mechanisms rather than as the result of an explicitly articulated legal entitlement.

One particularly significant lesson from national and regional legislation is that TKGR is not a uniform category but can be differentiated into distinct types, each requiring a tailored mode of protection. This implicit or explicit categorisation should serve as a key starting point in the design of any comprehensive TKGR entitlement. Certain forms of TKGR may be most effectively protected indirectly, for example by being recognised as prior art that prevents the granting of intellectual property rights to third parties. Other forms may qualify as innovations in their own right and thus warrant protection through conventional intellectual property mechanisms or through sui generis regimes. Finally, some TKGR may be inappropriate for market-based exploitation altogether, due to religious, cultural, or social considerations, and would therefore be best safeguarded through confidentiality or secrecy-based protections.

Is there a possibility to proceed to a systematisation of the principles and objectives to rule the process of the elaboration of a new entitlement, in this case on TKGR?

A systematisation of principles and objectives in the elaboration of a new entitlement such as that of TKGR is of vital importance. The side effects of the lack of clear-cut overarching principles and objectives are obvious in the previous critical analysis of regional and national initiatives on TKGR protection, as well as in the evaluation of bioprospecting agreements.

It seems rather impossible to successfully introduce a new entitlement, if one is not sure of the objectives the entitlement is to fulfil. Taking into consideration the vagueness and flexibilities of the International Treaties a systematisation of principles and objectives becomes of vital importance.

In this respect, an approach such as the one suggested by Calabresi & Melamed could have been valuable[16]. As a matter of fact, the end results of the implementation of the CBD, and thus of the crystallisation of a legal entitlement on TKGR, lack the systematic approach that would establish whether: a) there is a need for a new legal entitle-

16 See Guido Calabresi and A Douglas Melamed, 'Property Rules, Liability Rules, and Inalienability: One View of the Cathedral' (1972) 85 Harvard Law Review 1089; see also Keith N Hylton, 'Property Rules and Liability Rules, Once Again' (2006) 2 Review of Law and Economics, art 1 https://ssrn.com/abstract=946874.

ment; b) which objectives/purposes this entitlement would satisfy; c) what the overriding principles would be; and d) who the beneficiaries of the legal entitlement would be.

The lack of such a systematic and analytical approach in the national and regional TKGR-related legislation has, in a number of cases, provided for unclear and fragmented legal entitlements and numerous layers of right-holders with unspecified intra-relations.

The protection of TKGR has, to a large extent, been treated as other forms of sub-patentable/sub-copyrightable intangible assets and has as such been placed under the scope of property rights. Such a tendency is present both in the implementation initiatives as well as in the TKGR-related CBD and TRIPS negotiations. Property rules in the TKGR field are very often structured in different layers, imposing cumbersome procedures of access and use. Gradually TKGR, subject some decades ago to a "tragedy of the commons", is presently the focus of a new emerging "tragedy of the anticommons" as the one illustrated by Heller[17].

The answer to the first Calabresi & Melamed question would be yes, the market failures in the TKGR market are such that would require they be "lifted" from the public domain. At the same time, this has already been done by means of the CBD on an international convention level. The second question, is more complicated. For the purposes of this dissertation and for reasons earlier discussed, the principles/objectives of TKGR protection should be fairness and efficiency. Fairness and efficiency are also the answer to the question related to the overriding principles of the system. The most problematic issue to clarify is how to provide for the practical applications of these principles, and who are to be the beneficiaries.

At first glance, property rights seem to be an inappropriate form of protection for the main body of TKGR. There is certainly such TKGR that is closer to sub-patentable innovation and attributable to specific individuals and would benefit from a property regime. But in most cases, property rights-inspired entitlements on TKGR fail the efficiency and fairness test. The cumbersome procedures imposed due to the different layers of property rights granted, the unclear rules of representation of different right-holders and the weak enforcement provisions, increase transaction costs to the extent that bioprospecting becomes a prohibitive endeavour[18].

The recent developments with the adoption of Nagoya Protocol, confirm the concerns presented in this thesis, related to the increased transaction costs national and regional implementation initiatives have inflicted on the TKGR market. In an attempt to diminish transaction costs in TKGR trade, Nagoya Protocol provides for an obligation to make available to the ABS Clearing House Mechanism all information of relevance to ABS on the national or regional level[19]. Another means of providing for limited transaction costs is by using the Multilateral system introduced by means of ITPGRFA. This will of course only be of limited application taking into consideration the limited scope of crops included.[20]

And to which extent would present objectives and principles assist in the process and what outcome would they inflict on the TKGR protection?

Against the background of a differentiated categorization of TKGR-related innovations, the application of existing principles and objectives can play a decisive role in shaping and managing any future entitlement regime. Such principles may also guide the more fundamental question of whether legal protection is necessary at all, or whether market mechanisms could, over time, address the relevant externalities. Throughout this analysis, considerations of fairness and efficiency have served as the starting point for evaluating the choice between property rules and liability rules. Although property-based approaches have traditionally dominated diplomatic negotiations and academic debate, liability-based regimes appear, in several respects, to offer a more context-sensitive and adaptable alternative.

Liability rules may be particularly well suited to markets characterised by high transaction costs, such as bioprospecting. While the creation of property rights in TKGR may not necessarily lead to classic holdout behaviour, it risks significantly increasing transaction costs and thereby impeding access and use. In such cases, exclusive rights may contribute to blocking socially desirable exchanges rather than facilitating them. By contrast, liability regimes do not allow right-holders to deny access outright or to impose case-specific access conditions. For this reason, any liability-based system for TKGR would need to be grounded in an initial decision by right-holders—whether Indigenous communities, states, or both—regarding which resources are made available under "use now, pay later" conditions.

In this context, reward-based mechanisms may also provide an appropriate means of protection. Such systems could compensate communities for their role in the creation, preservation, and transmission of TKGR, without necessarily relying on exclusivity. Where TKGR

17 Michael A Heller, 'The Tragedy of the Anticommons: Property in the Transition from Marx to Markets' (1998) 111 Harvard Law Review 621 https://ssrn.com/abstract=57627.

18 On the tragedy of the anticommons in modern patent rights, see Domeij B., "Patent och innovationsprocessens avtal", in NIR nr. 2 (2012), pp. 122–140. In his article, Domeij proposes alternative means of remedying "anti-commons" effects that the patent system might inflict, such as for instance the possibility to place patents under some kind of management structure where the patent holder can state the royalty price, thus resembling a "creative commons structure".

19 Nagoya Protocol, Art 17(1)(a)(iv), providing that the information that should be available include information on legislative, administrative and policy measures on ABS, permits or their equivalent issued at the time of access as evidence of the decision to grant PIC, even additional information such as relevant competent authorities, model contractual clauses codes of conduct and best practices, may be required.

20 Halewood M. et al. (2013), pp. 68–96. For an analysis from an economics perspective, see Maskus K.E., "Intellectual Property Rights and Global Policy Challenges", in Private Rights and Public Problems: The Global Economics of Intellectual Property in the 21 st Century, manuskript prepared for Peterson Institute of International Economics, Maskus K.E. ed. (2012).

can be attributed to identifiable individuals or groups and exhibits characteristics comparable to other sub-patentable innovations, a sui generis regime conferring limited exclusive rights may be justified. Experiences drawn from plant variety protection and database rights demonstrate that such tailored regimes can be operationalised. Reward systems are also particularly well suited to protecting collective innovation and TKGR rooted in communal traditional knowledge, including forms of TKGR that would otherwise fall within the public domain. Legislative experiments in jurisdictions such as Thailand and Portugal illustrate how categorisation based on degrees of novelty and inventiveness can support differentiated protection models.[21]

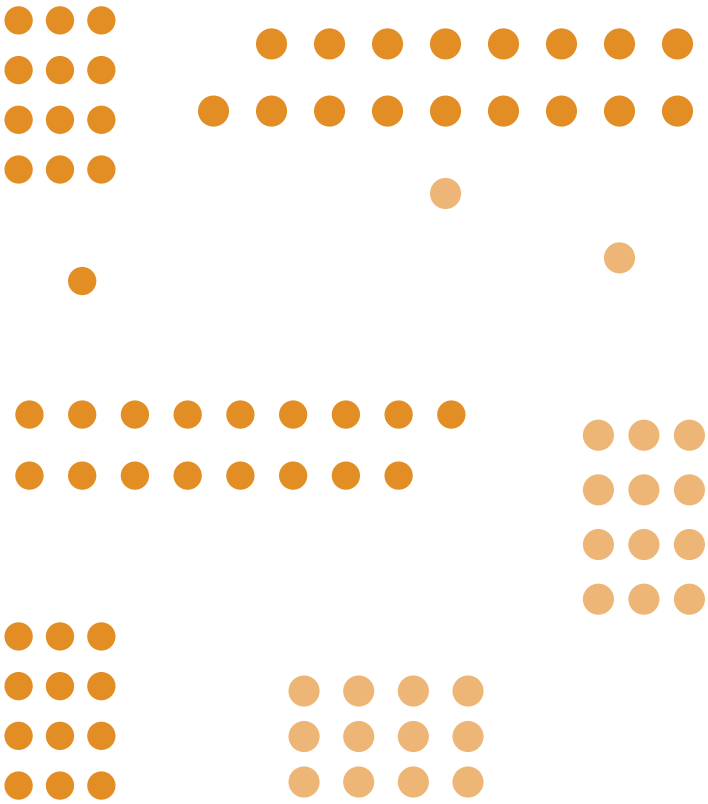
A further alternative lies in combining liability and reward mechanisms. Under such a model, a liability regime could govern relations between states and external users, such as bioprospectors, while reward mechanisms would regulate benefit-sharing between the state and Indigenous or local communities. This structure would allow the state to centralise rights management while ensuring that communities are compensated for their contributions. The effectiveness and fairness of such an approach would, however, depend heavily on domestic political conditions and on the nature of relations between state authorities and Indigenous communities.

One significant advantage of this combined approach is its potential to address a persistent weakness of many national and regional TKGR regimes: overregulation. Numerous existing initiatives illustrate what Michael Heller has described as the "tragedy of the anti-commons," where fragmented rights and overlapping approvals obstruct access and use. Evidence of this problem is also found in the operation of bioprospecting agreements. By establishing a two-tier governance structure—one internal (state, Indigenous communities, landowners) and one external (state and bioprospector)—it may be possible to create a more accessible and functional system for access and benefit-sharing and TKGR protection.

The identification of beneficiaries must necessarily reflect the diversity of TKGR itself. Indigenous communities and states of origin are central stakeholders whose interests cannot be sidelined, but the allocation of benefits may need to vary depending on the nature and provenance of the resources concerned.

Designing an optimal protection regime for TKGR is inherently complex. Multiple right-holders with often competing interests, a heterogeneous subject matter with varying degrees of innovation and value, a global market, and a dense web of international, regional, and national regulations all contribute to this complexity. This analysis does not claim to offer a ready-made model for a new TKGR entitlement, nor was that its primary objective.

21 Guido Calabresi and A Douglas Melamed, 'Property Rules, Liability Rules, and Inalienability: One View of the Cathedral' in Property Rules, Liability Rules and Inalienability: One View of the Cathedral (2007) https://doi.org/10.1002/9780470752135.ch3.



Rather, the ambition has been to propose an alternative mode of reasoning for the development of such an entitlement, demonstrating the value of theoretical frameworks in clarifying objectives and guiding regulatory design. TKGR offers a particularly compelling context in which to explore how systematic, principle-based analysis can inform entitlement design in a politically sensitive and normatively charged environment.

Moving beyond the routine replication of existing sui generis models—many of which have proven ineffective—opens space for a deeper examination of what different forms of legal entitlements actually entail. By critically analysing the content and consequences of property rights, liability rules, and reward mechanisms, decision-makers and right-holders may be better equipped to move beyond an almost automatic reliance on exclusivity as the default response to market failure.

A more critical and analytical approach holds the promise of more balanced, robust, and widely accepted protection regimes, while also enabling solutions to market failures that do not depend on the creation of strong exclusive rights. And for those inclined to view such rethinking as opening a Pandora's box, it is worth recalling that hope, too, was among its contents.

4. WHAT HAPPENED AFTER PANDORA'S BOX WAS OPENED, AND HOW RELEVANT ARE THESE RESEARCH RESULTS 10 YEARS LATER?

At the time when my doctorate thesis was defended, the issue of the protection of TKGR was for a number of years rather downplayed and although the work of the IGC

continued with two annual meetings, very little output was produced. It was not only a matter of minimal output, it was also a matter of loss of expectations and hopes that a solution, a form of protection would be possible for TKGR.

It is thus very interesting that when this text is written, some ten years later it coincides with what has been identified as the most decisive step towards a binding international legal framework for the protection of TKGR, namely the adoption of the *World Intellectual Property Organization Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge*.[22]

The adoption of the *World Intellectual Property Organization Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge* has been presented as a significant milestone in international intellectual property law. For the first time, a binding multilateral instrument directly addresses the interface between the patent system, genetic resources, and associated traditional knowledge (TK). At the same time, a closer examination of the Treaty text reveals that its regulatory ambition is both carefully circumscribed and structurally constrained.[23]

The Treaty's objectives, set out in Article 1, focus primarily on improving the efficacy, transparency, and quality of the patent system and on preventing patents from being erroneously granted for inventions that are not novel or inventive in light of genetic resources or associated TK. This framing is significant: rather than establishing substantive rights for TK holders, the Treaty positions itself as a corrective mechanism within existing patent procedures. The emphasis is thus placed on informational accuracy and procedural integrity, rather than on redistributive justice or the recognition of new legal entitlements.

This orientation is reflected most clearly in the Treaty's core operative provisions on disclosure, particularly Articles 3 and 4. These provisions require Contracting Parties to ensure that patent applicants disclose the country of origin of genetic resources, or the source of associated traditional knowledge, where an invention is "based on" such resources or knowledge. While this requirement constitutes a notable departure from the traditional insulation of patent law from questions of origin, its legal effect remains limited. Disclosure is conceived as an obligation owed to patent offices, not to Indigenous peoples or local communities, and the Treaty explicitly avoids linking disclosure failures to the invalidation of patents as a mandatory consequence.

The Treaty's cautious approach is further underscored by Article 6, which governs sanctions and remedies. It allows Parties to provide for "appropriate, effective and proportionate" measures in cases of non-compliance, but excludes remedies that would automatically affect the validity of granted patents, except in cases of fraudulent intent. This choice reflects a deliberate effort to maintain compatibility with existing international IP frameworks, particularly the TRIPS Agreement, but it also significantly limits the Treaty's capacity to function as a meaningful deterrent against misappropriation. At the same time, it throws back the point of reference from the international level to the national one, removing thus as such the rigor and enforceability of the legal framework introduced.[24]

Indigenous peoples and local communities are acknowledged in the Treaty's preamble and in Article 2, which defines "associated traditional knowledge" and recognizes its holders. The Treaty also refers, in general terms, to relevant international instruments concerning Indigenous rights. However, these references are largely declaratory. The Treaty does not establish rights of prior informed consent, benefit-sharing obligations, or direct procedural standing for communities within patent systems. Instead, Indigenous peoples and local communities appear primarily as sources of knowledge to be disclosed, rather than as rights-holders with enforceable claims.

22 WIPO IGC, Text of a Draft International Legal Instrument Relating to Intellectual Property, Genetic Resources, and Traditional Knowledge Associated With Genetic Resources, U.N. Doc. WIPO/GRTKF/IC/SS/GE/23/2 (June 30, 2023) (reviewed at Special Session Sept. 4–8, 2023); WIPO IGC, Decisions, U.N. Doc. WIPO/GRTKF/IC/SS/GE/23/4 (Sept. 8, 2023) (Special Session Sept. 4–8, 2023); Pedro Henrique D. Batista, The WIPO IGC Chair's Draft on IP and Genetic Resources—Reasons for Concern, 19 J. Intell. Prop. See, N.S. Gopalakrishnan, Srividhya Ragavan & Narendran Thiruthy, *Intellectual Property, Genetic Resources, and Associated Traditional Knowledge*, 54 Envt. L. Rep. 10829 (2024). Available at: https://scholarship.law.tamu.edu/facscholar/2119.

23 Vásquez Callo-Müller, María and Ortega, Diego and Matsuno Remigio, Alejandro, The WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge: Situating a Landmark Development in International Intellectual Property Governance (November 30, 2024).

24 The book of Wend Wendland – at the time of the adoption of the Treaty, the Director of WIPO's Traditional Knowledge Division and Secretary of WIPO's Intergovernmental Committee (IGC), provides a complete review of the process of the negotiation of the Treaty. The book elevates the importance of the Treaty to a major success. See Wendland, Wend. *The Journey to the WIPO Treaty on Genetic Resources and Associated Traditional Knowledge: Policy, Process and People*. Edward Elgar Publishing, 2025.

This reinforces concerns that the Treaty offers symbolic recognition without corresponding legal empowerment.

The Treaty's relationship to the broader international IP system is addressed explicitly in Article 9, which affirms that the instrument is to be implemented in a manner supportive of existing international agreements. While this ensures legal coherence and political feasibility, it also confirms that the Treaty does not seek to challenge the foundational logic of the patent system. Proposals for more transformative approaches—such as sui generis exclusive rights for TK or mandatory benefit-sharing mechanisms—are notably absent. As a result, the Treaty remains firmly anchored within a procedural, rather than substantive, conception of TK protection.

Implementation is further complicated by Article 10, which grants Contracting Parties considerable discretion in how the Treaty's obligations are incorporated into domestic law. While this flexibility accommodates legal diversity, it also risks uneven application and fragmented protection. States with limited administrative capacity may struggle to verify disclosures or meaningfully integrate TK considerations into patent examination, potentially reducing the Treaty's practical impact.

Taken together, the Treaty reflects a carefully negotiated compromise. It acknowledges long-standing concerns regarding the treatment of genetic resources and associated TK within patent systems, but it addresses these concerns through modest procedural adjustments rather than structural reform. Its reliance on disclosure, transparency, and administrative cooperation may improve patent examination practices, yet it leaves unresolved deeper questions of equity, control, and benefit-sharing that have driven international TK debates for decades. Another clearly positive aspect of the Treaty is that it is the outcome of a multilateral negotiation. Although the process has taken more than two decades, the adoption of a concrete legal instrument—even a relatively modest one—represents a meaningful result. Continuing the work of the Intergovernmental Committee (IGC) without any tangible outcome would arguably have been more damaging, both for the credibility of the process and for the vitality of multilateralism in a field where an international solution has long been recognized as necessary.[25]

In this respect, the Treaty embodies both progress and limitation. It constitutes progress insofar as it formally connects traditional knowledge and genetic resources to patent law at the international level. At the same time, it reflects clear limitations, as it ultimately reinforces rather than fundamentally reshapes the existing intellectual property paradigm. Whether the Treaty will meaningfully reduce misappropriation or merely add an additional procedural layer to patent systems will depend less on the text itself than on how its built-in flexibilities are interpreted and applied—or disregarded—at the national level.

This inevitably raises the question of how much, or perhaps how little, the proverbial opening of Pandora's box has influenced the drafting of the Treaty. The answer appears to be: very little, if at all. It is difficult to say whether this is a source of disappointment or merely a confirmation of how legal research is typically received within international negotiations and diplomatic fora. Having participated in the Swedish delegation to the IGC for several years, I was afforded direct insight into how international instruments such as this Treaty are negotiated and ultimately adopted. It quickly becomes apparent that drafting choices are rarely driven by academic research, even where such research may be directly relevant.

It is hardly surprising, therefore, that my own research had little impact on the substance of the negotiations or on the final wording of the Treaty. Yet, in revisiting this work for the purposes of the present article, I am reminded that legal research serves multiple functions. Ideally, it contributes to the development of more effective, balanced, and well-reasoned legislation. When that ambition is not realized, however, legal research retains significant value as an intellectual compass—one that can guide critical evaluation of legal rules and deepen our understanding of their real-world effects on individuals, stakeholders, and markets.

It has been both interesting and rewarding reading my thesis again and this time under the light of the recently adopted Treaty. It seems that the research results can yet again be used to critically assess the strengths and/or weaknesses of the Treaty and evaluate its long-term impact, which unfortunately in the specific case is deemed to be too restricted.

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25 Critical voices concerning the meaning and value of the Treaty (at the time the article was written, the Treaty was a draft), with a prominent example the article of professor Yu, see, Yu, Peter K., WIPO Negotiations on Intellectual Property, Genetic Resources and Associated Traditional Knowledge (December 6, 2023). Akron Law Review, Vol. 57, pp. 277–326, 2024, Texas A&M University School of Law Legal Studies Research Paper No. 23-71, Available at SSRN: https://ssrn.com/abstract=4656267.