International Journal of Law
www.lawjournals.org
ISSN: 2455-2194
Received: 26-04-2022, Accepted: 12-05-2022, Published: 27-05-2022
Volume 8, Issue 3, 2022, Page No. 70-75

Debates over traditional knowledge protection: The role of intellectual property laws

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Abstract
This paper discusses a legal framework for the protection of traditional knowledge (TK) through a non-conventional intellectual property system. Some key points in this paper will be shown through a brief case study that highlights the consequences that followed from the ambiguity present in international instruments that are supposed to aid in traditional knowledge protection. Furthermore, this paper addresses the contentions springing forth from various groups that argue for or against the placement of TK in the sphere of "public domain". This research highlights a number of caveats that ought to be considered should TK be viewed as a public good. This paper additionally puts forward that effective and well-balanced IP (Intellectual Property) tools are necessary so that IP laws do not undermine the rights and interests of TK holders. Finally, this paper determines that the methods best suited to bring a harmonious convergence for equal ground amid tensions for or against the application of IPRs (Intellectual Property Rights) to traditional knowledge would be using a Sui Generis mechanism and mandatory disclosure provisions in Patent laws. These solutions will be of substantial benefit in preventing biological piracy, misappropriation of TK and the abuse of IPR's.

Keywords: traditional knowledge, genetic resources, intellectual property rights, biological piracy, Sui generis mechanism

Introduction
This paper brings into context how Intellectual Property (IP) Laws have implications on the rights of traditional/indigenous communities. It discusses the flaws present in current IP laws and how these inconsistencies give way for biological piracy and misappropriation of traditional knowledge. Additionally, results of this research show the reasons why traditional knowledge is viewed as not meeting the 3 criteria of patentability. These being novelty (newness), inventiveness (non-obviousness) and usefulness. Because TK is somewhat accessible to the public, this means it does not meet the prerequisites of current intellectual protection laws. The main argument presented by several scholars is that even though TK meets the criterion of usefulness, it does not meet the core requirements of novelty and inventiveness. Additionally, although a number of international organizations, treaties and conventions exist. Each with their own mandate covering several issues, most groups have little to no direct convergence among themselves in matters as significant and interwoven as traditional knowledge, genetic resources and IPRs. Despite the formation of panels such as the Convention on Biological Diversity (CBD), it's Conference of Parties (Cop), the Intergovernmental Committee on Intellectual Property and Genetic Resources Traditional Knowledge and Folklore (ICG), the Trade-Related Intellectual Property Rights (TRIPs), the World Trade Organization (WTO) and the World Intellectual Property Organization (WIPO). Matters concerning traditional knowledge, particularly that associated with genetic resources are still lacking solid laws. The ambiguity present in international instruments that are supposed to aid in traditional knowledge protection has in turn given way for the abuse of IPR's. For example, intense differences in ideology between TRIPS and other international agreements are of perpetual hindrance to trade in services involving knowledge intensive sectors. TRIPs does not obligate disclosure of origin, prior informed consent and access authorization under benefit sharing for traditional knowledge. Mathur Ajeet in his research also points out there is an obvious difference between the CBD and TRIPS concerning clarity in regards to which rights over biological resources are most paramount [1]. While the CBD acknowledges and firmly upholds the collective rights of local communities over their biodiversity, TRIPS contrary to this, attempts to exact private intellectual property rights over matters of such a subject. For the WTO, IPRs are a question of enforceable legal rights, while the WIPO views IPRs in the same context where traditional knowledge, genetic resources and folklore are discussed together. Another problem is that due to the fact that traditional knowledge has a nature very much similar to a public good, legal intervention is vital in creating necessary measures to shield it from exploitation by individuals or firms.
Traditional knowledge also includes traditional medicinal knowledge which in itself is intertwined with and sourced from plant genetic resources. Given the quick pace with which biological technology has advanced over the years, it is inevitably apparent the significant position of IPRs, particularly for products resulting from

genetic resources based on traditional knowledge. At the forefront of this matter are developing countries from whom most resources genetic or otherwise are sourced. These countries are bringing to the forefront how inventions specifically sourced from a biological resource are not solely reliant on the tangible properties of the said resource, but are to a great degree also highly contingent on the intangible aspect of the traditional knowledge with which the resource is associated [2]. For better or worse, traditional knowledge and medicine is all the more picking the interest of bio-pharmaceutical companies. Research data reveals that of the drugs currently available on the world market, 119 were developed from plants and 74% were discovered from traditional herbal medicine [3]. Africa's traditional communities have contributed to more than 20 plant species in this arena and are estimated to have generated a whopping US$4 billion for the US economy alone. This has no doubt led countless others to the unrelentingly appropriation and abuse of traditional knowledge. This as well raises concerns about a lack of formal acknowledgement or benefit sharing schemes for indigenous communities that are the main custodians of such knowledge and resources. These communities have throughout many years passed down the knowledge and skills of identifying and utilizing the properties of genetic resources. But when all is said and done, recognition is usually given to the person or firm that manufactured a product or service with medicinal benefits. Whereas, the vital information about the knowledge that allowed for these medical advancements to develop rarely comes to light. Another problem is that there are arguments that still center around the validity of traditional knowledge, as well as its role in the development of a final product. The fundamental consensus for those favoring the application of IPRs to traditional knowledge is that this knowledge and its subsequent use of biological resources play a key role at several stages. These stages begin from the initial stage of identifying the exact use of a biological resource, formulating the precise dosage to be administered and finally the creation of a finished product. Thus, the fact of the matter is that any so-called new products are basically established on the foundation of traditional knowledge. Dhar and Anuradha in their research further put forward that these "new products" are merely just reformulations of existing knowledge and they as such literally have little to no difference from what already exists. Likewise, Buckingham in her research identifies several factors affecting traditional knowledge and that consequently also affect traditional communities. She lists these factors as the misappropriation of cultural images or themes, unauthorized copying and expropriation of traditional knowledge to mention but a few. In many ways, traditional knowledge in the legal aspect and the rights of traditional communities are to a noticeable degree quite a challenge to explore, as it is sensitive area that is also immensely politicized, contentious and undeniably important.[4] On that ground, the significance of this research is to show that it is very much possible to use the IP system for the protection of traditional knowledge. Furthermore, the protection of traditional knowledge will aid in current international efforts aiming at conservation and sustainable use of biological resources. Which will of course simultaneously combat problems associated with misrepresentation or appropriation of products and practices belonging to indigenous people. This protection will also help in abating cultural degradation, unauthorized public disclosure and use of esoteric knowledge, images and other sensitive information pertaining to indigenous communities.

Scope of Traditional Knowledge and the Role of International Organizations

The term traditional knowledge as defined according to WIPO is knowledge, know-how, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity. In 1999, WIPO also referred to traditional knowledge as being innovations and creations of intellectual activity in industrial, scientific, literary or artistic fields based on this knowledge area. Traditional knowledge originates from local or indigenous communities. Local communities refer to a group of people who aren't necessarily indigenous yet maintain a traditional lifestyle. An example of this is the communities in African countries. While the term indigenous describes a group of people that share the same common culture, tradition or sense of kinship. Additionally, this term refers to a group of people or their descendants who were at some point colonized by European countries and are the minority population in that country.[5] Traditional knowledge also encompasses a variety of areas such as medicinal, technical, agricultural, scientific, ecological and biodiversity related knowledge. In regard to the medicinal aspects of traditional knowledge, genetic resources are of great importance. Genetic resources are therefore defined as genetic material of actual or potential value. They can be sourced from any material of plant, animal, microbial or any other origin containing functional units of heredity. As such, genetic resources in this respect are regarded as an indigenous resource [6]. In further understanding the scope of traditional knowledge, the term "traditional" should not be viewed as something that points to the past, because this knowledge is not stagnant or primitive. Instead, the term "traditional" should be seen as reflecting the way in which it is transferred, acquired and used. Because, even though it traces its origins to the past, it is continually evolving in nature through the contributions made by new generations that enrich this knowledge and practices to meet their modern-day needs [7].

The Convention on Biological Diversity has been instrumental in the protection of genetic resources and traditional knowledge at the international level. The CBD imposes upon party states the responsibility of acquiring prior and informed consent under mutually agreed terms ahead of any grants to access genetic resources. Thus, setting a vital precedence for obligations of several other treaties for the protection of biological diversity [8]. To be further specific in highlighting the CBD's commitment to traditional knowledge protection. In it's Article 8j, the CBD recognizes the collective rights of local communities over their biological resources. This provision additionally obligates all member states to treat with respect and propriety the knowledge, creations and practices of indigenous or local communities. This includes respecting the traditional lifestyles of

such groups which are directly linked with biological diversity and its conservation. Furthermore, according to Article 8j, Prior Informed Consent (PIC) and Mutually Agreed Terms (MAT) ought to be established before accessing any knowledge, innovations or resources of traditional communities. This provision will facilitate in the equitable sharing of the benefits arising from the utilization of TK. Other supplemental provisions are made through Articles 15.5 and 15.7 of the CBD. Furthermore, in 1998, WIPO took protection of traditional knowledge to a new level by establishing the Global Intellectual Property Issues Division. This division engaged in dealing with several topics on traditional knowledge. One of which was the protection of innovations and creativity in to sphere of traditional knowledge. This included 3 areas: i) Conducting a study on customary law and other regulatory systems with implications on the protection of traditional knowledge. ii) Carrying out a feasibility study on the use of intellectual property laws in protecting traditional knowledge. iii) Commissioning international fact-finding missions in order to determine the nature and types of problems faced by traditional knowledge holders [9]. Additionally in 2000, WIPO formed the Intergovernmental Committee on Intellectual Property and Traditional Knowledge, Genetic Resources, and Folklore (IGC).

Threats and Dilemmas Affecting Traditional Knowledge

One of the biggest concerns threatening traditional knowledge manifests itself as biological piracy (bio-piracy). This occurs when traditional knowledge is commercially exploited and the rights of indigenous communities are sat on by parties seeking exclusive monopoly over the knowledge and resources associated with indigenous groups. These parties usually acquire some form of intellectual property rights or come under the guise of a non-profit scientific or academic organization. Legal recourse becomes even more difficult when these companies obtain intellectual property rights in a country that has a jurisdiction far different from the country that is the original source of the traditional knowledge. In the context of this research, misappropriation is defined as the unauthorized access and use of genetic resources and traditional knowledge for business purposes without a fair and equitable sharing of the profits earned with the indigenous communities that own them. Even with the CBD making provisions for the equitable benefit-sharing of benefits, it is still challenging to prevent bio-piracy or misappropriation. Mainly because most countries lack adequate domestic legislation that pertains specifically to traditional knowledge associated with genetic resources. Furthermore, even where such laws are present, implementation of the CBD's principles for access and benefit sharing is ineffective. Additionally, the Patent law of certain countries have no provisions that require benefit sharing for use of genetic resources or traditional knowledge.

Another dilemma pertaining to the protection of traditional knowledge comes as a result of it being perceived as a public good and as such is perpetually pushed into the sphere of public domain. Those advocating this move argue for two main things, firstly that because TK is somewhat accessible to the public, it does not meet the prerequisites of intellectual protection laws. Secondly, they assert that commercial innovations established on or dependent on traditional knowledge are proprietary and as such are subject to intellectual property protection [10]. Another reason for the public domain theory steams from the 3 criteria of patentability, these being novelty (newness), inventiveness (non-obviousness) and usefulness. The main argument is that even though TK meets the criterion of usefulness, it does not meet the core requirements of novelty and inventiveness. Since TK primarily relies on natural materials which are already readily available to the general public and has been used by traditional communities for centuries, it means that TK is un-patentable and giving it protection through the patent system contradicts the main purpose of a patent. Because, while a patent serves as a legal instrument to give its owner a right to exclude others from making and distributing the said invention, its key function does not allow for an extension of protection to knowledge already existing in the public domain. This public domain notion further emphasizes that due to the public good nature of TK, any additions or modifications made to it by another party are to be regarded as original inventions of the creator and as such patentable, provided the improvements meet patent criteria. Unfortunately, this leaves traditional communities and custodians of TK with neither a legal exclusionary right to the information nor legal form of action to prevent others from the exploitation and misappropriation of their knowledge and furthermore leaves the traditional communities with no legal recourse to obtain licensing agreements or compensation and financial interest for subsequent inventions made from their knowledge [11].

Discussion: Case Study of Rosy Periwinkle and Hoodia Cactus

This part of the research provides evidence that shows how ambiguity in IP laws led to abuse of the system and infringement on the rights of traditional knowledge holders. In Africa there are 2 well known cases were biological piracy, misappropriation of traditional knowledge and the misuse of intellectual property rights stand out significantly. Although there are some under the impression that bio-piracy is a thing of the past, others remain adamant that it still exists. Regardless of there being several new laws under international instruments, fairness in the administration of benefit sharing is often times stamped upon and even when it is implemented only a minuscule amount (especially in cases involving monetary benefits) of the profits generated by a company after accessing either genetic resources or traditional knowledge are given to the providing country from which the resource is derived or to the traditional community associated with the traditional knowledge. This part of the research analyzes a case of biological piracy which occurred in South Africa and the other which occurred in Madagascar.

The rosy periwinkle is native to Madagascar and the hoodia cactus plant is native to South Africa. In the case of Madagascar, traditional knowledge about the beneficial uses and applications of the rosy periwinkle were vital in the development of the cancer fighting drugs Vincristine and Vinblastine. Initially, the rosy periwinkle was used in treatments for diabetes until its potential for cancer treatment was found. Following this, a U.S. pharmaceutical company called Eli Lily obtained patents for Vincristine and reaped huge profits. Unfortunately, no form of benefits was given to Madagascar or the indigenous community from which knowledge about the medicinal uses of the rosy periwinkle were obtained. In South Africa's case, the hoodia plant has for several generations been used by the San people of the Kalahari Desert as an edible herb to suppress appetite. This was done when going on long hunting trips which are often times quite trying. Upon further research after the ingenuity employed by the San people came to light, the South African Council for Scientific and Industrial Research (SACSIR) applied for a patent of the hoodia for use of its active components linked with suppressing appetite. SACSIR further went on to sign an exclusive licensing agreement with a company from the UK called Phytopharm. This company later transferred the marketing and developing rights associated with the hoodia plant in aiding with slimming and obesity. As a result of this exchange, Phytopharm earned $32 million in royalty and milestone payments. When the details of these transactions were eventually revealed, the companies involved in patenting and commercialization of the hoodia came under huge fire from the public and non-governmental organizations. The resulting backlash was because these companies conducted themselves in an extremely unethical way by a clear disregard to seek the prior informed consent of the San people and also their failure to establish benefit sharing schemes. Faced with impending lawsuits by the San people for biological piracy, SACSIR proceeded to take another course by signing a memorandum of understanding in recognizing the San as the custodians of the traditional knowledge associated with the Hoodia plant. In order to remedy the injustice caused, SACSIR additionally set up the "San Hoodia Benefit Sharing Trust" which enabled for the San to receive milestone payments and royalties from the commercialization of hoodia. The 2 examples given in this research sadly aren't the only cases of bio-piracy. In 2006, the Edmonds Institute worked jointly with the African Centre for Biosafety on a report presented to the Conference of Parties under the CBD. The data compiled in the report showed that there were around 36 similar instances where the development of cosmetic products, medicines and even agricultural products sourced from biological resources in several African countries lacked prior informed consent or benefit sharing arrangements. Furthermore, in the majority of these cases, patents were obtained by the perpetrators to act as a shield against the legitimate rights of traditional knowledge holders.

Recommended Mechanisms for the Protection of Traditional Knowledge

Contrary to most misconceptions, IPRs are not in nature made solely for the protection of ideas. They are in fact designed to protect the specific, non-obvious and useful disclosure of an expressed idea from any unauthorized commercial exploitation. Therein, can one rely on the protection of IP laws, not the idea itself. Furthermore, it should be noted that WIPO does not feature the term "idea" in its legal definitions. IP laws offer a variety of legal instruments for the protection of creations of the mind which can either be discoveries or inventions. These are copyrights and related rights, trademarks, geographical indications, industrial designs, patents, layout designs of integrated circuits, trade secrets, protection of plant varieties, and petty patents/utility models. Still, the implementation of these categories of IPRs in developing countries is very much so shadowed by the treaties of international organizations responsible for administering the IPR regimes. As such, over the last few years developing countries have taken a new approach to intellectual property which may have positive implications for the area of traditional medicine and genetic resources. Therefore, a suitable way to show recognition of Indigenous people's customary laws and rights would be essentially through a Sui generis system specific to the needs of indigenous/traditional knowledge holders. A Sui generis mechanism if formulated to encompass the full characteristics of TK can most definitely assist in preventing bio-piracy and exploitation of such knowledge. For example, an analytical look into Zambia shows how domestic law makers took cognizance of international movements generated to safe guard genetic resources, traditional knowledge and folklore by introducing into domestic legislation the Protection of Traditional Knowledge, Genetic Resources and Expressions of Folklore Act 2016. This law contains provisions for matters such as procedures in acquiring an exploration permit, which involves getting a signed agreement issued from the community custodians (traditional leaders) for any resources sought. This law also includes provisions for reaching mutually agreed terms and the types of ways benefits may be allotted to traditional communities following the usage of genetic resources or TK. These provisions seek to align with the ideas expressed by WIPO as far as the substantive concerns about TK are involved.

Another tool that can be used to protect traditional knowledge would be introducing a mandatory disclosure clause in Patent laws. The driving force for disclosure of origins is the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization (Bonn Guidelines). Enforcing the mandatory disclosure of products that used traditional knowledge or genetic resources at any stage during its development can aid in holding responsible any parties that choose to apply traditional knowledge in patent applications and therefore prevent appropriation. Given that traditional medicine immensely relies on genetic resources, the nexus between it and the patent system is sealed. Further reasons for the use of the disclosure of origins is in identifying and rectifying situations in which IPRs have been indecorously granted for access to genetic resources and associated traditional knowledge without prior informed consent and equitable benefit sharing. For the disclosure of origins to be effective, they need to be enforced by a treaty that obligates its parties to acknowledge the decisions and administrative authority of other member states in protecting genetic

resources and traditional knowledge within their own corresponding jurisdictions. For instance, decisions such as i) Either rejecting to give patents for inventions that have not disclosed any related genetic resources and traditional knowledge, or imposing penalty fines for such omission of vital information. ii) Nullifying the patents of applicants that gave inaccurate information of related genetic resources and traditional knowledge. iii) Granting compensation to local communities who are affected by the unlawful and inapt usage of their genetic resources and traditional knowledge. As such, the TRIPS Agreement would for several reasons be the most suitable of all other treaty regimes for establishing the requirements of a mandatory disclosure of origins system [12]. Mainly because it has a thorough approach to the IP system and proficiency in handling IP issues. Additionally, other reasons for its eligibility are that among other things the WTO has a vast membership and a duty to upholding the relationship of the TRIPS Agreement to the CBD in conformity with paragraph 19 of the Doha Declaration. Furthermore, the mandatory disclosure of origins as a prerequisite for countries ahead of being given a patent will further aid in consolidating efforts made by international organizations and individual countries for the facilitation of equitable benefit sharing resulting from utilization of genetic resources or traditional knowledge.

Conclusions

Despite gestures of goodwill by many bureaucrats and some member states, international processes have proved to be unaccommodating to minority voices. Even with the creation of several forums and panels meant to ensure participation of indigenous communities, the hands that have in the past and still to this day continually strive to confine the agendas of developing countries by virtue of formal processes which maintain Western cultural privilege and dominance still exist, having their fingerprints largely visible. Intellectual property laws and other antiquated mainstream forms of protection have for a large part served mainly to enable for the transfer of genetic resources and traditional knowledge from developing countries to Western countries, while no form of recognition or monetary benefits are accorded to the countries or communities from were these are sourced. Even though several influential conventions such as TRIPs have no specific provisions for matters related to traditional knowledge and genetic resources, policy makers remain resolute in finding a more suited common ground for all parties by means of either adapting or creating new guidelines to fix the flaws in IP laws.

Additionally, attempts to utilize WIPO and IP laws as a regime and system for protection of traditional knowledge internationally is still problematic mainly because WIPO is concerned with soft norms, jam packed with language games associated with the production of treaty texts or similar talks that surround and inform them. As such, it does not accomplish what some participants and commentators seem to believe. International laws should not be seen as some sort of an alternative to domestic legal systems when it comes to protection of TK. Rather, international laws must work hand in hand with domestic regulations pertaining to TK, by complimenting them, not replacing or undermining the jurisdictions of sovereign states. For example, in the case of Zambia which enacted the Protection of Traditional Knowledge, Genetic Resources and Expressions of Folklore Act 2016. One can see the influence of WIPO's IGC on such legal developments locally. Although one should not attribute such initiatives to solely have occurred because of the IGC or as a direct consequence of any of the instruments. Yet however, by unceasingly keeping alive discussions about the injustices of non-recognition of the sovereignty of Third world countries and highlighting the need for international forums to legally recognize local communities as legitimate managers of local habitats creates an opening towards equitable benefits for everyone. Protection of traditional knowledge will aid in current international efforts aiming at conservation and sustainable use of biological resources, which will simultaneously combat problems associated with misrepresentation or appropriation of products and practices belonging to indigenous people. This protection will furthermore help in abating cultural degradation, unauthorized public disclosure and use of esoteric knowledge, images and other sensitive information pertaining to indigenous communities.

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