



Biopiracy and Protection of Traditional Knowledge

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I. INTRODUCTION

Nowadays, biodiversity has become a strategic, exploitable source of wealth whose strategic value is determined by the control that can be established over it. This is due to the fact that "polluting" capital and biotechnological capital are competing to control this new, unique source of wealth and thereby maintain their hegemony in the world economy. In other words, they are scrambling for the monopoly of as much germ plasm diversity as possible and therefore engaged in a frantic search to collect, purchase and steal the planet's biological diversity and its related knowledge.

Traditional knowledge encompasses indigenous and local community knowledge, innovations, and practices from around the world.¹ It includes a wide array of information passed from one generation to the next within indigenous communities. Traditional indigenous knowledge (TIK)² is the information that people in a given community (who identify themselves as indigenous to a place, based on a combination of cultural distinctiveness and prior territorial occupancy relative to a more recently arrived population, with its own distinct and subsequent dominant culture), based on experience and adaptation to a local culture and environment, have developed over time, and continue to develop. This knowledge is used to sustain the community and its culture and to maintain the genetic resources necessary for the continued survival of the community. TIK includes mental inventories of local biological resources, animal breeds, and local plant, crop, and tree species. It may include such information as trees and plants that grow well together, and indicator plants, such plants that show soil salinity or that are known to flower at the beginnings of the rains. It includes practices and technologies, such as seed treatment, storage methods, and tools used for planting and harvesting. TIK also encompasses belief systems that play a fundamental role in a people's livelihood, maintaining their health, and protecting and replenishing the environment. TIK is thus the totality of all knowledge and practices, whether explicit or implicit, used in the management of socio-economic, spiritual and ecological facets of life. The term 'traditional' used in describing this knowledge does not imply that this knowledge is old or un-technical in nature, but tradition based. It is traditional because it is created in a manner that reflects the traditions of the communities, therefore not relating to the nature of the knowledge itself, but to the way in which that knowledge is created, preserved, and disseminated.³ A growing number of scientists and policy makers are aware of the contribution that TIK can make to more sustainable development, protection of biodiversity, and as a starting point in the construction of a truly alternative agriculture.

TIK is being lauded as alternative wisdom relevant to society which is increasingly confronting the limits of its science. Thus the need is felt to access this knowledge so that the world at large can benefit from this knowledge and resources. This initiated the intensified search for commercially profitable substances and resources among the ecosystems of the indigenous peoples compelled by the limits of Western modern sciences.

II. EMERGENCE OF BIOTECHNOLOGICAL PATENTS

Among the obvious reasons for the emergence of intellectual property rights and indigenous knowledge and resources was the increasing interest on part of pharmaceutical companies in the collection and use of biological resources during the late 1980s and 1990s. What began with the pharmaceutical companies prospecting the rain forest resources and traditional knowledge bases for new therapeutic solutions now extends to exploring the local plant genetic resources, traditional /local agriculture knowledge about crops, medicinal herbs, climatic requirements, ecology management, and so on. Recent advances in biotechnology have increased the ability of the scientists to investigate organisms at the molecular and genetic levels and to find ways to commercialize products developed from these investigations. Prospecting for biological materials like plants with medicinal or other economically valuable properties like fiber or oil is becoming a dynamic and profitable enterprise. The wisdom and resources held by the traditional people of the developing countries forms the basis of a large part of the growing biotechnological boom.

¹Bryan Bachner, Facing the Music: Traditional Knowledge and Copyright, Hum. Rts. Brief, Spring 2005, at 9, 9.

² See, Mahia Maurial, 1999, 'Indigenous Knowledge and schooling: a Continuum Between Conflict and Dialogue', in What is Indigenous Knowledge? Voices from the Academy, Ladislaus M Semali and Joe L. Kincheloe (eds), New York and London: Falmer Press, p. 63

³ Elements Of A Sui Generis Systems For The Protection Of Traditional Knowledge. WIPO, Intergovernmental Committee on IP and Genetic Resources, Traditional Knowledge and Folklore, 3rd Sess., 2002. WIPO/GRTKF/IC/3/8.



The structuring of capital incentives within biotechnology began with case of *Diamond v Chakrabarty*⁴ in 1980 wherein the US Supreme Court broadened the scope of what is human made thus reordering what fell within the legal categories of nature and culture. In that case human made strain of micro-organism, genetically engineered to improve its ability to degrade crude oil was given patent. Simultaneously, patent applications for products using genetic material rose by almost 200 per cent in the year 1981 following the SC judgement, and the cumulative equity invested in all types in all types of biotechnology companies rose from 50 million dollars to over 800 million between years of 1978 and 19815. Thus expansion of intellectual property in the US to include microbiological material can thus be seen as an important for global extension of intellectual property in biological/ natural realm.

Second is the series of technological advances in the pharmaceutical industry which helped to sustain support for natural product development, generated interest in the intellectual property rights and indigenous people. Two technological developments helped promote biotech industry funding operations: High throughput Screening (HTS) tools and the development of combine chemistry and combinational biology. The advent of HTS made possible the analysis of tens of thousands of plant samples per week. The development of combinatorial chemistry and combinational biology generated thousands of molecular weights compounds for screening thus creating perfect match for HTS. Together these developments were responsible for development of biotech industry.

The Convention on Biological Diversity (CBD) which was agreed on at the Earth Summit (Rio de Janeiro) in 1992 and went into effect in December 1993 is the also a reason for the rise of the capitalistic misappropriation of TK by corporate giants. It establishes that "States have sovereign rights over their own biological resources" and that those resources are no longer freely available to others.

The final defining legal event to be considered is TRIPS agreement which created international standards for intellectual property law and obligated member states to omit to these standards. A significant contributing factor is the high profitability of the biotech ventures which became the basis for patented innovations and which then ensured greater profits at monopolistic levels. The TRIPS framework became the driving force behind the spurt in the industrial growth in this sector.

This materializes as an international legal system of patents which, in its most refined form and in the case of biotechnology, makes it possible for capital to recover or rather steal the age-old knowledge preserved in agricultural and indigenous communities.

III. BIOPROSPECTING TO BIOPIRACY

The heads of major multinational corporations (MNCs) and Central Nation States (CNSs) representatives of capitalist logic have devised two extremely complex lines of action. On the one hand, they have setup a World Bio-prospection System while on the other they need to develop a World Intellectual Property System that will bypass national patenting offices and enable them to establish the validity of private property worldwide in a single transaction. This has redefined the world's system of Public International Law and created a new specialty known as Gene Law that refers precisely to the legal guidelines for establishing a (private) right over life.

Bio-prospecting projects, which make it possible to selectively explore and investigate biodiversity for the purpose of finding commercially valuable genetic and biochemical resources and subsequently patenting them, depend on the knowledge of rural and indigenous communities that have established an intimate relationship with nature since precapitalist times. This process of appropriating biodiversity and the knowledge of the latter is known as "biopiracy."

The term "biopiracy" was coined in 1993 by Pat Mooney, president of the Rural Advancement Foundation International (RAFI, now the ETC Group), and refers specifically to:

"... the use of intellectual property systems to legitimize the exclusive ownership and control of biological resources and knowledge, without recognition, compensation or protection for contributions from indigenous and rural communities... thus bio-prospecting cannot be considered anything but biopiracy."

Biopiracy occurs when genetic resources and traditional knowledge is taken from biodiverse developing countries without permission. This knowledge is then used to patent related inventions without sharing the resulting commercial profits⁶. The original holder of the knowledge receives no gains from the use and is likely barred from obtaining a patent.

In India, around 70 % of the population directly depends on land-based occupations, forests, wetlands and marine habitats for ecological livelihoods and cultural sustenance⁷. Over 7500 species of plants and several hundred animal species and also metals and minerals are utilized by the folk tradition in India. The custodians and carriers of these traditions are tribal as well as non-

⁴ 16 June 1980 447 US 303, 206 USPQ 193.

⁵ Paul Rainbow, 1996, Making PCR: A story of Biotchnology, *Diamond v Chakrabarty*, 447 US 303, 206 USPQ 193. June, 1980, Chicago: University of Chicago Press, p.27.

⁶ Cynthia M. Ho, *Biopiracy and Beyond: A Consideration of Socio-Cultural Conflicts with Global Patent Policies*, 39 u. mich.j.l. reform 433, 436 (2006).

⁷ Kothari A., Patel A. 2006. *Environment and Human Rights*. National Human Rights Commission, New Delhi.



tribal, including house wives and welders, thousands of herbal healers, bone setter, vishvaidyas, birth attendants, potters, goldsmiths, black smiths, barbers and even wandering monks. 8

According to ASI, there are 4635 ethnic communities in India. In principle each of these communities could be having their own oral medical traditions that have been evolving across time and space. In India there have been a lot of cases where the indigenous knowledge has been tried to be taken away. Due to its easy access, it has been prone to piracy.

According to UNDP Human Development Report 1999: “The South is the source of 90 per cent of the world’s biological wealth – India, for example, has 81,000 species of fauna and 47,000 of flora, including 15,000 plant varieties unique to the country – and yet industrial countries hold 97 per cent of all patents worldwide and are driving the rush to patent plant genetic resources⁹.”

IV. BIOPIRACY CASES

In the recent past, there have been several cases of biopiracy of traditional knowledge from India.

HALDI (turmeric)

First it was the patent on wound healing properties of *haldi*(turmeric).¹⁰ *Curcuma longa*, a type of turmeric, is an Indian herb that has been used as treatment for sprains, inflammatory conditions and wounds. The orange coloured root is native to the subcontinent and South East Asia, and for thousands of years has been a one of the major components of Ayurvedic medicine. In 1995, two US scientists from the University of Mississippi were granted US patent 5,401,504 on the use of turmeric. The scientists claimed that turmeric could heal wounds and claiming this to be novel. They have mentioned in their patent application that turmeric has long been used in India as a traditional medicine for treatment of various sprains and inflammatory conditions. But they claimed that there was no research on the use of turmeric as a healing agent for external wounds. The Indian government vigorously challenged the patent and provided numerous research papers predating the patent, proving that turmeric has long been used in India to heal wounds. As a result, the US Patent and Trademark office rejected all patent claims related to turmeric.¹¹

NEEM

The Neem tree case is another significant example of biopiracy of Indian medicinal plant. Azadirachtin is one of many active compounds present in bark, leaves, flowers and seeds of the Neem tree or *Azadirachta indica*. The remarkable properties of this compound have been utilized in India from ancient times in the form of extracts of various kinds produced by Indian farmers and small industrial firms in medicine and agriculture. Use of neem had been described in ancient Indian texts written over 2,000 years ago as an air purifier and effective medicine for almost all types of human and animal diseases because of its insect and pest repellent properties.¹² A US timber importer studied the curing properties of neem and began importing neem seed to his company headquarter in Wisconsin since 1971. He successfully extracted a pesticidal agent from neem extract called Margosan-O. In 1985, the bio-pesticide derived from neem tree received clearance for the product from the US Environmental Protection Agency (EPA). The patent for the product was sold to the multinational chemical corporation, W.R. Grace after 3 years. Since then, many US and Japanese firms gained patents on formulae for stable neem-based solutions and emulsions and other products. The W.R.Grace approached several Indian manufacturers and industries to purchase their technology. The company ultimately managed to start a joint venture with a firm called P.J. Margo Pvt. Ltd to set up a plant in India. The plant processes up to 20 tonnes of seed a day and also established a network of neem seed suppliers in order to guarantee a constant supply of the seeds at a cheap price. In May 2000, a coalition of groups successfully overturned the patent held by the US company, WR Grace and the US Department of Agriculture over the Indian neem tree.

BASMATI

Basmati is produced largely in Punjab, Western India and in Pakistan. Basmati rice has been one of the fastest growing export items from India in recent times. It is evident that Basmati has been grown for centuries in the subcontinent. After centuries of observation, experimentation and selection, the Indian farmers have developed numerous varieties of the rice to meet various ecological conditions, cooking needs and taste. On 2 September 1997, Texasbased RiceTec Inc. was granted patent number 5663484 for a new plant variety that is a cross between American long-grain rice and Basmati rice. RiceTec claimed that the new varieties have the same or better characteristics as the original Basmati rice and can be successfully grown in specified geographical areas in North America. The patent covers the genetic lines of the basmati and includes genes from the varieties developed by farmers. RiceTec has already been trading rice under brand names such as Kasmati, Texmati and Jasmati. RiceTec’s strain possesses the same qualities and characteristics of the Indian traditional varieties of Basmati. ‘

On the question of consumer deception, RiceTec clearly labels its product as American type Basmati rice. No case has been filed in the US so far by any interested party from the Indian subcontinent regarding this serious issue. By mid-2000, however, the Indian government decided to challenge some of the claims of the RiceTec patent. World’s largest importer of Basmati rice, Saudi

⁸ Ibid

⁹United Nations Development Programme. 1999. Biopiracy and the patenting of staple food crops. Human Development Report, 1999

¹⁰Shiva, V. 1999. Biopiracy: The Plunder of Nature and Knowledge. South end press. India.

¹¹Rungtaphan, T. 2004. Biopiracy in Asia: a case study of India and Thailand. University of Hong Kong, China

¹² Ibid



Arabia and the UK, recognized that Basmati rice is unique to Northern India and Pakistan. Furthermore, the Agricultural and Processed Food Export Development Authority and Trade Mark Watch Agency of India have managed to win the Basmati patent case in at least 15 countries (including UK, Australia, France, Spain, Chile and the UAE). In the Basmati case, RiceTec's action would really become a threat to the sales of Basmati rice from India, and could affect the economic conditions of the rice farmers in India.

Karela (bitter gourd), *Jamun* (blackberry), *Gumrand Brinjal*, for instance, are commonly known in India for their anti-diabetic characteristics. Their uses are so common in India that there is no novelty involved while using them for curbing diabetes. A patent was, however, obtained in the U.S. by three NRIs for their utilization as a cure for diabetes¹³. North East India is very rich in flora especially in cultivation of medicinal plants by the tribes. Resource-rich Nagaland is plagued by bio-piracy with rare medicinal herbs, orchids and other endangered species being smuggled out of the state. These plants are being borne off by pharmaceutical companies for commercial benefits. *Ginseng*, *taxusbaccata* and *cephallutaxus* and *pariscordifolia* have medicinal properties and are often smuggled to Thailand¹⁴.

V. PROTECTION OF TRADITIONAL KNOWLEDGE

In politics, biopiracy has triggered the problem of the intrusion of national sovereignty when a corporation or a government from other countries utilizes and benefits from the patent varieties of genetic resources which derived from genetic resources or traditional knowledge from another sovereign state. This can violate the international merit of a state's sovereign rights on its own resource.

A study prepared for the UNDP discussed potential strategies to assist indigenous peoples in claiming biodiversity as their own property and to claim financial royalties owed to them by industry¹⁵. Some of the proposed steps in this new "intellectual integrity framework" are:

1. Discussion with indigenous communities to learn what steps they wish to take to preserve biodiversity and to properly acknowledge their contributions.
2. New deposit rules should be implemented that would identify biological inventions as to their origin, mentioning the names of individuals or communities concerned, when they are deposited in gene banks or when patent application is made. Failure to provide such passport data could nullify a patent.
3. Tribunals that could resolve disputes between indigenous communities and patent claimants.
4. The creation of a fee structure in each patent jurisdiction that would pay for expenses incurred by indigenous communities for deposits, tribunals and legal representation.

The concept of Biopiracy is intimately linked to the concept of intellectual property rights on biological inventions, which is, by itself highly controversial. It is further confusing when the patenting of biotechnology inventions involves a lot of international agreements. There are several concepts that are concerned with biopiracy, including the principle of proprietary intellectual property rights, community rights, national sovereignty, and the common heritage of mankind; all of them jointly have increased the complexity of the concept. There has not been any law punishing biopiracy because biopiracy is a new kind of crime that specifically emerged only two decades ago. And another reason is that industrialized countries have dominated main international conventions and make the rules accordingly.

Patent law in India needs a wider perspective in order to be protected from being plagiarized by such global giants who are stealing the age-old Indian traditional knowledge. To prevent the hijacking of distinctiveness of our cultural bio-diversity, construction of **Traditional Knowledge Digital Library** can be an effective way for combating the problem.

However, in the past few years, developing countries have become more vocal in the international arena. They have begun to work cooperatively with each other and form stumbling blocks to industrialized countries. This would help developing countries in the political bargaining with developed countries and can help to solve the problem of biopiracy.

VI. CONCLUSION

As technology advances, natural resources will become more valuable. Much of the untapped diversity lies within the control of indigenous groups. It is incredibly costly to sift through the massive amounts of resources to find a benefit. Traditional knowledge greatly reduces this effort. One pharmaceutical company claims that with traditional knowledge, the search can be reduced from one benefit in ten thousand samples to one in every two samples¹⁶. This knowledge can be of great value. Unfortunately, the people who could use the benefits the most are the ones who are least protected.

¹³ Ibid

¹⁴ Hindustan Times. May 2, 2008. Biopiracy rampant in Nagaland. Accessed from: <http://www.hindustantimes.com/india-news/biopiracy-rampant-in-nagaland/article1-308353.aspx>, Accessed on April 5 2015.

¹⁵ TWM. Bio-Piracy Cheats Developing Countries and their Indigenous Peoples of \$5.4 Billion a Year in Plant and Knowledge Royalties, Says Study Conducted for UNDP. Accessed from: <http://twm.co.nz/Biopiracy.html>,

¹⁶ Murray Lee Eiland, Patenting Traditional Medicine, 89 J. Pat. & Trademark Off. soc'y 45, 55-56 (2007).



In a world where profit and greed have become the new economic mantra, private companies will go to any extent to manipulate what is already known to project it as an invention or novelty. Any tinkering of the original medicinal remedy with a little cosmetic covering can be easily presented as a novel product that was not previously known. It has happened in the past. For every successful revocation of a patent, whether it is neem, turmeric or ayahuasca, there are at least a thousand others that simply go unnoticed.

India's effort of creating TKDL that is the database of the indigenous people knowledge is not spared by the critics and rightly so. First, any database will likely be difficult to search. Terms used by indigenous peoples are likely to be different than terms used by scientists. Term searches have the potential to be difficult given the possibility of a large number of possible phrases. Second, the complexity of the application not only makes searching for a potential database more difficult, but also makes it easier for an inventor to take traditional knowledge and change it enough to pass the novelty test. Third, construction of these databases is difficult and expensive. India's attempt is budgeted for \$2 million¹⁷. Even at this cost, it is unlikely that all traditional knowledge will be included. Tracking down centuries of knowledge is practically impossible, and many groups are reluctant to share their traditions, especially if they receive no benefit. Furthermore, it is difficult to take oral traditions and put them in writing. All traditional knowledge needs to be recorded in order fully to prevent biopiracy. A partial database will be of limited use and may also pose additional problems.

Alternative to creating a database are the bio-prospecting agreements and contracts which again are exploited by the developed countries. Thus a balance it to be found between the suggested and existing provisions for the protection of indigenous knowledge since only one method is not effective to protect the same. India a country which is very rich in biodiversity and indigenous knowledge, need to enact law which encompasses all the facets of the protection under various methods for the protection of traditional knowledge of indigenous people also which is compatible with its international obligations under various international treaties.

¹⁷Soutik Biswas, India Hits Back in 'Bio-Piracy' Battle, BBC news, Dec. 7, 2005, http://news.bbc.co.uk/2/hi/south_asia/4506382.stm.