4.1. Introduction

With growing interest in medicinal plants, the need of the hour is a long term strategy to conserve and sustainably harvest these plant products. The use of medicinal plants in India and many other developing countries can be considered a living tradition. The World Health Organisation (WHO) estimates that the primary health care needs of approximately 80 per cent of the developing world’s population are met by traditional medicine. Traditional Knowledge, *per se*, does not fall under any particular category but it ranges from the Ayurvedic, Unani, Siddha and Tibetan in India, the Kampo in Japan, the Jamu in Indonesia, and many more. The traditional systems of medicine largely depend on natural resources for their medicines, out of which plants form the bulk of the medicine. India, somehow, seems to be stranded between the international conventions and her nation’s need. A major concern for developing countries is the TRIPS Agreement which obligates all members to provide patent in all the field of technology and also provide IPRs (either by patents or a *sui generis* system) for plant varieties. In this chapter the more emphasis has been given on the protection of medicinal plants in India, under the Geographical Indications Act.

The All India ethnobiology Survey carried out by the Ministry of Environment and Forests estimates that over 7,500 species of plants are estimated to be used by 4,635 ethnic communities for human and veterinary health care across the country. These plants however face threat of habitat destruction. Under the Forest (Conservation) Act, 1980 and the Wildlife (Protection) Act, 1972, medicinal plants do get some amount of protection. But a lot of medicinal plants grow away from the protected areas domain and since there is no consolidated strategy for medicinal plants, a lot of them just disappear without any of its knowledge. Within protected areas also, the lack of a focused conservation strategy could cause a depletion of this valuable resource. Along with this, is an increased threat to the availability of medical plants. Over 95 per cent of the medicinal plants used by the Indian pharmaceutical industry are today collected from the wild. Over 70 per cent of the plant collections involve the
use of roots, bark, wood, stem and in some areas the whole plant, leading to destructive harvesting. If not carefully monitored, this practice could lead to the depletion of genetic stocks and ultimately to the diversity of medicinal plants. It will also lead to the loss of biodiversity, deprivation of traditional knowledge and threatening the survival of local communities.

4.2. Protection of Traditional Knowledge in the Present IPR Regime

The Linkage between IPRs, biodiversity and traditional knowledge (TK) is of recent origin. Biodiversity refers to “the variability among living organisms from all sources and the ecological complexes of which they are part and includes diversity within species or between species and of eco-systems.”

It protects ecosystem resilience and covers the entire life system that exists in a natural setting. In fact, ecological and genetic multiplicity together makes the very foundation of existence. Traditional Knowledge on the other hand is the result of intellectual activity in a traditional context. It is intricately woven into the living styles and practices of communities. This knowledge is transmitted through songs, stories, rituals and legends.

Intellectual Property Right offers two forms of protection to TK: (i) A positive protection by granting exclusive rights over use to the member of the local community, and (ii) a negative protection by excluding others from the use of TK held by a particular community.

Despite the tall claims, the sad reality is that traditional knowledge is threatened by unauthorised use. IPR regimes have miles to go before they can claim to be saviours of TK systems. An oft quoted case study is that of Cupuacu – a tree belonging to the cocoa family that has been cultivated along the Amazon since time immemorial. Today Brazil has been reduced to the insignificant role of a supplier of raw material. It is Japan that holds the IPRs—whether it is patents or trademarks. The billion dollar question is whether the natural habitat of the poor is again and again targeted by the international resource economy – this time in the name of IPR. With most of the original genetic materials located in the biodiversity hot spots of developing countries, the natural question that crops up is – “Is the destructive face of colonialism showing
up again? Is it a continuation of “the extirpation, enslavement and entombment in mines of the aboriginal population, the looting of the East Indies and the turning of Africa into a warren for the hunting of black skins that was once supposed to signalize the rosy dawn of the era of capitalists production?

India too had its share of bitter experiences vis-a-vis its sovereign rights over the resources available in nature. Turmeric, basmati and neem are the classic cases where the country had to fight tooth and nail. These cases, no doubt, provided the driving force for the enactment of the Geographical Indications (Registration and Protection) Act, 1999, the Plant Varieties and Farmers Rights Act, 2001 and the Biodiversity Act, 2002. At the same time we learned that our age old traditional philosophy beliefs that bio resources belong to common heritage of mankind are no longer safe because of threats from the developed world.

The seeds of such an Access and Benefit Sharing mechanism can be seen in the Convention on Biological Diversity (CBD) and the Bonn Guidelines at the international level and in the Indian National Biodiversity Policy and Macro level Action Strategy at the national level. The Jeevani (Aarogyapachha) case can be a leading light as regards benefit sharing. If there is political will to plan and administrative competence to execute, this can herald an era of unprecedented collaborations between the technosavvy developed nations and the knowledge-rich tribes.

The objectives of the present chapter is to codify the major case studies and international initiatives in the realm of IPR vis-à-vis biodiversity and TK (a) To assess the stumbling blocks (if any) in the present IPR regime as regards preservation of biodiversity and TK; (b) To enumerate success stories and to identify the factors that have paved the way for such viable models; (c) To devise a road map for an effective collaborative IPR regime

4.3. Biodiversity

The term biodiversity is a broad concept. It is the totality of genes, species and ecosystems of a region and encompasses the entire life system that exists in a natural setting. Article 2 of CBD stipulates that “biological diversity” means the variability
among living organisms from all sources including inter alia terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Section 2(b) of the Indian Biological Diversity Act 2002 seeks to broaden the scope of the term by using the phrase ‘all sources’.

There are various types of biodiversity—genetic diversity, species diversity and ecosystem diversity. Biodiversity performs a number of important functions. To cite a few:

(i) It maintains soil fertility, air quality, climate stability and the overall regime of life supporting systems on the planet. It sustains the nature’s basket of goods and services which according to the CBD secretariat include, “Provision of food, fuel and fibber, provision of shelter and building materials, purification of air and water, detoxification and decomposition of wastes, stabilisation and moderation of the earth’s climate, moderation of floods, droughts, temperature extremes and the forces of wind, generation and renewal of soil fertility including nutrient cycling, pollination of plants including many crops, control of pests and diseases, maintenance of genetic resources as key inputs to crop varieties and livestock breeds etc”

(ii) It has a key role in medication. According to the National Cancer Institute, more than 70 per cent of promising anti-cancer drugs originate from flora in tropical rainforests. The drug to treat malaria (quinine) is derived from the cinchona tree whereas the medicine for chronic heart trouble (digitalis) originates itself from the foxglove plant. Another oft quoted example is morphine from poppy.

(iii) It is fast emerging as a major source of wealth for many areas particularly through ecotourism – the mode of tourism that entails “environmentally responsible travel and visitation to relatively undisturbed natural areas in order to enjoy, study and appreciate nature, that promotes conservation, has low visitor impact and provides for beneficially active socioeconomic involvement of local populations”.
(iv) It is the source from which mankind derives food, fuel and fodder. Fibers for clothing, wood for shelter and biomass for energy are only some among the economically important commodities made available to the human race by the grace of biodiversity.

The concept of mega diversity countries was developed in 1988 by Dr. Russell Mittermeir. It has its origin in the ground reality that only a handful of countries account for a major portion of life on the planet. In fact, an overwhelming majority of plant genetic resources are found in the forests of the Third World—Africa, Madagascar, South America and tropical Australia. India is one of the top 12 mega diversity countries. With only 2.4 per cent of the land area, India accounts for seven-eight per cent of the recorded species in the world.

The National Bureau of Soil Survey and Land Use Planning have identified 20 broad agro ecological zones in the country. At least 166 food/crop species have originated in India. The genetic diversity within each of these species is unparalleled. A classic example is mangifera indica (a species of mango) which has yielded more than a thousand varieties. India also has two of the 18 biodiversity hotspots—the areas that have the most endemic species and are most endangered by habitat loss. The evil quartet of habitat destruction, overkill, introduced species and secondary extensions described by Jared Diamond are looming large over the horizons of these areas.

This threat to habitat dates back to the colonial period which was marked by the European settlers ‘incarceration of the savages’ and the appropriation of their ‘wild lands’ under the guise of converting ‘the haunt of wolves, bears and more savage men’ into ‘habitations of rational and civilised people’. In reality, it was an era of appropriating the resources of the earth, breaching the original unity of man and nature and transforming the planet into an “object of huckstering”. This greedy policy—ruinous to man and nature—unfortunately continues in the post-colonial era too. From tea and sugarcane through cotton and eucalyptus trees to kiwi fruits and king prawns, farming systems are put in place to cover the tables of distant consumers. Conversion of nature for plantations, aquaculture and water reservoirs is continuing unabated. Biodiversity is becoming the casualty of unsustainable policies. They are leaving behind a trail of clear – felled forests, poisoned soils, eroded landscapes and
over fished waters and are ultimately exacerbating poverty. The net result of all there is aptly summed up in the famous words of Wangari Maathai (Nobel Lecture: 10th December 2004):

I reflect on my childhood experience when I would visit a stream next to our home to fetch water for my mother. I would drink water straight from the stream. Playing among the arrowroot leaves, I tried in vain to pick up the strands of frog’s eggs believing they were beads. But every time I put my little fingers under them, they would break, later I saw thousands of tadpoles: black, energetic and wriggling through the clear water against the background of the brown earth. This is the world I inherited from my parents.

Today, over 50 years later, the stream has dried up, women walk long distances for water, which is not always clean and children will never know what they have lost. The challenge is to restore the home of the tadpoles and give back to our children a world of beauty and wonder.

4.3.1 A Bird’s Eye View of International Efforts to Conserve Biodiversity

Different views and disciplines focus on different descriptions of biodiversity. They prefer specific attributes and methods. From a natural science point of view mostly animals or plants are investigated in biodiversity studies. Sometimes values affect the selection of biodiversity attributes. Sometimes highly valued organisms/plants are more likely to be selected for biodiversity monitoring programmes. From the very definitions of biodiversity we understand that people’s/organisations attitudes affect their perceptions of biodiversity. These conceptions of biodiversity hence are shaped by people/organisations’ principles, biases and interests.
The international community had to wait till 1992 for these ideas to concretise in the form of the CBD at the Earth Summit in Rio de Janeiro. The CBD identifies the sovereignty of domestic countries and their traditional communities over natural biological resources in their regime and has three main goals:

(i) The conservation of biodiversity
(ii) Sustainable use of the components of biodiversity

(iii) Sharing the benefits arising from the commercial and other utilisation of genetic resources in a fair and equitable way

The Conference of parties to the CBD adopted the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising out of their Utilisation in 2002 with the following objectives:

(i) To promote awareness about the implementation of the CBD.

(ii) To provide transparent framework for access and fair and equitable benefit sharing.

(iii) To provide the practices and approaches viable in technology transfer between traditional communities and scientific communities.

In fact, the Bonn Guidelines set out the important parameters that need to be included in the terms and conditions of a benefit sharing agreement. The provisions under Article 8(j), 10(c), 15, 16 and 19 of CBD can serve as road maps for drafting legislations within the overall framework of Bonn Guidelines.

India signed the CBD in 1992 and ratified and brought it into force in 1994. The country’s Biological Diversity Act 2002 echoes the same objectives as that of the CBD. It regulates access to biological resources to persons in terms of use, the categorisation being made as for research, commercial utilisation and bio survey and bio utilisation. Persons have been differentiated—resident Indians and others.

India has taken a number of strategies towards protection of nature, natural resources and biodiversity at international, national and regional levels. Some of the initiatives comprise the World Heritage Convention (1972), Convention on International Trade of Endangered Species of Flora and Fauna (CITES) 1975, Ramsar Convention on Wetlands (1975)[ India has been a contracted party to the Ramsar Convention since 1st February 1982. India has now six sites covering some 192,973 hectares of important wetlands. These sites are Chilka Lake, Keoladeo National Park, Wular Lake, Harike Lake, Loktak Lake and Sambhar Lake], FAO’s International Undertaking on Plant Genetic Resources (1983), United Nations Convention to

**Table 4.1- Legislations Relevant To Biodiversity Conservation**

<table>
<thead>
<tr>
<th>Key legislation</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Forest Act, 1927</td>
<td>Designed for forest management and protection, the transit of forest and the duty leviable on timber and other forest produce</td>
</tr>
<tr>
<td>Wildlife (Protection) Act, 1972</td>
<td>Deals with protection of wildlife and habitats and provides for the protection of wild animals, birds and plants and related matters, with a view to ensure the ecological and environmental security of the country.</td>
</tr>
<tr>
<td>Forest (Conservation) Act, 1980</td>
<td>Designed for the conservation of forests and related matters</td>
</tr>
<tr>
<td>Biological Diversity Act, 2002</td>
<td>Provides for conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and related matters.</td>
</tr>
<tr>
<td>Biological Diversity Rules, 2004</td>
<td>Deals with executing the Biological Diversity Act.</td>
</tr>
<tr>
<td>Protection of Plant Varieties &amp;</td>
<td>Provides for the establishment of an effective</td>
</tr>
</tbody>
</table>
Farmers’ Rights Act, 2001

system for protection of plant varieties, the
rights of farmers and plant breeders, and to
encourage the development of new varieties of
plants

The Scheduled Tribes and Other
Traditional Forest Dwellers
(Recognition of Forest Rights)

Act, 2006

Recognises and vests the traditional rights to
forest communities over access to forest goods
and occupation in forest lands.

The growing international concern for biodiversity is aptly summarised in the words
of Kofi Annan, “Biological diversity is essential for human existence and has a crucial
role to play in sustainable development and the eradication of poverty. Biodiversity
provides millions of people with livelihoods helps to ensure food security and is a rich
source of both traditional medicines and modern pharmaceuticals.” No doubt, these
strategies will be incomplete if they do not get over the time-worn suspicion between
northern and southern countries. Needless to say, they must accommodate diachronic
observations about the local landscapes that have been accumulated over generations
by the 200 million odd indigenous people who inhabit the territories that have
exceptionally high levels of biodiversity.

4.4. Traditional Knowledge (TK)

The inter-governmental committee of WIPO on Intellectual Property and Genetic
Resources, Traditional Knowledge and Folklore defines traditional knowledge as
knowledge that is:

(i) Generated, preserved and transmitted in a traditional context.

(ii) Distinctively associated with the traditional or indigenous culture or community
that preserves and transmits it between generations.

(iii) Linked to a local or indigenous community or other group of persons
identifying with a traditional culture through a relationship based on a sense of
custodianship, guardianship or cultural responsibility such as a sense of obligation to preserve the knowledge, or a sense that to permit misappropriation or demeaning usage would be harmful or offensive, a relationship that may be expressed formally or informally by customary law.

(iv) Originating from intellectual activity in a wide range of social, cultural, environmental and technological contexts, and

(v) Identified by the community or other group as being traditional knowledge.

Needless to say, TK is largely oral and is the collective knowledge, beliefs and practices of indigenous people on sustainable use and management of resources. It embodies the wisdom developed over generations and encompasses agricultural knowledge, medicinal knowledge, biodiversity related knowledge and the like. Oft quoted classic examples of medicinal TK are:

(i) Methi to bring down blood glucose.

(ii) Composition of jamun, bitter gourd, jaggery and egg plant to treat diabetes.

(iii) Kala jeera to treat hepatitis and asthma

Traditional Knowledge also includes mental inventories of local biological resources and is transmitted through legends, songs, stories, etc. This knowledge is used to provide sustenance to the community and its culture and to maintain genetic resources necessary for the continued survival of the community.
Traditional Knowledge is a key element of the social capital to produce food, to provide shelter or to achieve success in their lives. TK also helps shape local visions and perceptions of environment and society. This mainly includes:

(i) Local healing practices

(ii) Communal use of land and forest

(iii) Agro forestry practices

(iv) Agriculture

(v) Animal husbandry

(vi) Use and management of natural resources

(vii) Construction of houses using natural materials

(viii) Water collecting mechanisms

(ix) Midwives

(x) Herbal medicines

(xi) Transfer of knowledge through elders, rituals or folk songs

The Inter-governmental committee of WIPO has identified specific threats to TK including:

(i) Unauthorised commercial exploitation

(ii) Insulting, degrading or culturally offensive use of material that is the subject matter of TK

(iii) False or misleading indications that there is a relationship with the communities wherein the material has originated

Needless to say, there are four primary reasons as to why TK should be protected:

(i) Conserving the environment

(ii) Improving the livelihood of TK holders.
(iii) Benefiting national economies in a knowledge driven era

(iv) Preventing biopiracy

4.5. Intellectual Property Rights vis-a-vis Biodiversity and Traditional Knowledge.

To quote from the United Nations Draft Declaration on the Rights of Indigenous Peoples, indigenous people are entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property. They have the right to special measures to control, develop and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs and visual and performing arts. This must be read in conjunction with provisions such as Article 8(j) of the CBD that provide for respecting, protecting and rewarding the knowledge, innovations and practices of local communities. It is worth mentioning here that benefit sharing may take the form of:

(i) Monetary benefit sharing (license fees, royalty, etc); and

(ii) Nonmonetary benefit sharing (technology transfer, joint IPR ownership, etc.).

Its avowed objective must be to ensure that instances such as derivation of vinblanstine and vincristine from the Madagascar rosy periwinkle (wherein the firm has earned $100 million per year but neither the shamans who gave the knowledge to the researchers nor the Government of Madagascar have received any compensation for their contribution) do not recur. We must not forget that co-modification of collective resources – which are often perceived as sacred or secret – is a violation of human rights in the broadest sense of the term.

The basic question that arises here is: is the IP system compatible with the values and interests of traditional communities or does it privilege individual rights over collective interests? What can be done to ensure that IP protects TK? The answer lies in a comprehensive strategy with national and international dimensions. These can take the form of:
(i) National laws (for instance Brazil, Costa Rica, Peru, Panama, Philippines, Portugal, Thailand and US have adopted sui generis laws vis-a-vis some aspects of TK).

(ii) International legal framework.

There are two basic ways of protecting TK

(i) Positive Protection: This has been described by the Intergovernmental Committee as “based on the active assertion of rights by the owners and custodians of TK.” Classic examples are protective legislations and use of contracts in the interest of indigenous communities.

(ii) Defensive Protection: Preventive patent applications and defensive trademark registration come within the ambit of this definition. The application herein does not seek to gain rights, but merely prevents third parties from getting unfavourable IPR in the same subject.

The basic modalities through which TK could be protected are:

(i) The existing Intellectual Property Rules (Geographical Indications and Trade Secrets are the two most suitable forms of IP in this regard)

(ii) Sui Generis protection to match identified needs of TK holders.

(iii) Contracts (the most flexible way to protect TK)

In India, there is no specific legislation to protect TK. Instead, the intellectual property legal framework provides protection to TK through the various provisions therein. Examples of such legislation include:

(i) The Copyright Act 1957


(iii) The Trademarks Act 1999

(iv) The Geographical Indications of Goods (Registration and Protection) Act 1999

(v) The Designs Act 2000
(vi) The Protection of Plant Varieties and Farmers Rights Act 2001 (PPVFR Act)

(vii) The Biological Diversity Act 2002 (BD Act)

Out of these, the last two legislations deal with the Access and Benefit Sharing system, though there are some inherent conflicts between them in this regard. For instance, the PPVFR Act allows free access without prior informed consent (PIC) to any genetic resource. This is in conflict with the BD Act wherein prior approval from NBA is mandatory if Indian plant genetic resources are to be accessed. Efforts to provide the needed frameworks to build up benefit sharing systems are galore. These include initiatives of NGOs like

(i) M.S. Swaminathan Research Foundation

(ii) SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions)

(iii) FRLHT (Federation for Revitalisation of Local Health Traditions)

(iv) MPCC (Medicinal Plants Conservation Centre)

The Government of India is also providing the needed backup – in the form of the National Innovations Foundation (NIF), an autonomous society established under the Department of Science and Technology for “recognising, respecting and rewarding innovations and outstanding Traditional Knowledge at the grassroots”. The NIF has developed a model to facilitate PIC system for local innovators and TK holders.

In fact, the benefit sharing mechanism suggested by NIF’s models include four types of benefits:

(i) Monetary—Individual

(ii) Monetary—Collective

(iii) Non-Monetary—Individual

(iv) Non-Monetary—Collective

Special mention should also be made of the following steps for IPR protection related to the domain of TK.
(i) CSIR coordinated programme on drug discovery;

(ii) New Millennium Indian Technology Leadership initiative on Drug Prospecting;

(iii) Bioprospecting during the 9th Plan involving 13 institutions by the department of Biotechnology;

(iv) Programme of NBRL Lucknow to establish a multimedia web based database on plant genetic resources and TK;

(v) Traditional Knowledge Digital Library and Traditional Knowledge Resource Classification

It is worth mentioning here that India’s TKDL is a 2.4 crore page, multilingual database on traditional remedies and medicinal plants. It acts as a bridge between the existing prior art and the patent examiner at the global level and uses digital technology to prevent grant of questionable patents. Started in 1999 as a joint project between five Indian government organisations including the CSIR and the NISCAIR (National Institute of Science Communication and Information Resources), the maintenance of this database (including its web version) offers the prospect of benefit not only to indigenous people but also to the scientific community. And India is not alone in these efforts. Instances of important databases created and used are:

(i) China–Traditional Chinese Medicines (TCM) Patent Database.

(ii) USA–Cultural stories Project of the Tulalip Tribes

(iii) Venezuela–Biozulua database on indigenous communities

4.6. The Indian Legal System and Traditional Knowledge protection

Let us now examine the various Indian legislations regarding IP and the level of protection given to TK therein.

4.6.1 The Copyright Act 1957

This Act confers a bundle of legal rights on the creator or author of the work. Author’s moral rights, broadcast rights and performer’s rights are also recognised.
Expression in a tangible medium is all that is required to attain a copyright. But copyright subsists only in works which are original. Thus if any work is already in the public domain, it cannot be registered under the Act. In other words, the protection afforded to TK by the Copyright Act is indirect—against exploitation and reproduction without authorization.


An invention which in effect is TK or which is an aggregation or duplication of known properties of traditionally known component and components” is not patentable in India. Moreover the Patent Act specifies that:

(i) The applicant must disclose the source of geographical origin of any biological material developed (Section 10(d))

(ii) If the applicant does not disclose or wrongly mentions the source of geographical origin of biological material used for invention, then it becomes the ground for refusal of the patent (Section 25)

Thus the Patents Act makes provision for opposing the patent application before grant of a patent and opposing the grant of a patent within a year from the grant on grounds of non-disclosure of geographical origin of the biological material or if the complete specification of claims in the application is anticipated from the knowledge held by indigenous community.

Traditional Knowledge v. Patent Laws

One of the major problems that India is facing is exploitation of her traditional knowledge. Gene technology has given unlimited powers to developed countries to exploit the genetic resources of poor nations leading to a situation of ‘biopiracy’ and ‘gene robbing’. Biopiracy can be defined as the stealing of biomedical knowledge from traditional and indigenous communities or individuals. The term can also be used to suggest a breach of a contractual agreement on the access and use of traditional knowledge to the detriment of the provider, and also applies to bioprospecting without the consent of the local communities. The issue of protection of traditional knowledge, bio-piracy and fair equitable sharing of benefits arising out
of utilization of traditional knowledge is very important for India. The patent intervention is being quite visible, lately. A number of herbs, viz. neem, haldi and ashwagandha and plant drugs of India have been patented by outsiders on the basis of secondary researches. Perhaps rightly so, since Basmati, Neem and Haldi have never been too far from an Indian’s life, and the idea that someone else may acquire the right to own, trade and market it, is more than a bit jolting. The objective of the patents system is to develop new knowledge for prosperity of mankind which is getting diluted day by day. It is instead helping monopolisation of new knowledge for exploiting mankind.

Almost 80 per cent of the 4,896 references to individual plant based medicinal patents in the United States, Patents Office that year related to just seven medicinal plants of Indian origin. Three years later, there were almost 15,000 patents on such medicines spread over the United States, UK, and other registers of patent offices. In 2005 this number had grown to 35,000, which clearly demonstrates the interest of developed world in the knowledge of the developing countries. There were cases in the past which were the best epitome of exploitation, ignorance and negligence buoying up on the Patent laws of the developing countries like India.

4.6.3 The Trademarks Act 1999

The Act clearly stipulates that trademarks shall not be registered if—

(i) They consist exclusively of the marks or indications which have become customary in current language or in the bonafide and established practices of the trade.

(ii) They consist exclusively of marks or indications which may serve in trade to designate the kind, quality, intended purpose, value, geographical origin or the time of production of the goods or rendering of the services or other characteristics of the goods or services.

4.6.4 The Geographical Indications of Goods (Registration and Protection) Act 1999
The Act was promulgated with the objective of excluding unauthorised persons from misusing GIs, of protecting consumers from deception, of adding to the economic prosperity of the producer of such goods and of promoting goods bearing Indian GI’s in the export market. Needless to say, geographical indication products are the natural brands because of their unique quality. It is the best way to protect TK – Basmati Rice, Hyderabadi Biriyani and Pochampalli sari being classic examples.

4.6.5 The Designs Act 2000

The nature of protection given by this Act to TK is indirect. The Act clearly specifies that the following designs cannot be registered:

(i) A design that is not new or original

(ii) A design that has been disclosed to the public anywhere in India or outside by publication or by use prior to the filing date.

(iii) A design that is not significantly distinguishable from known designs or combination of known designs.

Needless to say, designs that are already in public domain cannot be registered.

4.6.6 Protection of Plant Varieties and Farmers’ Right Act (PPVFR Act)

It is the first piece of legislation in the world which recognises the contribution of the farming and tribal communities in conserving biodiversity and developing new plant varieties. The Act is a sui generis system to protect traditional rights and enshrines the rights of farmers as breeders, conservators and cultivators. It stipulates that a farmer who is engaged in the conservation of genetic resources of land races and wild relatives of economic plants and their improvement through selection and preservation shall be entitled for recognition and reward from the Government Gene Fund. It confers on the farmer the entitlement to save, use, sow, re-sow, exchange, share or sell his farm produce. Any person, group of persons or NGO, on behalf of any village or local community may with the previous approval of the Central Government, file a claim attributable to the contribution of the people of that village or local community in the evolution of any plant variety for the purpose of staking
claim on behalf of such village or community. Enactment of this legislation has been hailed as a milestone in the history of conservation of TK.

4.6.7 Biological Diversity Act

The Act is a classic example of defensive protection to TK. For instance, Section 6 of this Act provides that “no person shall apply for the IPR, by whatever name called, in or outside India, for any invention based on any research or information on biological resources obtained from India without obtaining the previous approval of the National Biodiversity Authority (NBA) before making such application”. NBA may determine benefit sharing fee or royalty for benefits accruing from commercial utilisation of such rights.

4.7 Traditional Knowledge v. Intellectual Property Rights Regime: A Classic Fable

A classic fable of the traditional Amazon healer (Shaman) and the protection of the various elements of this TK through the existing IP laws can be summarized in Table 4.2 below.

<table>
<thead>
<tr>
<th>Element</th>
<th>IP mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants from which the Shaman has made the potion.</td>
<td>Plant variety protection system.</td>
</tr>
<tr>
<td>Formula of the potion.</td>
<td>Patent (if it meets the requirements of patentability—being an inventive step, being new and novel and having utility.</td>
</tr>
<tr>
<td>Use and dosage of the potion.</td>
<td>Patent.</td>
</tr>
<tr>
<td>Prayer of the shaman to the Gods of the forest.</td>
<td>Copyright (once fixed in a medium).</td>
</tr>
<tr>
<td>Performance of the shaman (Dance, etc)</td>
<td>Copyright.</td>
</tr>
<tr>
<td>Vase containing the potion</td>
<td>Utility model certificate (if it has new &amp; inventive functional features).</td>
</tr>
<tr>
<td>Designs on the vase and on the garments</td>
<td>Copyright/Industrial design system.</td>
</tr>
</tbody>
</table>

4.7.1 Biopiracy of TK from India – from patent on wound healing properties of turmeric to patents obtained in other countries on hypoglycaemic properties of bitter gourd, brinjal, etc.
(a) Turmeric

The crux of the issue in this case was the patent issued by USPTO to the University of Mississippi Medical Centre in 1995 for its use in wound healing. In fact, the patent holders were two non-resident Indians – Suman Das and Harihar Cohli. The CSIR raised objections and submitted 32 references from ancient Indian scriptures. The issue herein was twofold:

(i) Whether the claimed invention fits into the patent criteria.

(ii) The violation of IPRs and biopiracy under CBD.

This was a landmark case which India won, but the issues remained – lack of proper documentation of bioresources, the virtual absence of information to USPTO regarding TK and the ground reality that we cannot chase and challenge every TK based product research. Needless to say, the turmeric case speaks volumes for the need to attune our legislations towards a fair and honest regime that protects IPRs in letter and in spirit. It eventually opened up the path to the creation of TKDL.

(b) Neem

Patenting of neem properties by a US multinational company raised many eyebrows due to three reasons:

(i) Local indigenous farmers would no longer be able to use their products based on neem without paying royalties.

(ii) Consumers who will be using the alternative medicines based on neem properties would not get them at an affordable price.

(iii) The community as a whole is entitled to get the share of profits from the multinational as per CBD.

The issue of IPRs over the neem tree was challenged at the Munich office of the EPO by the EU Parliamentary Green Party, Dr Vandana Shiva and the International Federation of Organic Agriculture Movement. After years of legal battle, the neem patent was finally revoked. No doubt, it was a historical moment for the Third World
who had been fighting to liberate their knowledge systems from the control of the patent regimes of developed countries.

(c) Basmati

The patenting of basmati, the queen of fragrance, by a US based multinational—Rice Tec Inc. raised much eyebrows. Needless to say, the decision to grant patents is a violation of TRIPS and the GI regime. To make matters worse, the Rice Tec was having an international market with the brand name as Kasmati and Taxmati and after having patent rights, it was planning to label the rice as Basmati and export the same. India stood to lose in the markets of EU, UK and Middle East in this regard. Moreover, the livelihood economy of the marginal Indian farmer was at crossroads. It is not only biopiracy but also a trade mark deception and a case of “passing off trade”. The most important victory as India could see in this regard is the change of nomenclature from Basmati lines and grains to rice lines BAS 867, RT 1117, RT1121. The case highlights the need for a cautious and preventive approach by the Indian government on any similar future claims.

(d) Monsanto

The patenting of wheat gene by Monsanto caused much apprehension. The new variety was developed from the primitive Indian race Nap Hal which is ideal for making bakery products. The issue was the possibility of future infringement cases against Indian farmers for non-payment of royalties to Monsanto. The Green Peace, RFSTE and Bharat Karishak Samaj jointly challenged the patent. The patent was finally revoked on October 5, 2004 thanks to the European database that shows that Nap Hal was collected from Uttar Pradesh in 1948. But the issues remain.

(e) Amazon Basin and the ‘Banisteriopsis caapi’ Case

A wrong patent that was given on a plant species called Banisteriopsis caapi and its traditional medicine uses led to lots of protests among the indigenous tribes in the Amazon region. This plant is native to the rainforests. The bark of this jungle wine is processed to produce a ceremonial drink called Ayahuasca (vine of the soul).
The COICA (Coordinating Body of Indigenous Organisations of the Amazon Basin) spearheaded the protest. The controversy over the patent generated considerable hostility between US and Ecuador. Finally the US patent office had to revoke the patent. However in a setback for the traditional tribes, it reconfirmed the patent rights subsequently,

(f) Fiji and the Kava case

Kava has been cultivated in Fiji and Vanuatu since times immemorial. However, the L’Oreal group (a French company) has now patented the use of kava to stimulate hair growth. The patented company can now obtain exclusive rights to the plant, thereby demanding full profits associated with usage, ultimately creating a monopoly of ownership over the plant.

(g) Africa and the Hoodia gordonii Cactus Case

San, the Bushmen who live around the Kalahari Desert region of Africa, have been using Hoodia gordonii cactus to stave off hunger. But hoodia’s appetite—suppressing P57 was patented in 1995 by the South African Council of Scientific and Industrial Research. This led to widespread protests. Finally, the San managed to make them yield to a benefit sharing agreement. But the ground reality is that the percentage of the sales that they eventually get is abysmally low.

(h) Alice Community of South Africa and the Pelargonium Case

In a place called Alice in South Africa, tinctures have been produced right from historical days to treat respiratory infections including tuberculosis. These are produced from the roots of pelargonium sidoides. Now this TK has been exploited by Schwabe pharmaceuticals which market syrup by name Umckaloabo from these roots. The Alice Community has fought against this exploitation tooth and nail.

These are only some of the myriad instances of biopiracy reported from the length and breadth of the world. There are various other classic examples—the commercialisation of Hagen Abyssinica products as a treatment for cancer after Ethiopians had used the plant for centuries and the aborted patenting of Bolivian quinoa by two American researchers, to name a few.
4.7.2 Where Have We Gone Wrong?

In reality, biopiracy is the outcome of the stark contrast between the viewpoints of the rich countries that possess technology and finance and the poor ones that are endowed with diverse genetic resources. To quote from the UNEP:

Intellectual property rights systems either encourage the appropriation of TK for commercial use without the fair sharing of benefits or ... violate indigenous cultural precepts by encouraging the commodification of such knowledge.

Needless to say, bioprospecting- the search among living organisms for compounds that have commercial value as active ingredients in pharmaceuticals, pesticides, etc.—in controversially justified by the contention that it provides biologically rich but economically poor countries a means to save nature by selling it. As the present day IPR considers documented knowledge as prior art, incorporating TK (which is largely oral) in the framework of prior art raises its own set of problems

In Merrel Dow pharmaceuticals Inc V. H.N.Norton & Co Ltd, the Court through Lord Hoffman, when considering the status of TK as prior art relating to patentability, codified the scenario as follows:

The Amazonian Indians have known for centuries that cinchona bark can be used to treat malarial and other fevers. They used it in the form of powdered bark. In 1820, French scientists discovered that the active ingredient, an alkaloid called quinine, could be extracted and used more effectively in the form of sulphate of quinine. In 1944, the structure of the alkaloid molecule (C20H24N2O2) was discovered. This meant that the substance could be synthesised.

Imagine a scientist telling an Amazonian Indian about the discoveries of 1820 and 1944. He says ‘We have found that the reason why the bark is good for fevers is that it contains an alkaloid with a rather complicated chemical structure which reacts with the red corpuscles in the bloodstream. It is called quinine. ‘The Indian replies:’ that is very interesting. In my tribe, we call it the magic spirit of the bark’. Does the Indian
know about quinine? My Lords, under the description of a quality of the bark which makes it useful for treating fevers, he obviously does. I do not think it matters that he chooses to label it in animistic rather than chemical terms. He knows that the bark has a quality which makes it good for fever and that is one description of quinine.

“On the other hand, in a different context, the Amazonian Indian would not know about quinine. If shown pills of quinine sulphate, he would not associate them with the cinchona bark. He does not know quinine under the description of a substance in the form of pills and he certainly would not know about the artificially synthesised alkaloid.....”

“The quinine example shows that there are descriptions under which something may in a relevant sense be known without anyone being aware of its chemical composition or even that it has an identifiable molecular structure. This proposition is unaffected by whether the substance is natural or artificial. So far I have been considering what it means to know about something in ordinary everyday life. Do the same principles apply in the law of patents? Or does patent law have a specialised epistemology of its own?”

These issues of protection of TK and interpreting the same in harmony with IPRs need to be resolved in right earnest. The right path ahead will be one wherein:

(i) Indigenous communities can exercise a veto on whether to provide private parties with access to genetic resources located on native land.

(ii) access is strictly denied to those who undervalue TK

(iii) rights of indigenous people are safeguarded through PIC while preserving the integrity of scientific research

(iv) a balance is struck between the economic benefits of bioprospecting and the fundamental right of self-determination

(v) Monetary and non-monetary benefits are shared with the knowledge-owners in a just and equitable way.
Harmonising IPR laws, placing ethnobotanical knowledge in public domain and fostering indigenous commercialisation can go a long way towards channelising benefits from exploitation of TK back to the indigenous communities.

4.7.3 Successful Models

(a) The Jeevani (Aarogyapachha) Case

This is the first and foremost case in India dealing with benefit sharing and won the UNDP Equator Initiative Prize 2002. Jeevani is a restorative, immunity enhancing drug based on the medicinal plant Aarogyapachha—a perennial rhizomatous herb. The TK regarding these medicinal properties was revealed by three members of the Kani tribe (who inhabit the Agastyamalai forest of Western Ghats) to the scientists of the TBGRI (Tropical Botanical Garden and Research Institute).

In fact, the breakthrough came when under the All India Coordinated Research Project on Ethnobiology, a team of scientists undertook a botanical expedition into Agastyamalai, accompanied by members of the Kani tribe as guides. During the expedition, the scientists observed that the Kani guides frequently ate black fruits of some plants which kept them agile. It was only after much persuasion that they showed the scientists the plant (trichopus zeylanicus) from which the fruit was obtained.

The technology was transferred to Arya Vaidya Pharmacy (Coimbatore) Limited, (AVP) through an agreement. Jeevani was successfully marketed in India and abroad (US, Japan, etc). TBGRI parted with 50 per cent of the license fee as well as royalty to an autonomous mechanism to benefit the Kani informers as well as to the Kanis of Kerala in general. This was done as per Article 15.7 of the CBD. The Kerala Kani Samudya Kshema Trust was registered as the institutional mechanism to receive the share in license fee and royalty received by TBGRI from AVP. The objectives of the Trust are:

(i) Welfare and development activities for Kanis in Kerala.

(ii) Preparation of biodiversity register to document the knowledge base of Kanis
(iii) Evolving methods to promote sustainable use and conservation of biological resources.

However, this process of benefit sharing also ran into rough weather. The Kerala Institute for Research, Training and Development of Scheduled Castes and Scheduled Tribes went on record that the tribal’s had received a raw deal. Moreover, with commercialisation, aarogyapachha began to be extensively collected from the forest. During harvest of leaves, some people uprooted the whole plant. What followed was large scale smuggling of the herb.

This is a classic instance of legal and policy vacuum resulting in chaotic situations. In fact, the scopes of benefits could have been wider if —

(i) International patent applications had been filed under PCT

(ii) Product patents were available in India at that point of time for pharmaceutical products, not only process patents

(iii) Trademarks had been registered to protect the distinguishing signs of this product.

No doubt, the degree of involvement of various tribal settlements could have been increased and more non-material benefits for them could have been considered. Nevertheless, this model will go down into history as one of the pioneer models in benefit sharing even before a formal legislative framework was evolved in the country.

(b) Suriname - ICBG Project

It is a good example of prospective benefit-sharing. It involves identification of tribal knowledge, documentation of biodiversity, and setting up of a trust fund to compensate the indigenous communities. The TK of the Maroons encompasses ancient healing traditions. A trust based relation between ICBG (International Cooperative Biodiversity Group) and the Maroons can go a long way in preserving this TK. Informed consent of the Maroons has been obtained through a letter of intent issued by their paramount chief.
(c) Samoa’s traditional healers and the mamala tree

A recent agreement has given the traditional healers in Samoa a share of the benefits accruing from a new AIDS drug that draws on their TK of the mamala tree.

(d) Amrad - Tiwi Land Council Bioprospecting Agreement

This is one of the pioneer bioprospecting agreements in Australia. The AMRAD Pvt Ltd, an Australian Pharmaceutical company has signed agreements with the Aboriginal Tiwi Land Council for exclusive access to plants on the Tiwi islands. In return for this, AMRAD agreed to pay the aboriginal peoples a percentage of the profits from the sale of pharmaceutical products developed from these plants.

(e) Merck - INBio Agreement (Costa Rica)

Under this benefit sharing agreement, the INBio (a non-profit organisation created by the Government of Costa Rica) will provide 10000 samples of plants, animals and soil to Merck Sharp & Dome. Merck will retain patents to any drugs developed using the samples, but will pay INBio USD 10 lakh upfront. There is also a promise to pay royalties to INBio and provision to use the proceeds for the conservation of biological diversity by the Government of Costa Rica.

(f) AIMS -Queensland Government Agreement

The agreement between AIMS (Australian Institute of Marine Science) and the Queensland Government pertain to sharing of benefits of commercial exploitation arising out of research carried on by AIMS on the biota from Queensland waters. The benefits shared include non-monetary ones too (capacity building, sharing of scientific knowledge, etc). A salient feature of the agreement is the provision regarding documentation of biodiversity so as to assist in more effective management.

(g) Shaman Pharmaceuticals-Consejo Aguaruna Haumbisa Negotiations

147
Shaman Pharmaceuticals is developing business relationships with indigenous groups. In Peru, they have negotiated with Consejo Aguaruna Hauambisa (an indigenous federation) to supply them a sustainable harvest in return for reciprocal benefits. The revenue will be distributed through ‘Healing Forest Conservancy’—a non profit organisation.

(i) Body Shop and Kayapo Indians

Body shop is bioprospecting in Kayapo area of Brazil drawing on TK of Kayapo Indians. A part of the benefit accrues to the indigenous people too.

4.8. Conclusion

Traditional knowledge or cultural goods are more like natural goods than software programmes like Java or C++. They create, in effect, environment for monopolization in their very existence. Marx turned to this problem in Volume III of Capital:

Capital cannot create a waterfall from its own resources. The surplus profit that arises from the use of this waterfall thus arises not from the capital but rather from the use by capital of a monopolisable and monopolised natural force. Under these conditions the surplus profit is transformed into ground-rent, i.e. it accrues to the owner of the waterfall... this rent is always a differential rent, for it does not contribute to determining the general production price of the commodity, but takes this as given...Landed property does not create the portion of valued that is transformed into surplus profit; rather it simply enables the landowner, the proprietor of the waterfall, to entice this surplus profit out of the manufacturer’s pocket and into his own.

Similar to waterfalls of Marx, biodiversity and traditional knowledge are not found all over. They are also not replicable. In effect, they introduce an irreducible unevenness to an otherwise totalising system. This capitalist development creates crises and repeated cycles of exploitation, eventually threatening the environment of subsistence itself. The point is that the capitalistic model of conservation of biodiversity by documentation of indigenous knowledge will result only in flattening of cultural and social richness and will fall short of its avowed objectives.