Chapter 4

Traditional Knowledge and IPRs

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Chapter 4

Traditional Knowledge and IPRs

Traditional Knowledge (TK) can generally be described as information in respect of traditional medicines existing in the society and passed by generations to generations since time immemorial. It encompasses inter alia, the information regarding the product and its entire methodology of use, making and manufacturing. The peculiarity of Traditional Knowledge and information thereabout is the inability to identify the original creator, inventor, innovator, discoverer and conceiver of an idea in the majority of the cases. In many cases, it has generally been seen that the information in the previous form must have been modified by the holder thereof as per existing requirements at that time.

A fundamentally important aspect of Traditional Knowledge is that it is "traditional" only to the extent that its creation and use are part of the cultural traditions of communities. Traditional therefore does not necessarily mean that the knowledge is ancient. Traditional Knowledge is being created everyday, it is evolving as a response of individuals and communities to the challenges posed by their social environment. In its use, Traditional Knowledge is also contemporary knowledge. This

aspect is further justification for legal protection. It is not only desirable to develop a system that documents and preserves Traditional Knowledge created in the past, which may be on the brink of disappearance: it is also important to envisage a system that contributes to the promotion and dissemination of innovations which are based on continuing use of tradition. Thus we are not talking only about freezing and preserving knowledge that exists now. We are also talking about preserving what exists as an indispensable and powerful tool for fostering continued traditional innovation and creativity.

4.1 Seed Piracy

With the first shower of rain, the seeds sowed beneath the earth sprout, promising life to mankind and other living animals. These seeds are like ships and carry the cargo of millions of years. It is the treasure of Mother Nature which is a part of its rich biodiversity. Ships have always been vulnerable to piracy. But today even biodiversity is vulnerable to a totally different kind of piracy, i.e. biopiracy. The rights evolved by man in the form of IPRs have posed a serious threat to this biodiversity and are in the process of destroying this biodiversity itself in the blind rush to capture its fruits.

For centuries, seeds moved freely across the continents on the wind's wings, in birds' bellies, in traders' caravans, conquerors' pockets, and immigrants' knapsacks. They were available to all, and were never considered as the sole property of anyone, but the common heritage of the planet earth.

There is a common misperception among the people in general about the world's seeds that they were naturally occurring. But behind every food crop seed there was a long line of farmers who literally created them through a process that the Mende people of Sierra Leone call "hungoo," meaning innovation or invention. The seed so created, consisted not only the gene of that particular plant, but also the sweat and blood of entire generations of farmers.[1]

Early on, the forerunners of agribusinesses transplanted bananas and sugarcane from Asia and coffee from Africa to Latin America and produced them in heavily policed plantations for export to European countries. The French prohibited the export of indigo seeds from Antigua and the Dutch destroyed all of the nutmeg and clove trees in the Molucca Islands after they had established their own plantations. By separating the seed from its cultural root, the colonizers changed it forever from the living symbol of a community's history into a commodity. This violation of the biodiversity was the beginning of human aggression and onslaught on the sovereignty of Mother Earth.

The US is known as the breadbasket of the world. But out of the total food and industrial crops available here in plenty, only the sunflower is native to this continent. All the U.S. food crops worth about $1 billion depend on genetic material from other

[1] *Lehman, Karen Institute for Agriculture & Trade Policy 'Pirates of Diversity The Global Threat to the Earth's Seeds'*

countries: corn, potatoes, tomatoes and cotton from Latin America; rice and sugar cane from Indochina; soybeans and oranges from China; wheat, barley, grapes and apples from West Central Asia.[2] The US, responsible for the brain drain from the developing countries in the 20th century, had indulged in seed drain in the earlier centuries, which was in fact seed piracy.
In the early 1960s, the United States passed a law granting plant breeders the rights to patent seeds, thus preventing others from selling the same variety. Having made billions of dollars on seeds developed by farmers in other lands, seed companies are now taking the final step to ensure a never-ending source of revenue. They are trying to force all countries to recognize patents on seeds through a set of trade accords called the General Agreement on Tariffs and Trade (GATT). If they succeed, farmers will be forced to pay royalties to companies who hold patents on the genetic material they or their ancestors helped to shape.

It is mind-boggling that the very farmers who had developed seeds by using their knowledge and experience and pouring the life blood and sweat of several generations, will now pay royalty through their noses to the seed companies who pirated seeds from the developing and underdeveloped countries, to use the same seeds for eking out their livelihood. For this farmer, the royalty payment to use the seed is actually a payment of royalty for their life.

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[2] *Lehman, Karen. Institute for Agriculture & Trade Policy. 'Pirates of Diversity: The Global Threat to the Earth's Seeds'*

To avoid themselves being called as seed or genetic pirates, the seed companies coined a new and interesting word for genetic piracy - "intellectual property rights," which are defined as the rights to protection of innovation. Intellectual property rights would only be recognized when they generated profit, which occurs when a worker pulls a gene out of a seed in a Boston laboratory, but not when a Mende farmer saves some seeds and rejects others. Intellectual property rights are also only respected when the innovation is capable of industrial application. Pioneer Hi-Bred can be protected when it mass produces seed varieties, but the Indian farmer who collects and saves seeds for next year's planting cannot.

This means that innovation that took place in communities over centuries, or even innovation in plant varieties that takes place in the present in a communal fashion, is not eligible for protection. As more power is concentrated in the hands of the corporate gene manipulators, the genetic diversity that has been tended by farmers in millions of fields around the world is lost.

On October 2, 1993, 500,000 Indian farmers demonstrated against the passage of the General Agreement on Tariffs and Trade and vowed to protect their right to produce and protect their own seeds. They created a charter of farmers' rights, especially the right to conserve, reproduce, and modify seed and plant material. They speak for the rest of the farmers of the

world who want to continue their partnership of 'hungoo' with the vegetable kingdom.[3]

Only such resistance to the piracy of the earth's diversity could ensure that for future generations, seeds will continue to be the fruit of our common heritage and not the exclusive property of the gene splicers. Only such resistance can ensure that the true inheritors of the farmers' innovation and creation are all the children of Mother Earth, and not selective seed companies whose only motto is profit. Let not the hunger and starvation of millions be the source of profit of the seed companies.

Farmers saving the seed for next year's crop has always been a very crucial part of agriculture and the seed companies have always grudged this, saying that they were losing their markets because of this. When the UPOV Convention was revised in 1991, they tried to take away the right of the farmer to save seeds. But because of the protests at that time in Europe about their right to save seeds and to get it cleaned, the UPOV Convention retained the right to save seeds, although in a weaker form.

While the right to save seeds was an integral part of the UPOV Convention earlier, in the amended version in 1991, it became an optional exception to the Breeder's Rights which members may grant 'within reasonable limits and subject to safeguarding the

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[3] *Lehman, K. Institute for Agriculture & Trade Policy. 'Pirates of Diversity: The Global Threat to the Earth's Seeds'*

legitimate interests of the breeders'. The right to get their seeds cleaned off farm has been totally lost. With the changing structure of agriculture in the developed countries, the farmers might lose even whatever they have managed to salvage earlier. Though the right to save seeds is there in the '*sui generis*' system, it is living a very tenuous existence.

4.2 The 'sui generis' system

A '*sui generis*' (of its own kind) system of protection is a special system adapted to a particular subject matter, as opposed to protection provided by one of the main systems of intellectual property protection, e.g. the patent or copyright system. A special law for the protection of integrated circuits is an example of a '*sui generis*' law. In the case of plants, it means countries can make their own rules to protect new plant varieties with some form of IPRs, provided that such protection is effective.

One type of '*sui generis*' system is the UPOV system of Plant Breeders' Rights. This initially developed in Europe and has now been adopted by the industrialized countries, and is also being adopted by an increasing number of developing countries. Plant Breeder's Rights were developed because plant breeders found it difficult or impossible to meet two of the fundamental requirements of patent law: inventiveness, and a written description of how to make and use. The UPOV system, however, produces a quite strong IPRs regime for plant varieties geared to institutional breeding which may not suit all countries.

The alternative is for countries to develop their own solution with special legislation protecting plant varieties appropriate to their situation. Both are possible but developing an appropriate '*sui generis*' system is a challenging task that may take some time. Many countries are working on such legislation.

Farmers are being hit hard by the extortionate royalties demanded by plant breeders, and the prohibition on saving seeds. Such an eventuality is foreseen not only in the case of patented crops, but also patented livestock breeds. **The logical extension of such a monopolistic regime could be that a farmer who has bought a patented breed of hen, would not own the chicken of this hen!**

4.3 Implications of Plant Patents

Patent holders will increasingly claim rights not merely to varieties, but to characteristics that are common to several varieties. This means that a patent holder could prevent others from completing research even using totally different genetic systems, and could perhaps also prevent farmers from innovating on their own, other products and varieties with the same characteristic.

The emerging Intellectual Property Rights (IPRs) regimes have serious implications for biodiversity itself. For instance, debt repayments of tropical countries would increase substantially. In the last few decades, attempts to repay debts have consisted of exporting natural resources in their raw form or in the form of

various processed products. More often than not, considerable over-exploitation is the result. Farmers may be forced to adopt the homogenous and genetically narrow base of modern agriculture, and be unable to innovate on even the seeds or livestock they buy. Thus there would be loss of indigenous crop and livestock diversity. Moreover, the incentives provided by patenting could increase the thrust towards the commercialization of agriculture, which is inevitably accompanied by the homogenization of crop varieties, ultimately resulting in loss of biodiversity.

A close look at the profile of innovations that have revolutionized humankind's living standards reveals that many innovations have taken place without patents and implied incentives. In fact, innovations that have been treated as 'free' have brought in many dividends to both the innovator and the society at large. The Green Revolution, based upon the new high-yielding varieties of seeds, was treated more or less as a public commodity, but it had a much greater impact on the welfare of human society than any other patented innovation in agriculture. As against the Green Revolution, the present biotechnology-based innovations are done by the multinationals and they have developed a tendency to claim monopoly power on their innovations. This has not only resulted in reducing the pace of the spread of the innovations but also in making it costlier and out of reach of the poorer segments of society.

When there was no monopoly granted on inventions, more innovations took place in the field of agriculture as compared to the monopolistic regime where patents are granted for agricultural innovations. This fact negates the claims of the advocators of IPRs that IPRs are necessary to boost innovations. For the common man in the country, the innovation of seedless grapes that took place during the Green Revolution is more beneficial than a variety of fruits produced by a multinational firm in the laboratory with some fancy names.

The sovereignty of India's seed supply systems rests on two sources of public seed supply – 80% of which comes from farmer bred traditional varieties, and 20% of which used to come from public sector seed breeding stations and seed farms. India's food security has been based on the diversity of seeds and on the public supply system, both at the community and state level. The 1966 Seed Act has performed an effective function for seed reliability.

As a result of the World Bank driven new Seed Policy of 1988, MNCs like Cargill and Monsanto entered the seed supply system in India. With their entry, India's agriculture has become destabilized. MNC seeds are costly, unreliable, and non-renewable. Farmers must buy them every year. High costs, non-renewability and non-reliability of MNC seeds have created severe distress among farmers. Farmers have become indebted. Unable to find an avenue to eke out a living, a large number of indebted farmers have decided to sell their kidneys. In most extreme

cases they have taken their lives due to indebtedness resulting from high input costs. All suicides are concentrated in areas where farmers have become dependent on private seed supplies of MNC seeds. In the cotton-growing Vidarbha region of Maharashtra in India, 244 farmers have committed suicides in six months since June last year.[4] With no means of subsistence the farmers are now trying to draw global attention to their plight. Shocked at the suicides, village elders have passed a resolution to offer their kidneys for sale to raise the money for the next crop. Some villages have declared themselves up for sale to raise capital and clear farmers' debts. People of a village have also sought 'permission' from the President and Prime Minister to commit suicide en masse. With poor yields of around three quintals cotton per acre, returns are hardly enough for the year-long needs of farmers, leave alone paying back mounting dues of co-operative banks or moneylenders. In Amravati division alone, 180 farmers have died during the last seven months.[5]

4.4 Recovery of the Commons – An Indian perspective

The expansion of "Intellectual property rights" (IPRs) into the domain of life forms and biodiversity, and the globalization of this regime through Trade Related Aspects of Intellectual Property Rights (TRIPs) Agreements of GATT/WTO, has been an attempt by the developed countries to enclose the biological and intellectual commons. This calls for steps towards the recovery of

[4] *Times of India, Ahmedabad, dt 24 1 06*
[5] *ibid*

the commons, especially for the two - thirds of India that lives outside the livelihoods provided by the State and the market in what is referred to as the biodiversity based economy.

The biodiversity based economy of India represents the poorest communities in the marginalised regions. Their access to biodiversity and their use of their indigenous knowledge and skills is their primary means of livelihood security.

The "piracy" of their indigenous innovation through patents, and the diversion of their biological resources to global markets undermines the livelihoods of two - thirds of India - women, tribals, peasants, pastoralists and fisher folk. It also threatens the biodiversity base which they have protected because their survival has depended upon it.

The recovery of the commons for traditional communities is based on their recognition of their own rights and recognition by the state that communities have their own rights, knowledge, and values. This recognition by the formal legal systems would not give the State the right to intrude in local biodiversity utilization patterns based on community rights. But it would create an obligation on the State to prevent external forces from "pirating" local resources and indigenous knowledge, and from imposing property rights regimes that counter community rights and cultural values. This is based on the principle that no state-made law can infringe on natural law.

Community rights as the countervailing force to Intellectual Property Rights regimes, emerging from corporate interest have to form an intrinsic part of all IPR legislation, including patent laws, biodiversity conservation laws, plant variety laws, trademark laws. These community rights, which exist prior to and are more fundamental than IPRs, need to be the screen through which IPR regimes are evolved and IPR claims are evaluated. They are also necessary to protect the free spaces for knowledge systems and production systems on which livelihoods of local communities depend.

This rectification is necessary because in the absence of strong community rights protection, the state is merely an instrument for the protection of foreign investment and a promoter of the predation of biodiversity and indigenous knowledge.

Seventy percent of India depends upon traditional systems of production for their survival. The majority of the people in the rural areas, involved in agriculture, are small, marginal farmers and peasants. 70% of India's health care needs are met by traditional systems of medicines, whose practitioners use over 7,500 varieties of medicinal plants as part of their healing work. Over 70% of manufacture is in the decentralised small-scale and cottage industry sector, which provides livelihood to seven times as many people as the public and private sector industries sector.[6]

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[6] *Shiva, Vandana – Asia Research Centre on Social, Political & Economic Change - Enclosure & Recovery of Commons - 1995*

Given their economic viability for the poor of India, they have continued to be vibrant living economies, not needing any protection until now. Today, these production systems and their technologies are under severe threat from the new monopolistic protections being carved out for transnational corporations (TNCs), through Intellectual Property Rights (IPR) Regimes. In fact, in free trade and trade liberalisation regime, which is supposed to end protectionism, IPRs are the main instrument of this new form of protectionism.

The new protectionism for TNCs through IPRs is becoming the major means of dismantling both local and national economies as well as national sovereignty through piracy of both material resources as well as at the intellectual and cultural level.

The implementation of the provisions of the Panchayats (Extension to the Scheduled Areas) Act 1996 has already set the precedent for the recognition of communities as competent authorities for decision making on resource use and cultural values and traditions, and community rights to common resources as the building block of a decentralised democracy.

But this decentralised democracy must be expanded throughout the country by recognising that knowledge, innovation and biodiversity have evolved through community rights and community responsibility - and the recognition of community rights is a precondition for the protection of biodiversity and the

protection of people's rights. It is also the only means for protecting our national wealth in the form of our biological and intellectual heritage.

In the present arrangement, knowledge and resources flow freely from poor countries to rich countries, and from the poorest communities and countries a double loss occurs - the first through the theft of their intellectual and biological wealth, and then secondly, through royalty payments for what has been derived from their innovations and biodiversity.

4.5 Bio-piracy and bio-prospecting

The quest for new plants to create new products has resulted in a new "gold rush" known as bio-prospecting. Ethnobotanists go to indigenous communities, sometimes offering compensation in the form of gifts or shares in any royalties that may be earned, once a product is patented and marketed. Like gold diggers everywhere, these explorers inadvertently disrupt the indigenous communities. And once disrupted, it may be difficult or impossible for that community to restore the traditional balance between itself and the ecosystem which has sustained it while being sustained by it. FAO Assistant Director-General Obaidullah Khana referred to such bio-prospecting as "bio-piracy."[7]

Bio-piracy in the narrower sense refers to the appropriation, generally by means of patents, of indigenous biomedical

[7] *"FAO Official Blasts Western Biopiracy." Reuter. June 6, 1994*

knowledge by foreign entities (including corporations, universities and governments) without compensatory payment.[8] The classic case is that of the Rosy Periwinkle (Madagascar Periwinkle), a plant native to Madagascar. Research into the plant was prompted by the plant's traditional medicinal role and resulted in the discovery of a large number of biologically active chemicals, including the children's cancer cure vincristine. It is both highly effective in curing children's cancer and, as a result, an unusually lucrative drug. Vincristine was initially patented and marketed by Eli Lilly without payment to the country of origin.

Bio-piracy is also used in a loose sense to cover the various forms of power imbalance between richer and poorer countries which arise out of poorer countries' tendencies towards high biodiversity and richer countries' tendencies towards needing or wanting the benefits of that high biodiversity. As debate on bio-piracy has established itself, so too have pharmaceutical companies and national governments modified their behaviour in response to the debate, leading to a proliferation of related ethical issues and dilemmas.

Bio-prospecting – Bio-piracy is a value-laden term which at the same time has established itself as the primary concept in academic ethical debate on the subject. The term "bio-prospecting" is a frequent alternative neutral or positive term. Bio-piracy and bio-prospecting are easily defined in terms of each

[8] *en wikipedia org/wiki/Bio-piracy*

other (bio-piracy is illegal or unethical bio-prospecting; bio-prospecting is legalised or ethical bio-piracy).

Some of the famous cases of bio-piracy have been –

Rosy Periwinkle (Madagascar)[9], Neem (India)[10], the Enola bean (Mexico), Hoodia cactus (South Africa)[11], Turmeric (India)[12], Karela (India)[13], Quinoa (Bolivia)[14], Basmati (India)[15], and many others.

4.6 Patenting Traditional Indian Knowledge

The news that neem, turmeric and rice, used everyday in almost every household in our country, have been patented and can no longer be used without paying royalty, had sent shock waves throughout the country equal in intensity to those felt during the earthquake of 2001 in Gujarat. Scientists, political leaders, legal practitioners and biologists, all condemned vociferously this patenting of our centuries old Traditional Knowledge by profit-hungry monopolistic US multinationals. The Indian government reacted swiftly and challenged these patents under the aegis of Council of Scientific and Industrial Research (CSIR), led by its chief Prof. R.A. Mashelkar, and got them revoked on the ground that their use being Traditional Knowledge of our country, it is not novel, it is ancient.

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[9] *US Patent no 5750709 dt May 12, 1998 to Eli Lilly*
[10] *US Patent no 6455070 dt Sep 24, 2002 to East Park Research Inc.*
[11] *US Patent no 7033616 dt April 25, 2006 to Phytopharma Plc*
[12] *US Patent no 5401504 dt March 28, 1995 to Uni of Mississippi Medical Centre*
[13] *US Patent no 7014872 dt March 21, 2006 CSIR, India*
[14] *US Patent no 5597807 dt January 28, 1997*
[15] *US Patent no 5663484 dt Sep 2, 1997 to Ricetec Inc*

India's rich stock of traditional medicines based on historical knowledge and traditional heritage has become an eyesore for transnational companies and other commercial outfits which are engaged in bio-piracy in the name of research and development and getting Indian traditional medicines patented in the respective countries devoid of any international and national legal norms and ethical values.

The United States Patent and Trademark Office (USPTO) has become a haven for multinational bio-pirates. For the USPTO, everything under the sun is patentable. Due to the lethargy of the Indian government, there are a number of items of Indian origin which got patented in the United States like Gurmar, Jamun[16], Turmeric[17], Basmati rice[18], Neem[19], Tulsi[20] and Brinjal[21], etc.

4.7 First victory over bio-piracy (Turmeric)

A patent on turmeric[22] was granted to University of Mississippi Medical Centre, USA for 'use of turmeric in wound healing'. Two US based Indians namely Suman K. Das and Harihar P. Cohly claimed to be the finders of the wound healing property, whereas practically every Indian housewife knows and uses it to heal wounds. A formal request for re-examination of the patent was filed by Indian Council of Scientific and Industrial Research

[16] *US Patent no 5900240 dt May 4, 1999 to Cromak Research Inc*
[17] *US Patent no 5401504 dt March 28, 1995 to Uni Mississippi Medical Centre*
[18] *US Patent no 5663484 dt Sep 2, 1997 to Ricetec Inc*
[19] *US Patent no 6455070 dt Sep 24, 2002 to East Park Research Inc*
[20] *US Patent no 5472684 dt Dec 5, 1995 to Colgate Palmolive, US*
[21] *US Patent no 5856526 dt Jan 5, 1999 to CSIR, India*
[22] *US Patent no 5401504 dt March 28, 1995 to Uni Mississippi Medical Centre*

(CSIR) on 28th October 1996. The first office action in the re-examination was issued by USPTO on 28th March 1997, which rejected all the six claims based on the references submitted by CSIR as being by 'anticipated references' and therefore considered invalid under 35 USC 102 and 103. Sec. 102 of the US Patent Act deals with the conditions for patentability; novelty and loss of right to patent whereas s.103 deals with conditions for patentability; non-obvious subject matter.

After receiving the first action, the University of Mississippi Medical Centre, to whom the patent on turmeric was granted, decided not to pursue the case and transferred the rights to the inventors.

In the second office action, the examiner rejected all the claims once again and made his action final. The inventors subsequently persuaded the examiner on the ground of their invention being restricted to 'non-healing surgical wounds'. However, the examiner rejected all the claims once again on 20th November 1997, ruling that turmeric's medicinal properties were not patentable, since turmeric is an Indian discovery. It issued a re-examination certificate on this case on 21st April 1998, bringing examination proceedings to a close.[23]

CSIR Director General Dr. R A Mashelkar described the development as one of far-reaching consequences, not only for the protection of traditional Indian knowledge in the public domain but also for that of other third world countries.

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[23] *Mashelkar, R A.,2001 Intellectual Property rights and the Third World Current Science 81(8) 960*

This is the first known case where the use of the Traditional Knowledge base of a third world country patented in the United States has been successfully challenged. Efforts to challenge a similar patent made out on Neem were not even entertained earlier by the United States Patent and Trademark Office, Dr. Mashelkar said.

According to Dr. Mashelkar, Director General of Indian Council of Scientific and Industrial Research, the success of the turmeric case sends out strong signals that well-argued and well-supported techno-legal cases would have a fair chance in the USPTO.

4.8 Bitter-sweet victory (Neem)

In 1995, the US Department of Agriculture and a pharmaceutical research firm, East Park Research Inc. received a patent[24] on a technique to extract an anti-fungal agent from the neem tree (Azadirachta India), which grows throughout India. Indian villagers have long understood the tree's medicinal value. Although the patent had been granted on an extraction technique, the Indian press described it as a patent on the neem tree itself. The result was widespread public outcry, which was echoed throughout the developing world. Legal action followed and the patent was eventually overturned.

[24] *US patent no 6455070 dt Sep 24, 2002*

The pharmaceutical company involved in the Neem case argued that as traditional Indian knowledge of the properties of the Neem tree had never been published in an academic journal, such knowledge did not amount to 'prior art' (prior art is the term used when previously existing knowledge bars a patent).

On March 8, 2005, in a landmark decision, the European Patent Office upheld a decision to revoke in its entirety the patent on the fungicidal product derived from seeds of the Neem, a tree indigenous to the Indian subcontinent. The historic action resulted from a legal challenge mounted ten years ago by three Opponents: the renowned Indian environmentalist Vandana Shiva, Magda Aelvoet, then MEP and President of the Greens in the European Parliament, and the International Federation of Organic Agriculture Movements (IFOAM). Their joint Legal Opposition claimed that the fungicidal properties of the Neem tree had been public knowledge in India for many centuries and that this patent exemplified how international law was being misused to transfer biological wealth from the South into the hands of a few corporations, scientists, and countries of the North. The European Patent Office (EPO's) Technical Board of Appeals dismissed an Appeal by the would-be proprietors—the United States of America and the company Thermo Trilogy—and maintained the decision of its Opposition Division five years ago to revoke the Neem patent in its entirety, thus bringing to a close this ten-year battle in the world's first legal challenge to a bio-piracy patent.

In response to bio-piracy threats such as this, India has been translating and publishing ancient manuscripts containing old remedies in electronic form. The texts are being recorded from Sanskrit, Urdu, Persian and Arabic; they will be made available to patent offices in English, German, French, Japanese and Spanish in 2006. The aim is to protect India's heritage from being exploited by foreign companies. Hundreds of Yoga poses are also kept in the collection.

4.9 Yoga Patents

The multinationals did not stop at getting patents based on products and Traditional Knowledge of Indian heritage which has healing properties for the human body, but went to the extent of getting patents on traditional Indian knowledge which heals human mind. Yoga is the ancient technique of healing the mind which is known and practiced by Indians since ages. US billionaire Vikram Chowdhary along with his wife Rajashri got patented 26 poses of yoga.

This woke up the Indian government though belatedly, and it has decided to challenge this patent. Not only that, the government has initiated a 10 crore project named Tradional Knowledge Digital Library in which the ancient manuscripts of Traditional Knowledge will be translated into English and other foreign languages which will be made available from 2007 onwards. The patent offices in other countries will be able to study this data before granting patents based on Indian Traditional Knowledge.

4.10 The Basmati Victory (Rice)

A patent on the Indian Basmati rice was granted to a US company based at Texas, Ricetec Inc.[25] This was later challenged by India and we have now won the Basmati bio-piracy battle, though the war for defense of farmers' rights, indigenous knowledge and biodiversity still needs to be won.

And this partial victory has been based more on the Indian citizens' actions than Government action. As a result of a worldwide citizen campaign against the Texas company RiceTec's Basmati patents, on August 14, 2001, the United States Patent and Trademark Office struck down large sections of the Basmati patent.

No new patents have been given to RiceTec, and no new right has been given to market their varieties as equivalent to or superior to Basmati. RiceTec has been forced to give up its far-reaching and false claims to having invented a very broad range of Basmati rice lines and plants. Ricetec has withdrawn 4 claims related to rice because submissions made by India have established that there is nothing novel in the Basmati 867 and RT 1117 which Ricetec claims to have invented. And Indian people in solidarity with the people worldwide succeeded in freeing the Indian Basmati from the clutches of monopoly, colonialism and seed terrorism.[26]

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[25] *US Patent No 5663484 dt Sep 2, 1997*

[26] *Dr Shiva Vandana, 'The Basmati Battle and its Implications for Biopiracy and TRIPs – Navadanya newsletter, 2001*

1. The generic title of the RiceTec patent, which earlier referred to Basmati rice lines.

2. The sweeping and false claims of RiceTec having `invented' traits of rice seeds and plants including plant height, grain length and aroma which are characteristics found in our traditional Basmati varieties. The collective cumulative innovation of our farmers was thus being pirated by a Texas based company.

3. Claims to general methods of breeding which was also piracy of traditional breeding done by farmers and our scientists (Of the 20 original claims only three narrow ones survive)

When RiceTec was granted the 20 far reaching Basmati claims, the Government of India (GOI) did not challenge this outrageous bio-piracy. We had to file a PIL and get the Supreme Court to ask the government to take legal action in the USPTO. When the Government did go to USPTO it challenged only 3 claims related to basmati grain, and hence to basmati exports. It did not challenge claims related to basmati seeds and plants, and hence to farmers' rights & Traditional Knowledge even though the research done by the CFTRI (Central Food Technology Research Institute, in Mysore) and ICAR (Indian Council of Agricultural Research) established that the basmati seed claims covered our traditional varieties.

In fact on 25 January 2001, the Government of India told the Supreme Court they were satisfied with the withdrawal of 4 claims by RiceTec and did not intend to fight the Basmati patents

any further because exporters' interests had been defended. There was no attempt to defend farmers' rights. Even in the debate in Parliament, the Basmati issue has been narrowed to the issue of exports, and detracted from the larger issue of bio-piracy, Traditional Knowledge and farmers' rights.

This issue can no longer be evaded because the surviving claims to Bas 867, RT 1117 and RT 1121 have been granted on the basis that farmers' breeding does not count, but when farmers' varieties are used to derive varieties with the valuable characteristics such as aroma already evolved by farmers, it is treated as an invention and given patent protection. These rice varieties have used Indian and Pakistani varieties. When the government failed once again to defend our Basmati biodiversity and indigenous knowledge, the Research Foundation along with other citizens groups launched a global campaign against RiceTec's Basmati patents. Organisations and individuals bombarded the USPTO with protest letters, demanding the US Patent Office not to protect bio-pirates.

The fact that USPTO struck down 15 claims out of 20 in spite of GOI asking for withdrawal of only 3 and the U.S. Government insisting that they would never drop the generic claim to basmati shows that once again people proved more powerful than corporations and governments.

The Basmati variety for which Ricetec claimed a patent has been derived from Indian Basmati crossed with semi-dwarf varieties including Indica varieties. The Basmati varieties are farmers'

varieties bred over centuries by farmers of the Indian subcontinent. The method of crossing different varieties to mix traits - in this case the Basmati characteristics from Basmati and the semi dwarf characteristics - is also not novel. It is a very commonplace method of breeding, which everyone familiar in the art of breeding knows. In fact, the national agricultural system has released new semi-dwarf varieties, Kasturi and Pusa Basmati-1. The patent application states these "new varieties more properly should be described as Basmati substitute or quasi-basmati". However, it uses the same breeding step of crossing Basmati varieties with semi-dwarf varieties to claim "characteristic and qualities" similar or superior to those of good quality Basmati rice grains produced in India and Pakistan. The characteristics for which Ricetec claimed a patent are derived from traditional Basmati. However, the patent claim basically denies the prior breeding by farmers and by denying the role of farmers as breeders, falsely claims an essential derivation as an invention.

India's basmati exports will not be undermined by Ricetec's patent. The economic piracy of India's export markets has therefore been prevented. However, the cultural and biological piracies have not been stopped. By holding on the remaining claims in 5663484, Ricetec continues to violate India's cultural heritage and farmers' rights. Basmati grain has been liberated, basmati seed has not. However, rice grains come from rice plants and rice plants grow from rice seeds. If the grains are not novel and are prior art, how can the seeds and plants from which they come be novel?

Stopping this violation is the next step in the Basmati patent battle. The continued use by Ricetec of the name "Basmati" which embodies the unique cultural heritage and innovation, is a form of intellectual piracy. "Basmati" is not a generic name for all aromatic varieties, but a particular aromatic variety evolved in the foothills of the Himalaya. There are many other aromatic varieties in India which are not called Basmati.

4.11 The battle continues...(Wheat)

On 21st May 2003, the European Patent Office (EPO) in Munich granted a patent[27] with the simple title 'plants'. The patent holder is Monsanto, better known as the world's largest trader in genetically engineered plants. The patent covers wheat exhibiting a special baking quality. The cause of this special quality lies in a naturally occurring combination of genes, which reduces the percentage of protein in the grains. Wheat with these characteristics was originally developed in India. Now Monsanto holds a monopoly on the farming, breeding and processing of this type of wheat.

According to the European Patents Convention, patents cannot be issued on plants that are normally cultivated, any more than they are allowed to be issued on their seeds. In case of the Monsanto wheat patent, the EPO has clearly disregarded rules and law.

[27] *Patent no EP 445929 B1 granted to Monsanto*

International non-government organisation (NGO) Greenpeace alongwith Indian organisations like Research Foundation for Science, Technology and Ecology (RFSTE) and Bharat Krishak Samaj (BKS) on 27th January 2004 filed a petition at the European Patent Office (EPO), Munich, challenging the patent rights given to Monsanto on Indian landrace of wheat, Nap Hal. Patent expert Christoph Then, Aseesh Tayal of Greenpeace-India, Vandana Shiva of RFSTE and Krishna Bir Choudhary of BKS jointly signed the petition.

The petition stated that the technical features of the plants described in the patent are typical of seed which is grown normally and not allowed to be patented. The patent owners have not added anything new to what is state of the art; they have merely described known features of wheat plants in such a way that they are supposed to look as if they are new.

The activists added that "keeping the patent would mean illegal monopolization of important genetic plant resources," and could block cultivation of all related varieties.

"It's robbery of generations of effort in cultivation of Indian farmers." [28]

Though the fate of millions of Indian farmers was at stake and the wheat patent issued by EPO (European Patent Office) was a classic example of bio-piracy,, the government of India preferred to sleep over it, which ultimately forced three NGOs to swing into action and a Public Interest Litigation (PIL) was filed in the

[28] *Christoph Then - Greenpeace Genetic Engineering Campaigner*

Supreme Court of India by Dr. Vandana Shiva and Research Foundation for Science, Technology and Ecology (RFSTE) which came up immediately after notice was served to the four Ministries of the Government of India on 13th February 2004 by the Foundation attorneys. The attorneys argued for direction for protecting various Indian Wheat varieties and asked for immediate action. The question of immediate urgency was in respect of government challenging the grant of a patent[29]to wheat plants and products based on an Indian wheat, which Monsanto calls "Nap Hal" by 21st February 2004 in the European Patent Office (EPO). Under the EPO, objections to the grant of a patent have to be filed within 9 months, which would expire on 21st February 2004.

Assuring the Supreme Court bench presided by Chief Justice, Mr. Mukul Rohatgi, Additional Solicitor General assured immediate steps would be taken and whatever is necessary will be done in respect of protection of traditional Indian wheat including filing challenges to the patent in the EPO, since the matter concerned is of national interest and it is of grave concern to India.

The photograph of the wheat variety used in the patent (taken from European Gene Bank) along with an Indian wheat variety from the collection of Navdanya, a National Biodiversity Conservation Movement, founded by the petitioner, was shown to the Bench to highlight the similarity. While NGOs have been working nonstop to reverse Monsanto bio-piracy, the Government

[29] *Patent no. EP 445929 B1*

has taken no action to either identify the variety or challenge the patent.

Historical records are there right from mid 19th century, which show that Indian wheat was exported widely and Indian wheat seeds have traveled to different continents and the wheat used in the Monsanto patent is an Indian variety. The patent is a blatant example of bio-piracy.

Since a patent is an exclusive right based on invention, bio-piracy patents harm the country's interest in 3 ways - they rob us of our claim to our scientific, intellectual and creative abilities, by allowing indigenous innovations to be treated as "inventions" of the bio-pirates. For this reason alone they need to be challenged. But they also have serious economic consequences. In the short run, a bio-piracy patent robs us of markets overseas for our unique products. And if these trends are not challenged and IPR systems changed to prevent bio-piracy, over time we will be paying royalties for what belongs to us and is necessary for everyday survival.

The wheat patent granted by EPO has exposed the loopholes in the European patent laws. They allow patents on plants but not on plant varieties. The European Patent Convention forbids patents on plant varieties, but the European Directive from 1998 allows patents on plants that are not a variety. It is almost impossible for any person to draw a line between these two legal frameworks.

"You can claim something higher than the taxonomical status of a plant variety, but can't claim anything limited to a plant variety. It's logical insanity."[30]

The European patent itself shows that Monsanto patent is based on the "Indian variety", which they call Nap Hal. The European Wheat Database also shows that the "Nap Hal", the traditional cultivar/ landrace was collected from India and the USDA database shows that it has been collected from Uttar Pradesh (India) in 1948. Indian wheat has been documented and analysed and exchanged for more than a century.

Not challenging this patent will immediately rob India of export market for our wheat and wheat products. If this European patent on wheat is not challenged, India will not be able to export its own wheat and subsequently may have to be on the mercy of Unilever and Monsanto for Wheat seeds, breeding process, processing and for bread.

The decisive patent claims concern soft-milling wheat in which the relevant genes are either not present or not active. The patent means in fact a monopoly on the genetic characteristics of Nap Hal plants and on all wheat plants, which are crossed with Indian variety. In addition, it covers the flour gained from this wheat as well as "dough produced from flour..." and "biscuits or the like, produced from flour...".

In a patent filed for at the same time by Unilever/ Monsanto and issued in Europe back in 1996, claims were then made expressly

[30] *DiMauro, patent agent in Washington, as told to The Scientist*

to the use of flour to make traditional kinds of Indian bread such as chapattis[31]. The government had failed to challenge the 1996 chapatti patent. Monsanto's statement that these patents "no longer hold good" because Monsanto is trying to get out of the wheat business in Europe is blatantly false since a patent is a legal monopoly right which stands till it is challenged and revoked and if unchallenged will merely be transferred to the corporation which buys Monsanto's wheat business. And as long as it is not challenged and revoked, it will deny us our indigenous creativity and economic benefits based on that creativity.

The government must wake up and become a partner in stopping this bio-piracy. It must work with its citizens to protect the national legacy and national interest. If even our wheat and 'atta' and 'chapatis' do not belong to us, and others control them economically through intellectual property rights, the time is not far when the prayer "give us this day our daily bread" will become a prayer to Monsanto, instead of the Creator.

India cannot wait forever. A legal and administrative process must be organized to protect our indigenous knowledge and resources.

India cannot wait for the mercy of a corporate giant for its own seed. Plants are not inventions. Each and every international treaty including TRIPs/ WTO, Convention on Biological Diversity (CBD), and the Indian Patent Act, 1970, allows exclusion of

[31] *Patent no EP 518577*

plants from patentability in order to ensure access to all to our Traditional Knowledge and resources for livelihoods and food security.

4.12 Protection or Piracy

The agricultural genetic wealth of Third World countries like India has contributed tremendously to the development of new varieties of agricultural crops by the transnational seed industry in the North. With the onset of the green revolution and its attendant emphasis on uniformity, this genetic diversity is on the way to becoming extinct. Over 90 per cent of the collections of this diversity is in or under the control of the North, from where it is freely available to TNCs in the seed sector, who use them to develop new varieties, protect them under the present IPR regimes and sell them back to their original developers -- Third World farmers. Though the North, particularly the US, is accusing India and other Third World countries of piracy, if Third World contributions are taken into account, estimates of US piracy of Third World farmers' seeds alone amounts to royalty of much more than US $302 million.[32]

In India, over 70% of the seed sales are among farmers. The organised seed industry, including the public sector, cannot meet even 40% of the seed requirement of these farmers. The seed industry is looking towards stronger IPR protection for their industry, including preventing farmers from selling seed. In the US and Europe, they have lobbied for measures to prevent

[32] *Shiva, V 'IPRs, community rights and bio-diversity A new partnership for national sovereignty'*

farmers from using the seeds of one harvest for replanting. The world retail sales in seeds are expected to rise tremendously through the implementation of IPR regimes in countries which did not extend these regimes to agriculture and to seed till now.

Basically, the law related to IPRs in this regard has been exploited to afford protection to the investment incurred therein. It has encouraged illegal transfer of the knowledge base from the communities in the developing countries to the corporate houses of the developed countries for scientific analysis and creation of new products for global exploitation.[33]

Today the economic survival of third world communities is under severe threat from the new monopolistic protections being carved out for transnational corporations (TNCs), through IPR regimes. In fact, in free trade liberalization regime, which is supposed to end protectionism, IPRs are the main instrument of this new form of protectionism.

The new protectionism for TNCs through IPRs is becoming the major means of dismantling local and national economies as well as national sovereignty, through piracy of material as well as intellectual and cultural resources.

The thrust of western IPR regimes in the area of biodiversity is diametrically opposed to indigenous knowledge systems. Knowledge is considered to be the product of individual

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[33] *Darell A Posey, "Protecting people bio indigenous right to diversity", 38 Environment, 1996, p 6*

creativity, based on western scientific thought and systems of knowledge creation and gathering whereby the resource base is merely viewed as 'raw material'. In this paradigm IPRs represent the property rights to the products of mind, thereby resulting in knowledge and creativity being so narrowly defined that the creativity of nature and non-western knowledge systems have been ignored. Patents allow the usurpation of indigenous knowledge as a western invention through minor tinkering or trivial translation. The reason that the collective and cumulative innovation of millions of people of thousands of years can be 'pirated' and claimed as an innovation of western trained scientists or corporations, is because of two reasons. The first reason is the colonial hangover of the idea that science is unique to the west and indigenous knowledge systems cannot be treated as scientific.

Secondly, countries like the US where most pirated indigenous innovations are filed for patenting do not recognize the existing knowledge of other countries as prior art. Thus while patent regimes offer no protection to indigenous communities for their common innovation and their common resources, they allow the appropriation of their biodiversity and knowledge by scientists and commercial interests of cultures, including members of the modern scientific culture in their own societies.

IPR regimes in the context of 'free trade' and 'trade liberalization' thus become instruments of piracy at three levels:

Resource piracy in which the biological and natural resources of communities and the country are freely taken, without recognition or permission, and are used to build up global economies. For example, the transfer of basmati varieties of rice from India to build up the rice economy of the US; the free flow of neem seeds from the farms, fields and commons to corporations like W.R.Grace for export.

Economic piracy in which the domestic and international markets are usurped through the use of trade names and IPRs, thereby destroying local economies and national economies where the original innovation took place and hence wiping out the livelihoods and economic survival of millions. For e.g. US rice traders usurping European markets; Grace usurping the US market from small scale Indian producers of neem based bio-pesticides.

Intellectual and cultural piracy in which the cultural and intellectual heritage of communities and the country is freely taken without recognition or permission and is used from claiming IPRs such as patents, and trademarks even though the primary innovation and creativity has not take place through corporate investment. For instance, the use by US corporations of the trade name ' basmati' for their aromatic rice, or Pepsi's use of the trade name 'Bikaneri Bhujia'.

Pepsi Foods Ltd. entered this business initially as a trader, buying the 'bhujia' from local producers and selling it under their brand name of `Lehar Namkeen'. Pepsi sold the 'bhujia' at a

much lower price than local traders in a bid to grab the domestic market. This negatively affected the market of the local producers significantly.

Pepsi announced its intention of turning this cottage industry product into a high-technology product by starting to produce it commercially. Given the scale of its capital and its ability to absorb initial losses, Pepsi is capable of totally destroying this cottage industry and the livelihoods of the millions of people dependent on it.

4.13 Legal and political aspects of biopiracy

Patent law

A frequent legal misunderstanding with respect to biopiracy is the belief that pharmaceutical companies patent plants themselves. It is not possible to patent a living organism. Patents are instead taken out on specific chemicals isolated or developed from plants, often in combination with a stated and researched use of those chemicals.

In the United States, patent law can be used to protect "isolated and purified" compounds. In 1873, Louis Pasteur patented a type of "yeast" which was "free from disease"[34]. US courts have upheld patents on biological substances like adrenaline and even basic elements. Patents covering biological inventions have been treated similarly. However, the United States Patent and

[34] *US Patent no 141072*

Trademark Office (USPTO) notes that "a patent on a gene covers the isolated and purified gene but does not cover the gene as it occurs in nature".

It is also possible, under US law, to patent a cultivar. In other words, if you yourself cultivate a new variety of an organism which enhances certain properties of the organism, the variety can be patented (an example is the Enola bean case).

Bioprospecting contracts

A consequence of ethical debate and inter-governmental agreements has been the rise, since the 1990's, of bioprospecting contracts between biomedical research companies and the national governments of countries with high biodiversity. Bioprospecting contracts lay down the rules of benefit sharing and can potentially bring substantial royalties to lesser-developed countries. On the other hand, the fairness of such contracts has been a subject of debate. Unethical bioprospecting contracts (as distinct from ethical ones) can be viewed as a new form of bio-piracy.

4.14 Ethical issues: Biopiracy &Bioprospecting

There are several ethical issues involving bio-piracy and bio-prospecting. The major ethical issue involving bio-piracy and bio-prospecting is the issue of rights of ownership. No one individually can claim ownership of the earth and its rich biodiversity as it is the gift of nature to all living creatures including mankind.

Ownership rights regarding biodiversity may be -

Ownership Rights of National Governments

Under current international law, national governments own the biological resources present within their country, just as they own mineral rights or are responsible for human rights. The fact that this is the legal situation does not automatically make it ethically right, however. The case for national governments having an ethical right to ownership of their biological resources must be argued separately.

An advantage of national government ownership is that some national governments may be strong enough to defend those property rights (e.g. against pharmaceutical corporations). There is little point in assigning property rights to parties who are too weak to defend them.

One problem with National Government ownership is that there may be conflicts of interest in developing countries between national governments and local communities. High biodiversity tends to occur in the least developed regions. National governments tend to represent the more developed and urbanised populations of a country. Ethnic and historical gaps between governmentally well-represented groups and the populations of the least developed regions are not infrequent. The knowledge at issue in the biopiracy debates is the knowledge of these local communities, not the knowledge of their governments.

communities is public knowledge, whereas the completion or development of this knowledge creates something new which can be rightly patented for a limited period of time to the benefit of the pharmaceutical company.

Consequentialist Arguments

Conseqentialist arguments typically look at issues such as the maximisation of utility or other benefits. In the case of the Rosy Periwinkle, the most important consequences are the numbers of children's lives saved (and those of various other types of cancer sufferer). An ownership right entails the right to refuse use to anyone - in other words, a deontological approach to the biopiracy problem would logically entail that the owner of the biological resource could impose (for example) export licences and then refuse to grant these or restrict them excessively. To the consequentialist mind, it is intuitively intolerable that large numbers of children should have to die out of respect for a government's property rights.

The Rosy Periwinkle case is somewhat exceptional, however - the benefits arising from vincristine are unusual among pharmaceutical products. In the case of the Enola bean the consequentialist arguments clearly favour the interests of Mexican bean farmers. In the case of the Hoodia cactus the moral need for the drug is less obvious, while at the same time the payment of appropriate compensation to the San would probably have the consequence of finally destroying their fragile way of life.

Virtue-based arguments

A virtue-based approach might state that although assigning property rights turns out to be a futile and self-contradictory exercise, nevertheless there is something more fundamentally and intuitively offensive about taking shamanic knowledge from traditional communities and making millions out of this without paying anything back to the communities in question. A virtue-based approach can thus bypass the difficult rights issues while nevertheless appealing to fundamental concepts of virtue to enforce some kind of exchange between prospectors and indigenous peoples.

Whether it is trademarks, patents, or breeders' rights, Western style IPR regimes which have been created for corporate protectionism, are rapidly becoming new instruments for the destruction of the economy and of people's livelihood options. Stopping piracy through IPRs requires the invention of new instruments that deal with theft at the resource, the intellectual and the market level.

4.15 Stopping biopiracy

The last few years have seen a range of significant developments related to IPRs and biodiversity. At least two major international agreements, both legally binding, deal with this issue: The Convention on Biological Diversity (CBD) and the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) of the World Trade Organization (WTO). In addition, the World

Intellectual Property Organization (WIPO) and other international institutions are increasingly becoming active on the subject.

The CBD came into force in 1993. It awarded rights over biological resources to the countries in which those resources were located. One of the advantages of it was that it would enable lesser-developed countries to better benefit from their resources and Traditional Knowledge. Under the rules of the CBD, bioprospectors are required to obtain informed consent, and must share any benefits with the biodiversity-rich country. However, some critics believe that the CBD has failed to establish appropriate regulations to prevent bio-piracy.

At national level too, there is considerable activity. Several countries (India, Costa Rica, Fiji, Mexico, Peru, Philippines) are coming up with legislation or other measures, which respond to the above treaties or in other ways deal with the relationship between IPRs and biodiversity. Of particular interest to many countries especially in the developing world are the following-

- Protecting indigenous knowledge (traditional and modern) from being 'pirated' and used in IPR claims by industrial/commercial interests;

- Regulating access to biological resources so that historical 'theft' of these resources by the more powerful sections of the global society can be stopped and

long used to refer to aromatic rice grown in northern India and Pakistan to describe its rice varieties;

- Patents on technologies that threaten farming systems worldwide such as a US patent[40] granted to Delta and Pine Land Co. nicknamed the Terminator Technology for its potential of stopping regeneration after the first generation.

Patents on our crops are a new form of bio-colonialism. They need to be fought by changing patent and IPR laws, and TRIPs. Cases like the Basmati and Neem victory highlight what is at stake. But the place to stop bio-piracy is where it happens, through perverse IPR systems. Stopping bio-piracy demands shaping the appropriate laws for seeds, biodiversity and patents, nationally and internationally for the defense of our biological and intellectual wealth.

4.16 Implications of TRIPs for the Seed Sector

Seed is the basis of agricultural production and livelihood systems, along with land and water. Agriculture represents a sizeable portion of the GDP of most industrialised countries and an overwhelming portion of that in the South. IPR legislation – patents or '*sui generis*' plant variety protection – has spurned a tremendous concentration in the sector over the past decades in the North, accompanied by vertical integration of plant breeding with agrochemical and food processing corporations.

[40] *US Patent no 5723765 dt March 3, 1998 to Delta & Pine Land Co, USA*

markets overtaken by Trans-National Corporations (TNCs) and abusive patents. This will be at the expense of much untapped or unrecognised breeding potential among their own scientific and rural communities.

It also throws up serious contradictions with negotiations in the biodiversity related forum, such as the CBD and the Food and Agricultural Organisation (FAO), where Farmers' Rights and Community Rights over the biological materials they have developed and nurtured for millenia, are seen as *a priori* rights.

4.17 TRIPs Review – 1999

Even one year after the launch of the review, the recommendations for clarification of TRIPs made by developing countries were not acted upon. Finally, the deadline for implementation of A.27.3(b) in developing countries, 1st January 2000, arrived before any conclusions could be drawn from the mandated re-examination of the text. In sum, although the review has not been a failure, it does not seem to have been effective. Overall it has been a disappointment. The review started, but it did not end.

Least-developed countries have been given an extension until 1st July 2013 to provide protection for trademarks, copyright, patents and other intellectual property under the WTO's agreement, following a decision reached by member governments on 29th November 2005.

practice. This is to the long-term economic detriment of developing countries and is intellectually backward.

IPR systems evolved in industrial countries reflected in the TRIPs agreement only recognize western knowledge systems as scientific and formal and non-western knowledge systems are regarded as unscientific and informal. The creation of monopoly rights to biodiversity utilization through its claim to the creation of 'novelty' can have serious implications for erosion of national and community rights to biodiversity and devaluation of India's indigenous knowledge. TRIPs gives countries the option of formulating its own '*sui generis*' regime for plants as an alternative to patent protection. Collective rights can be a strong candidate for such '*sui generis*' systems for agricultural biodiversity and medicinal plant biodiversity. Therefore, it is crucial that community held and utilized biodiversity knowledge systems are accorded legal recognition as the 'common property' owned by the communities concerned. Building such an alternative is essential to prevent biodiversity and knowledge monopolization by an unbalanced mechanistic and non-innovative implementation of TRIPs.

Requirements for patentibility of Traditional Knowledge

The modern system[42] envisioned three fundamental requirements for information to be patented which are as follows-

1. Information must be new and useful invention
2. information must be invented by an inventor
3. invention with its details must be in written form.

[42] *Sec 6 – 10, Indian Patents Act, 1970*

The above said requirements must be satisfied prior to patenting any information. Moreover it is the invention which can only be patented under the law.[43] The discoveries and idea of patentability thereof is excluded as they are naturally occurring.[44] The US Supreme Court observed:[45]

> Thus, a new mineral discovered or a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated law of relativity, nor could Newton have patented the law of gravity. Such discoveries are "manifestations of nature – free to all people and reserved exclusively to none".

Thus it can be aptly remarked that only inventions that are the product of the inventive faculty of human beings are protected. So, from the very inception of the patent system, it is only "new and useful" inventions that were permitted for the grant of the patent.[46]

For the purpose of finding out whether the existing products and processes based on Traditional Knowledge can be treated as invention, it is necessary to examine the meaning of "new", "inventive step" and "industrial application". Since these terms, through judicial interpretation and practical application have

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[43] *Indian Patents Act, 1970, sec 2(j)*
[44] *sec.3(c) (d), ibid.*
[45] *Sydeny A. Diamond v. A.M.Chakrabarty, 447 US.303 (1980)*
[46] *David Young et al., "Terrell on the Law of Patents," (London: Sweet & Maxwell, 1994 p.4*

received universally accepted meaning but TRIPs agreement has left them undefined.[47]

The most important element of the concept of novelty is the non-disclosure of the invention to the public. The information must have been kept secret for the purpose of claiming novelty. The two requirements to find out whether an invention is disclosed or not are (a) prior publication and (b) prior use.[48] The requirement of inventive step is to demonstrate that the invention is the creation of the individual or individuals claiming monopoly. This is to ensure that substantial intellectual labour of the inventor is involved in the creation of the new inventions. So the test applied by the courts is to examine whether there is any application of inventive faculty of the inventor.[49]

The general and common use of neem, tulsi and turmeric, etc. is commonly known to the society and it is being used by the people since time immemorial. The information regarding them is non-documented information and it is passed from one generation to another generation.

The growing incidence of patenting of traditional medicines which first came to light when compositions of turmeric and neem were patented in the United States a few years ago raises several issues that would need serious consideration at the present

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[47] *Gopalkrishnan, N S "Impact of patent system on Traditional Knowledge" CULR at pp 219-25*
[48] *Supra n 3, sec 13-25 of US Patent Act*
[49] *M/s Bishwanath Prasad Radheshyam v M/s Hindustan Metal Industries, AIR 1982 SC 1444*

juncture. At the first instance, patenting of these traditional medicines in Western countries which have a large and growing market for alternative systems of medicines, would imply the death knell for the business prospects of the Indian enterprises exporting to these countries. This could arise since patent rights enable the patent holders to preclude any other commercial enterprise to conduct business in the country which grants them the patents.[50]

In a world increasingly characterized as the "global information society," we are witnessing, on the one hand, the rapid emergence of modern information technologies, and, on the other hand, an increasing awareness about "Traditional Knowledge" and its spiritual, cultural and economic values.

At a time when the wealth of nations lies increasingly in the knowledge which their peoples' hold, some groups are claiming their stake to an important element of this new information landscape, "Traditional Knowledge". However, what do we mean by "traditional" knowledge? How is it different from "modern" knowledge? Who are its holders? And, does it need protection in the "global information society?"

4.18 Traditional Knowledge and its protection

Traditional Knowledge is not limited to any specific field of technology or the arts. The entire field of human endeavour is

[50] *Dhar Viswajit, "Patenting of traditional medicine," The Economic Times, New Delhi, Aug. 11, 1999*

open to inquiry by traditional methods and the full breadth of human expression is available for its transmission. Intertwined within practical solutions, Traditional Knowledge often transmits the history, beliefs, aesthetics, ethics and traditions of a particular people. For e.g., plants used for medicinal purposes also often have symbolic value for the community. Many sculptures, paintings and crafts are created according to strict rituals and traditions because of their profound symbolic and/or religious meaning.

An immediate need is to establish a definition of Traditional Knowledge. What can be said for the time being and taking into account the purposes of WIPO's ongoing work, is that Traditional Knowledge is a multi-faceted concept that encompasses several components. What characterizes Traditional Knowledge is the fact that, generally, it is not produced systematically but in accordance with the individual or collective creators' responses to an interaction with their cultural environment. For this reason existing intellectual property mechanisms that are intended to function in a trade related context, may not fully respond to the essentially cultural nature of Traditional Knowledge.

In addition, Traditional Knowledge as a representative of cultural values is generally held collectively. This results from the fact that what can be sometimes perceived as an isolated piece of literature (a poem for example) or an isolated technical invention (the use of a plant resource to heal wounds, for instance) is actually an element that integrates a vast and mostly coherent

complex of beliefs and knowledge, control of which is not in the hands of individuals who use isolated pieces of knowledge but is vested in the community or collective. Furthermore, most Traditional Knowledge is transmitted orally from generation to generation and thus remains largely undocumented.

4.19 Indian Traditional Knowledge

There is no proper documentation of Traditional Knowledge in India and it is generally transferred from one generation to another orally. Though it is not systematically documented by the holders of TK, this information is contained in Ayurvedic texts and other religious scriptures regarding "palm leaves" etc. and their use is treated as documented information and it can easily be made available to the common people for examination and use.

In Vembur village, Tamil Nadu, India, there is a man by the name Thiru Palchamy Gounder who has been curing animals since he was sixteen. Developing his trade under the guidance of his guru, Kandavilswamy, this traditional veterinarian has gained fame within his region for being able to cure maladies such as fractures, abscesses, broken horns, swollen tongues, swollen faces and headaches. The treatments can last from two hours to a month, but the continued demand for these services provides little doubt as to the efficacy.

Associations of grass roots innovators are compiling such Traditional Knowledge to save it from disappearance, to promote respect and protection for it, to disseminate it and to add value to it through research. They see this as a possible avenue for a bottom up approach to development. For e.g. some associations hope to market TK-based products, after obtaining patent protection, for the benefit of the communities and innovators that have developed this knowledge.[51]

A related aspect of Traditional Knowledge is the method of its regulation established within the community. The system that governs the use and transmission of Traditional Knowledge within a community, which may bear remarkable similarity to formal intellectual property systems, may be referred to as customary or "informal" regimes.

Essentially, an informal regime is a system of rules, rights, and obligations which are generally not written down, but which achieve standing by the community's consensus to be bound by those rules. Customary law results from the accretion and sedimentation of repeated practices. By way of constant repetitions, it is assumed that those practices have been accepted by the community. These informal regimes are often monitored and enforced by elders, specialized experts, and religious leaders within the community.

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[51] *"Keeping knowledge alive Gounder's cattle cures" Honey Bee vol 9 No 4 Oct-Dec 1998*

4.20 Problems in protecting Traditional Knowledge

Holders of Traditional Knowledge are faced with a variety of difficulties. A serious problem is the reluctance of the younger generation to learn "old ways". The rejection of traditions by the young and the encroachment of modern lifestyles often result in the decline of Traditional Knowledge and practices. Either through acculturation or diffusion, many traditional practices are lost. Thus a primary need is to document and preserve the knowledge that is held by elders and communities throughout the world. The absence of willing heirs to this knowledge has resulted in the precarious situation where the death of a TK holder can result in the demise of an entire tradition and knowledge system.

Another difficulty facing holders of Traditional Knowledge is the lack of respect and appreciation for such knowledge. The true understanding of the value of TK is often overlooked within the modern reductionist approach to science. Unless information is developed under aseptic clinical conditions by scientific methods, it is sometimes viewed as "inferior". For example when a traditional healer provides a mixture of herbs to cure a malady, the healer may not describe the effects on the body as molecular interactions in the terms of modern biochemistry, but the healer bases his "prescription" upon generations of clinical trials undertaken by healers before him.

At times, modern society has displayed a prejudice against TK since it does not confirm to accepted methods of learning. Some

of the vernacular references to TK carry negative connotations. e.g. denigrating traditional medicine as 'primitive' and its practitioners as "quacks". However, after even a simple inquiry into the field, one is soon aware of the true vitality and value of this knowledge. Contemporary examples of this recognition are evident in the fields ranging from music to medicine, biology and ecology.

The protection of Traditional Knowledge is important for communities in all countries, particularly perhaps in developing and least developed countries. On one level, Traditional Knowledge plays an important role in the economic and social organization of those countries and placing value on such knowledge is a viable means of promoting a sense of national cohesion and identity. On another level, developing and least developed countries are engaged in implementing two international agreements – The Convention of Biological Diversity (CBD) and The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) – that may affect the manner in which knowledge associated with the use of genetic resource (whether traditional or not) is protected and disseminated as an outcome of the Uruguay Round negotiations, many developing and least developed countries have accepted the obligations under the TRIPs agreement to establish high standards of intellectual property protection as a means of promoting free trade. It may be argued that biodiversity and Traditional Knowledge associated with using it in a sustainable manner are a comparative advantage of those countries that are biodiversity

rich, enabling them to participate more effectively in global markets and thus rise above current levels of poverty and deprivation. This is an example of how protection of Traditional Knowledge at the national and international levels may be seen as a potentially powerful tool for advancing the integration of least developed countries into the global economy.

The ultimate analysis is that the patenting of traditional medicines and commodities on Indian traditional heritage and knowledge adds to the long list of polemical areas where WTO has to reconsider and rework thereon. A full review of TRIPs agreement must be undertaken and India along with other developing countries must present their case of exclusion of so called invention of traditional medicines based on Indian traditional heritage and knowledge from the existing ambit of patenting for once and all. It would be the best possible way to ensure the safety and to counter the biopiracy of the products and processes of the developing countries by the governmental and non-governmental dominant enterprises in the western countries.

Dr. R.A. Mashelkar of Council of Scientific and Industrial Research (CSIR), the man who shot into the spotlight for winning the turmeric patent war against the US has said that Traditional Knowledge in developing countries was facing a piquant situation as it was passed on from one generation to other but the world never knew about it. Indians were fully aware of turmeric's medicinal worth but the world was ignorant. He stresses that

"our goal should be to link our Traditional Knowledge to the globally acceptable international patent classification system, in order to build the bridge between knowledge contained in our ancient scriptures and today's computer screen of a patent examiner in Washington."[52] The Indian Government's move to create a Traditional Knowledge digital library on traditional medicinal plants will lead to creation of Traditional Knowledge resource classification as well. This would eradicate the existing problem of wrongful grant of patents since the examiner would be aware of the Indian rights to that knowledge.

The CSIR chief's philosophy can be summed up in these words – "A nation's future will be determined by its ability to convert knowledge into wealth and social good through the process of innovation. If the US had Silicon Valley in the 20th century, we will have Genetic Valleys in the 21st century. Ours should be a bio-click economy and not a brick and mortar economy or a brick and click economy."

[52] *An interview of Dr R A Mashelkar with Sharat Pradhan at Lucknow on 10-11-2000 – 89th Indian Science Congress - 'Intellectual Property Rights and Wrongs A Developing World Perspective'*