

INDIGENOUS KNOWLEDGE IS TECHNOLOGY: IT CONFERS RIGHTS ON COMMUNITIES

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Local communities own the bioresources in their region since it is they who maintain them and it is they who possess the knowledge of their properties and their use. In other words, they possess the technology about bioresources. This indigenous knowledge automatically confers on them certain rights including the right to share the benefits derived from the commercial exploitation of bioresources. It is known that it is the women rather than the men in rural and more so in adivasi communities that have the knowledge about bioresources. In that sense this technology is specially theirs. The importance of indigenous knowledge can not be understood when one realises that there are no rice or wheat plants nor did cotton or mustard find lying around in the forest. What are found in the forest are wild plants out of which communities of men and women over generations have bred races of several food and cash crops. These communities have bred out of the wild plants of the forests, the thousands of land races which are the basis of the world's agriculture. The land races bred by farming communities are the foundation material of modern plant breeding and global food security. These land races are the self-same varieties that plant breeders use to breed other varieties and for which they seek special and exclusive privileges like Plant Breeders Rights.

It needs to be remembered that farm women and men have not only created several thousand races of food and cash crops, they have also identified valuable genes and traits in these crops and maintained them over generations through a highly sophisticated system of crossing and selection. Communities have not only developed complex systems of pest management and biological control, they have identified and managed a series of genes conferring valuable traits for commercial and domestic needs. So it is that genes for traits as diverse as disease resistance, high salt tolerance, resistance to water logging and drought tolerance have been maintained in the repertoire of communities. Along with these commercial traits, characteristics like cooking time

, taste, digestibility, milling and husking characteristics like how much grain breaks during milling operations are recognised and maintained. Women, who have been the traditional custodians of the seed and responsible for its selection, are the repositories of this knowledge and in the true sense owners of this complex seed technology and know-how.

This work of genetic selection, maintenance and cross breeding is the result of innovative and creative scientific experimentation in the field. This work is in no way less than the scientific experimentation conducted by scientists in the experimental plots of agricultural research stations. We need to overcome the bias that most of us suffer from, that of acknowledging the research conducted by scientists in white coats working in laboratories of universities as 'Science' and dismissing the complex knowledge systems contained in rustic, rural communities as something infinitely less and not worthy of acknowledgement.

The fact is that there would be no plant breeders in long white coats working on experimental farms if it were not for the prior knowledge gained from rural communities. Indigenous knowl-

edge is not only the foundation of modern science in this and many other fields, it is also what could be described as the reference and referral centre for modern plant breeding.

Today, faced with the threat of global warming and climate changes across agricultural zones, scientists are on the look out for crop varieties that are more heat tolerant. The scientists do not acquire information about the location of heat resistant wheat or millet varieties by sitting in their expensively appointed laboratories and meditating for guidance. They acquire this information by going to deserts and hot regions and asking local farming communities about the varieties that grow in that region and that can withstand extreme heat. Armed with the benefit of indigenous knowledge, these scientists return to their labs and their experimental farms and engage in a breeding and selection program that will result in the combination of traits that they seek to achieve in the new variety that is to be designed for post global warming agriculture.

If credit had to be apportioned for the breeding of a new crop variety, then it could be shared perhaps as 80:20 or at least 70:30 between the farming and scientific communities. One could say quite easily that if the breeding of a crop variety entailed 100 steps, then indigenous knowledge contributed the first 80 or 70 steps and laboratory science contributed the next 20 or 30 steps. It stands to reason therefore that credit, reward and recognition for a new variety should be similarly shared. That is the reason why the claim to place Farmers Rights on par with Breeders Rights is such a natural claim. Farmers have a greater and more innovative share in the creation of new plant varieties than scientists. Their contribution must be recognised with at least the same degree of enthusiasm, if not more than that accorded to scientists.

The role of indigenous knowledge in the realm of medicinal plants is even more obvious than in the case of crop varieties. Knowledge about the characteristics of a particular plant and its properties as a healing substance, or stated differently, the technology of its use, is what gives medicinal plants their social and economic value. This technology of use has been acquired through a few thousand years of experience, trial and error and incremental refinement. As a result of this, communities have developed the knowledge of the plant, animal and mineral world to a mature and scientifically sound technology which exists in several forms, the best known of which is perhaps Ayurveda and Siddha. Apart from these, knowledge of the healing properties of plants is found in communities that live around the forest or close to nature. Tribal communities, island communities and others have developed their own knowledge base about the flora, fauna and mineral wealth of their region and use this knowledge to their socio-economic advantage.

It stands to reason that the technology pertaining to the medicinal uses of plants and animals belongs to indigenous communities and must be considered their property. It must be considered to be their property in the same way that a technology for making high grade chrome steel is considered the property of the Japanese company that developed it. It stands equally to reason that when someone wants to use indigenous technology to produce medicines from medicinal plants, they must first ask for permission and then agree on terms of payment for the use of this technology. When a company like Dabur or Baidyanath commercialises community knowledge and benefits financially from it, it should certainly pay royalty or make an arrangement for profit sharing. This would be even more the case if foreign companies wanted the use of this technology.

If a pharmaceutical giant like Merck were to show interest in the production of medicines based on Ayurvedic or tribal knowledge, it would explore the forest wealth of regions like India and Costa Rica via the local vaid or shamams. The scientist from Merck cannot make head or tail of medicinal flora when he is bioprospecting, if he does not have information from the vaid or the tribal ojha. Merck will begin to look for a cure for stomach ulcers in plants that local vaid uses for stomach ailments, and not in plants that they use for ailments of the eye. The scientist from Merck could not enter a tropical forest on his own and choose random plants, saying for example, the creeper with blue flowers could yield drugs against cancer or the shrub with yellow flowers could contain ingredients effective against diabetes. The plants in the forest or in the field, or for that matter along the banks of rivers or on the roadside, have value only because people have the special knowledge about their characteristics and the range of their utility. It is clear that Merck must pay for this technological know-how.

It stands unequivocally established that biological resources have a value only when accompanied by the technology of their use. It is equally clear that bioprospecting as an activity is only possible when indigenous technology is made available to those seeking access to biological resources for commercial use. Now that bioresources are becoming a highly sought after raw material in the era of biotechnology. We must create a framework for the just and proper use and appropriate payment for indigenous technology. At present the awareness and acceptance in India is inadequate with respect to the recognition of indigenous knowledge as valuable technology with a high price.

We need to address ourselves to a few important aspects in order to lay down a comprehensive national policy in this regard. These can be listed as follows.

1. Documentation of the location of biological resources at the regional and national level. If we want to use bioresources as the foundation for national growth, we must at least know where we have what and whether previously recorded populations of plants, animals and insects are healthy, threatened, on the verge of extinction or already extinct.

Along with the documentation of the bioresources, we must **document the local/ community knowledge** that exists about the various uses of these resources. This documentation which should be compiled as a **National Bioresource Register** will serve several functions.

a. The first is that of a data bank for people seeking access to information. This access should be made available for a fee accompanied by the conditions governing the use of this information. This is the normal practice with data banks every where.

The fee for bioprospecting must be levied and be paid into a **Community Gene / Technology Fund** in the dispensation of which, representatives of communities will have a say. It would be advisable to have a basic fee for the right to prospect irrespective of whether a viable product emerges from this exploration. A profit sharing formula should be worked out in addition, if a commercial product is developed, to pay for the use of Indian raw material and Indian / Indigenous technology.

b. The documentation can be used to stake the claim of communities or individuals for royalty payments for the transfer of indigenous technology. This data base can also be used to

identify communities which should be included in the National Authority that will govern the use of bioresources and implement conditions of the Convention on Biological Diversity (CBD) like Prior Informed Consent and Material/ Information Transfer Agreements.

c. Finally, this data bank will serve the important function of establishing community knowledge firmly in the public domain. This will provide the technical basis for rejecting patent claims that derive from indigenous knowledge. The recent furore over the American patent granted on the wound healing properties of Haldi is a case in point. As is also the patent granted to WR Grace for a Neem based pesticide. *Phyllanthus niruri*, called Bhoomi Amla in India is known in several Asian countries for its efficacy in treating liver ailments. A liver medication extracted from *Phyllanthus* has been patented by Bloomberg (USA), obviously derived from the traditional knowledge of Indian/ Asian communities. All these patents should have been challenged on the grounds that they derived from knowledge/ technology owned by indigenous communities. Furthermore, this knowledge was used unlawfully without either Prior Informed Consent or Material / Information Transfer Agreements, therefore a strong case exists for annulling these patents.

If India is to protect its interests, and the interests of its indigenous communities, it will have to be aggressive and proactive in laying down the guidelines governing the use of bioresources. It will then have to act resolutely to challenge any infringements. Apart from challenging the grant of patents in other countries, it would be advisable for Indian legislation to include clauses barring the grant of patents on any products or processes derived from indigenous knowledge. The knowledge of communities must remain in communities and not be privatised.

d. We must ensure that the information that is documented is banked in a government owned repository and is legally admissible in a court of law as evidence for prior knowledge. In order to strengthen the claim of indigenous communities over their knowledge base, our laws must admit Oral Tradition as documentation of use. This will be of importance when dealing with knowledge other than that documented in Ayurveda, like tribal knowledge or the knowledge existing in far flung island or hill populations.

2. **Drafting of national legislation.** New laws should be drafted quickly to deal with all aspects of bioresources and policy governing their use. These laws are to be drafted primarily in the context of two international treaties, the **Convention on Biological Diversity (CBD)** signed in Rio in 1992 and the **GATT/ TRIPs** which was finalised in 1994 and led to the formation of its successor the World Trade Organisation (WTO).

The new law to be formulated regarding the conditions of the CBD will have to take into account three principal areas. These are (i) to establish ownership rights over the biological resources found in the sovereign territory of India. This is necessary to overturn the earlier principle of Common Heritage of Mankind according to which all genetic resources were considered to be the property of everybody, with no particular ownership. (ii) To formulate the guidelines and structures for Prior Informed Consent according to which user parties will have to seek the permission of some kind of National Authority authorised to grant or refuse

access to genetic resources. Representatives of communities that have been responsible for maintaining genetic resources over generations and are the repositories of indigenous knowledge should be members of such a National Authority. (iii) The conditions for Material and Information Transfer Agreements will have to be laid down so that the use of biological resources is just, equitable and sustainable. This law would seek to ensure that indigenous communities are not denied their share of the profits that accrue from the commercial exploitation of the genetic resources that they have conserved.

The question of Intellectual Property Rights will have to be addressed in the CBD, although indirectly. Our position should be that India will not grant IPR protection over products and processes derived from indigenous knowledge. The rationale for this is that knowledge that belongs to communities should not be privatised. Whereas this knowledge can and should be used for commercial exploitation and the betterment of communities, it should not be monopolised.

With respect to GATT/ TRIPs or now WTO/ TRIPs, a **sui generis** legislation will have to be brought in to determine the use of genetic resources in the breeding of new crop varieties and the kind of Intellectual Property Rights that would be granted for the development of new varieties. It would be highly inadvisable in this case to follow the UPOV model for Plant Breeders Rights, as favoured by the government. The UPOV model is relevant for industrial economies where it was developed, not for agricultural economies like ours. UPOV respects the rights of breeders but has no mention of the rights of farmers who are the creator/ maintainers of the agricultural stock and land races without which modern breeders could not breed new varieties. Our sui generis legislation should place Farmers Rights on par with Breeders Rights and acknowledge and reward the contribution of farm men and women to the development of land races and therefore to the development of new varieties. The indigenous knowledge involved in the location of favourable genes needed for successful breeding work should be paid for. The recipient can be the **Community Gene / Technology Fund** mentioned earlier.

Another prospective legislation emanating from the WTO/ TRIPs will have to decide on an IPR regime for **micro organisms**. Micro organisms do not feature as much in the mainstream of community knowledge as plants and animals. Even then, there are pockets of specialised knowledge regarding their use in cases like human and veterinary care and the processing and preservation of many foods. Care will have to be taken that any IPR regime that India finally accepts, will have provisions for acknowledging and compensating the rights accruing from indigenous knowledge.