

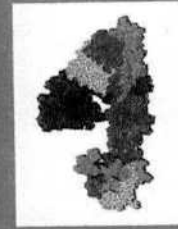
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The Public and Private Domains: Intellectual Property Rights in Traditional Ecological Knowledge

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versão original

THE PUBLIC AND PRIVATE DOMAINS: INTELLECTUAL PROPERTY RIGHTS IN TRADITIONAL ECOLOGICAL KNOWLEDGE¹

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1. TRADITIONAL ECOLOGICAL KNOWLEDGE (TEK): WHAT IT IS AND WHY IT'S USEFUL

According to Martha Johnson of the Dene Cultural Institute in Canada, Traditional Ecological Knowledge can be defined as: “a body of knowledge built by a group of people through generations living in close contact with nature. It includes *a system of classification, a set of empirical observations* about the local environment, and *a system of self-management* that governs resource use” [emphasis added].²

Following this definition, it would be incorrect to assume that the word ‘traditional’ necessarily implies ‘outdated’. Indeed, the term ‘traditional innovation’ should not be regarded as an oxymoron since, as noted by the Canadian indigenous peoples organisation, the Four Directions Council³:

what is ‘traditional’ about traditional knowledge is not its antiquity, but *the way it is acquired and used*. In other words, the social process of learning and sharing knowledge, which is unique to each indigenous culture, lies at the very heart of its ‘traditionality’. Much of this knowledge is actually quite new, but it has a social meaning, and legal character, entirely unlike the knowledge indigenous people acquire from settlers and industrialised societies.

In the context of TEK, two issues are hotly debated by anthropologists and continue to be controversial. The first is whether traditional knowledge and western science are clearly distinguishable or not⁴. The second issue concerns the alleged inherent environment-friendliness of traditional knowledge systems and livelihood practices. Without discussing in detail the merits and demerits of the range of views expressed in the literature, it is worth considering these issues briefly. With respect to the first, Johnson identifies various characteristics of TEK and of how it is generated, recorded and transmitted. Some but not all

² Johnson, M. “Research on Traditional Environmental Knowledge: Its Development and Its Role”. In M. Johnson (ed.) *Lore: Capturing Traditional Environmental Knowledge* (IDRC, Ottawa), p.4, 1992.

³ Four Directions Council *Forests, Indigenous Peoples and Biodiversity: Contribution of the Four Directions Council*. Submission to the Secretariat for the Convention on Biological Diversity, 1996.

⁴ For example see Agrawal, A. “Dismantling the Divide Between Indigenous and Scientific Knowledge”. *Development and Change*, 26, pp.413-439, 1995.

of these differ from Western scientific approaches.⁵ Thus, traditional ecological knowledge:

- is recorded and transmitted through oral tradition
- is learned through observation and hands-on experience
- is based on the understanding that the elements of matter have a life force. All parts of the natural world are therefore infused with spirit
- does not view human life as superior to other animate and inanimate elements: all life-forms have kinship and are interdependent
- is holistic (whereas Western science is reductionist)
- is intuitive in its mode of thinking (whereas Western science is analytical)
- is mainly qualitative (whereas Western science is mainly quantitative)
- is based on data generated by resource users. As such it is more inclusive than Western science, which is collected by a specialised group of researchers who tend to be more selective and deliberate in the accumulation of facts
- is based on diachronic⁶ data (whereas Western science is largely based on synchronic⁷ data)
- is rooted in a social context that sees the world in terms of social and spiritual relations between all life-forms. In contrast, Western science is hierarchically organised and vertically compartmentalised
- derives its explanations of environmental phenomena from cumulative, collective and often spiritual experiences. Such explanations are checked, validated, and revised daily and seasonally through the annual cycle of activities.

In the academic and activist literature dealing with this issue, perhaps the most commonly drawn distinction between the two lies in the tendency of non-Western traditional science to be holistic and of Western science to be reductionist.

Turning to the second issue, the view that a conservation ethic is a prevalent feature of the subsistence and resource management practices of present-day indigenous or native peoples and traditional communities is supported by a large number of field studies⁸. But some

⁵ Op cit., at pp.7-8.

⁶ Location-specific and cumulative.

⁷ At one point in time.

⁸ E.g. Bodley, J. *Anthropology and Contemporary Human Problems* (Benjamin Cummings Publishing, Menlo Park), 1976; Clad, J. "Conservation and Indigenous Peoples: A Study of Convergent Interests" *Cultural Survival Quarterly* 8, pp. 68-73, 1984; Martin, C. *Keepers of the Game* (University of California Press,

anthropologists claim that in many such societies, this ethic is either not observed by many of their members or is entirely non-existent.⁹ Roy Ellen¹⁰ argues that the many traditional societies observed to impact minimally on the environment do so merely because they are the smallest and most isolated ones. Kent Redford and Allyn Stearman¹¹ are also sceptical of the 'ecologically noble savage' hypothesis. They feel it is inappropriate to generalise about native peoples and traditional communities and make broadly applicable assertions about their environmental values. They also argue that expecting them to continue using *only* traditional technologies and low-impact subsistence strategies places an unfair burden of responsibility on them and implicitly denies the right of such peoples to develop according to their own preferences.¹²

Nevertheless, academic studies of such communities provide ample evidence that the protection of traditional ecological knowledge will provide significant environmental benefits as well as possible commercial applications. For example, in many forest areas, indigenous peoples plant forest gardens and manage the regeneration of bush fallows in ways which take advantage of natural processes and mimic the biodiversity of natural forests. Researchers are increasingly aware of the extent to which traditional natural resource management can enhance biodiversity, and in this way have realised the extent of anthropogenic landscapes even within 'pristine' tropical forests.¹³ Much of the world's crop diversity is in the custody of farmers who follow age-old farming and land use practices that conserve biodiversity and provide other local benefits, such as: the promotion of diet diversity, income generation, production

Berkeley). 1978; Reichel-Dolmatoff, G. "Cosmology as Ecological Analysis: A View from the Rain Forest" *Man* 11: pp.307-318, 1976.

⁹ Hames, R. "Wildlife Conservation in Tribal Societies". In: Oldfield, M.L. and Alcorn, J.B. (eds.) *Biodiversity: Culture, Conservation, and Ecodevelopment* (Westview Press, Boulder, San Francisco and Oxford), pp.172-199, 1991; Kalland, A. "Indigenous - Local Knowledge: Prospects and Limitations". In: Hansen, B.V. (ed.) *Arctic Environment: Report on the Seminar on Integration of Indigenous peoples Knowledge, Reykjavik, September 20-23, 1994* (Ministry for the Environment (Iceland), Ministry of the Environment (Denmark) and The Home Rule of Greenland (Denmark Office), Reykjavik and Copenhagen), pp.150-167, 1994.

¹⁰ Ellen, R. "What Black Elk Left Unsaid: On the Illusory Images of Green Primitivism". *Anthropology Today* 2, pp.8-12, 1986.

¹¹ Redford, K.H. "The Ecologically Noble Savage". *Cultural Survival Quarterly* 15, pp.46-48, 1991; Redford, K.H. and Stearman, A.M. "Forest-Dwelling Native Amazonians and the Conservation of Biodiversity: Interests in Common or in Collision?" *Conservation Biology* 7, pp. 248-255, 1993; Stearman, A.M. "Neotropical Hunters and their Neighbors: Effects of Non-Indigenous Settlement Patterns on Three Native Bolivian Societies". In: Redford, K. H. and Padoch, C. (eds.) *Conservation of Neotropical Forests: Building on Traditional Resource Use*, pp 108-128. Columbia University Press, New York, 1992.

¹² Redford op cit.; Kalland op cit.

¹³ For example, see Hecht, S.B. and Posey, D.A. "Preliminary Results on Soil Management Techniques of the Kayapo Indians". *Advances in Economic Botany*, 7, pp.174-188, 1989; Posey, D.A. "The Science of the Mebengokre". *Orion*, Summer, pp.16-23, 1990.

stability, minimisation of risk, reduced insect and disease incidence, efficient use of labour, intensification of production with limited resources, and maximisation of returns under low levels of technology. These ecologically complex agricultural systems associated with centres of crop genetic diversity include traditional cultivars or ‘landraces’ that constitute an essential part of the world’s crop genetic heritage, and non-domesticated plant and animal species that serve humanity in various ways.

While scientific and commercial interest in TEK and resource management practices have never been greater, human cultural diversity is eroding at an accelerating rate as the world steadily becomes more biologically and culturally uniform. According to the IUCN Inter-Commission Task Force on Indigenous Peoples¹⁴, “cultures are dying out faster than the peoples associated with them. It has been estimated that half the world’s languages – the storehouses of peoples’ intellectual heritages and the framework for their unique understandings of life – will disappear within a century”. According to the Task Force, the main threats include genocide, uncontrolled frontier aggression, military intimidation, extension of government control, unjust land policies, cultural modification policies, and inappropriate conservation management. Awareness of the destruction of traditional knowledge systems is increasing but there is some debate concerning the most appropriate way to respond. Many academics and development workers have urged that traditional knowledge be documented before it disappears. While recording traditional knowledge before it falls out of use may often be the only way to prevent it from being lost completely there are potential dangers with archiving traditional knowledge in national and international databases to the exclusion of locally-based initiatives.

1. Traditional knowledge is not static but evolves. Storing it in *ex situ* collections fixes it temporally so its relevance will diminish over time unless it is constantly updated. As Arun Agrawal argues¹⁵, “divorced in archives from their cultural context, no knowledge can maintain its vitality or vigour”.
2. Such an approach is problematic in the sense that it may deflect attention from the far more important priority of protecting traditional knowledge *in situ* which requires that urgent attention be given to the cultural, spiritual and physical well-being of the knowledge holders

¹⁴ IUCN Inter-Commission Task Force on Indigenous Peoples, *Indigenous Peoples and Sustainability: Cases and Actions* (IUCN & International Books, Utrecht), 1997, p.60.

¹⁵ Agrawal, A. op cit. at 429.

and their communities.

3. Documenting traditional knowledge is unethical *and* counter-productive if the intellectual property rights of the generators and holders of such knowledge are ignored by those doing the recording and if the archives are inaccessible to the communities providing the knowledge to the archives. It seems paradoxical but it is often the case that traditional knowledge is respected more than the people who generate and share it. According to Akhil Gupta¹⁶, “‘natives’ serve as informants and sometimes collaborate in eliciting data; significantly, they are rarely the ‘experts’ who compile, systematise, and store the data in retrievable form”.

It is perhaps out of such concerns that representatives of indigenous peoples attending the Workshop on Traditional Knowledge and Biological Diversity organised by the Secretariat of the Convention on Biological Diversity in November 1997 went so far as to call for “a moratorium on the registering of [traditional] knowledge”. Fortunately, some scientific organisations are sensitive to the concerns of indigenous peoples. The International Society for Ethnobiology recently drafted a set of *Guidelines for Research, Collections, Databases and Publications*. According to these Guidelines no research, collection, database or publication shall be undertaken without the prior informed consent of “all potentially affected communities of indigenous peoples or traditional societies”. Also,

no member of the International Society for Ethnobiology (ISE) or affiliated organizations of ISE shall undertake any research, collection, database or publication derived or obtained from information or materials from any community that has requested a moratorium on any relevant research, collection, database or publication.

2. THE LEGAL STATUS OF TRADITIONAL ECOLOGICAL KNOWLEDGE: TEK AND THE BIODIVERSITY CONVENTION

¹⁶ Gupta, A. *Postcolonial Developments: Agriculture in the Making of Modern India* (Durham & London, Duke University Press), at 173, 1998.

The Convention on Biological Diversity is the first international treaty to acknowledge the vital role of traditional knowledge, innovations and practices in biodiversity conservation and sustainable development as well as the need to guarantee their protection, whether through IPR protection or other means. Article 8 (j) requires the State Parties of the CBD to “respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote the wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices.”

Use of the terms ‘knowledge’, ‘innovations’ and ‘practices’ in addition to ‘traditional’ is very significant. As suggested earlier, there is a tendency to assume that ‘traditional’ implies any or all of such notions as ‘time-honoured’, ‘historical’, ‘inflexible’ and ‘static’. On the contrary, ‘traditional innovations’ is not an oxymoron. Perhaps the most significant word of all, though, is ‘holders’, which may not imply ownership but minimally suggests the existence of legal entitlements.¹⁷ The Article seems to affirm, then, that the holders have *rights* over their knowledge, innovations and practices, *whether or not they are capable of being protected by IPRs*. If they are not capable of being protected by the existing IPR system, there is at the very least a *moral obligation* for governments to safeguard these entitlements either through a new IPR law or by other legal means. These moral obligations should also extend to users of traditional knowledge, innovations and practices. Minimally giving effect to these obligations should be through *prior informed consent* and observation of *codes of conduct*, such as those developed by some scientific organisations.¹⁸

3. TEK IN THE PUBLIC AND PRIVATE DOMAINS

It is frequently assumed that *ownership* and *property rights*, including intellectual property

¹⁷ “[W]hen the Convention discusses knowledge, innovations and practices and entitles local and indigenous communities to be their *holders*, it links these concepts with the vocabulary for the definition of the proprietor of an intellectual property right” Costa e Silva E. da “The Protection of Intellectual Property for Local and Indigenous Communities”. *European Intellectual Property Review*. 17(11), pp. 546-549, 1995 [emphasis in original].

¹⁸ A good example is the International Society for Ethnobiology’s “Code of Ethics and Standards of Practices”, and the Biodiversity and Ethics Working Group of Pew Conservation Fellows’ “Proposed Guidelines for Researchers and Local Communities Interested in Accessing, Exploring and Studying Biodiversity”.

rights, are alien concepts in indigenous and traditional societies.¹⁹ Such communities and peoples, it is said, are characterised by a strong sharing ethos with respect to biological resources and biodiversity-related knowledge. In fact, the anthropological literature reveals that such concepts – or at least close equivalents to them – may well be no less common than the sharing ethos.²⁰ Proprietary systems *do* exist in many traditional societies, but it would be erroneous to assume that there is a generic system of collective intellectual rights which is common to them all. Being locally specific, these systems display a far greater diversity than those that are available to protect the valuable intangibles of industrial firms. According to the Canadian indigenous peoples organisation, the Four Directions Council²¹:

Indigenous peoples possess their own locally-specific systems of jurisprudence with respect to the classification of different types of knowledge, proper procedures for acquiring and sharing knowledge, and the rights and responsibilities which attach to possessing knowledge, all of which are embedded uniquely in each culture and its language.

This suggests that it may not be correct to suppose that patents, copyrights, trade secrets and trademarks are entirely unfamiliar concepts to native peoples and traditional rural communities. The Indian ecologist Madhav Gadgil finds that “IPRs... date right from the hunter-gathering stage. The way in which these were enforced is analogous to the institutions of ‘trade secrets’ of today”.

In an anthropology literature review by a recent Oxford University postgraduate, Tom Griffiths, some fascinating findings are revealed by studies on traditional knowledge and intellectual property:

- The Shuar view shamanic knowledge as an ‘exchangeable commodity’ which can be purchased. The tangible, alienable nature of specific items of shamanic knowledge is revealed by the fact that this knowledge can be bought, sold, lent and subject to theft.

¹⁹ See Biothai & Genetic Resources Action International *Road Maps to a Peoples’ Sui Generis Rights Plan of Action* (Biothai and GRAIN), 1998.

²⁰ Cleveland, D.A. & Murray, S.C. “The World’s Crop Genetic Resources and the Rights of Indigenous Farmers”. *Current Anthropology*, 38(4), pp. 477-496, 1997; Griffiths, T. *Indigenous Knowledge and Intellectual Property: A Preliminary Review of the Anthropological Literature*. (Unpublished paper commissioned by Working Group on Traditional Resource Rights, Oxford), 1993.

²¹ Four Directions Council *op cit*.

(Griffiths 1993, based on Hendricks 1988)

- Miskito healers value their cures as ‘private property’ (see Dennis 1988)
- ‘Secrets turn knowledge into property that can be exchanged ... people throughout Melanesia swap or sell their secrets and/ or their knowledge copyrights for pigs, money, and other goods’. (Lindstrom 1990)
- The personalised nature of healing knowledge can induce a *de facto* private knowledge of botanical resources . For the healer, these secret plants are a symbolic extension of his secret knowledge. Langdon (1986) states that each Siona shaman owns his personal cultivar of yagé which is co-owned by his spirit guide.
- In Australian aboriginal societies ritual knowledge is directly associated with the rights in a geographic territory and rights in women (e.g. Bell 1983; Moyle 1979; Bern 1979)

As in Western societies the acknowledged creators are not necessarily the intellectual property owners. For example, in referring to Australian Aborigines Golvan (1992) states:

Under Aboriginal law, the rights in artistic works are owned collectively. Only certain artists are permitted within a tribe to depict certain designs, with such rights being based on status within a tribe. The right to depict a design does not mean that the artist may permit the reproduction of a design. This right to reproduce or re-depict would depend on permission being granted by the tribal owners of the rights in the design.

Even so, it is quite another matter to suggest that IPRs, particularly patents, are suitable mechanisms to protect traditional knowledge. A great deal of traditional knowledge cannot be traced to a specific community or geographical area. Thus, no identifiable group of people may exist in which rights to such knowledge can be vested. In those cases where the sources of knowledge can be attributed to single individuals or communities, or to kinship or gender-based groups, there are practical obstacles which make patenting an unattractive option. While TEK of this kind may be patentable in theory, it is most unlikely that the

potential applicants could bear the cost of acquiring and then defending a patent.

Tremendous controversy has arisen because while the patent system is to all intents and purposes unavailable for indigenous communities to use, there have been numerous cases of inventions derived from TEK being patented. This is why a lot of indigenous peoples' representatives condemn the patent system as being predatory. Are they right to think so? This is an issue I would now like to talk about.

Let's consider the case for the defence. First, one might reasonably argue that the high expense of acquiring and enforcing patents does not make the system inherently unjust if these high costs are unavoidable. The patent system can hardly be blamed for the fact that many potential users either lack sufficient financial resources or are unwilling to take the risks of applying for patents in exchange for future gains that may never materialise.

Second, companies holding patents derived from knowledge acquired from indigenous communities cannot prevent members of these communities from continuing to use their knowledge, and as far as I know such companies have never attempted to do so. So just because a United States company holds a patent for, say, a stable storage form of neem pesticide, this does not prevent Indian farmers from continuing to use neem tree seeds as a pesticide as they have done for generations. As long as the patent requirements of usefulness, novelty and inventive step are strictly upheld by patent offices there is no reason for traditional communities to feel exploited since if their knowledge were simply copied there would be no invention to patent.

Third, some of those who condemn the corporate 'biopirates' weaken their position by failing to build their case on the existence of traditional proprietary systems, while assuming that all TEK is communally shared and traceable to no entity more specific than the (usually anonymous) 'local community' or 'Third World farmers'. In effect, they seem to be saying that traditional knowledge is, by its very nature, a part of the public domain. This surely is just what the pharmaceutical and seed companies want to hear. If traditional knowledge is not secret and is not even considered by the holders themselves to be anybody's legal property, then it is reasonable to assume that nobody's rights are being infringed by publishing this knowledge or commercially exploiting it. These advocates of indigenous rights are then forced to resort to moral arguments to claim that *traditional* knowledge should enjoy a privileged legal status *vis-à-vis* other public domain knowledge originating from *non-traditional* sources such as public or private sector research programmes. This position is quite difficult to sustain. To take the example again of neem seeds, at least some (and possibly most) of the 150 plus

neem-related inventions embody uses identical to those of the farmers but the products and/or methods of extraction are different. In such cases it can safely be assumed that the existence of relevant traditional knowledge was one of the essential intellectual inputs for the inventions to happen. Does this mean that the knowledge of Indian farmers is being pirated by the holders of these 150 patents? To be consistent, those arguing in favour would also have to agree that a temporary monopoly right to an incremental improvement is inherently exploitative of *all* people that had contributed to the state of the art (or more accurately all the states of the arts) relevant to the patent. This position is difficult to sustain on both theoretical and practical grounds. The state of the art in this case includes not only the knowledge that neem seed extracts are an effective pesticide, but also the industrial techniques that can be applied to produce neem derivatives that are in one way or another more useful than the natural product.²²

Two political philosophers, Anthony Stenson and Tim Gray²³, in their paper on “Cultural Communities and Intellectual Property Rights in Plant Genetic Resources” made evident how difficult it is to argue convincingly in favour of compensating communities when advocates view traditional knowledge as if it is the property of nobody. Taking at face value the same conception of traditional knowledge as these advocates, they concluded that moral entitlement theories do not justify indigenous communities’ property rights over traditional knowledge, by which of course they really mean ‘public domain collective traditional knowledge’.

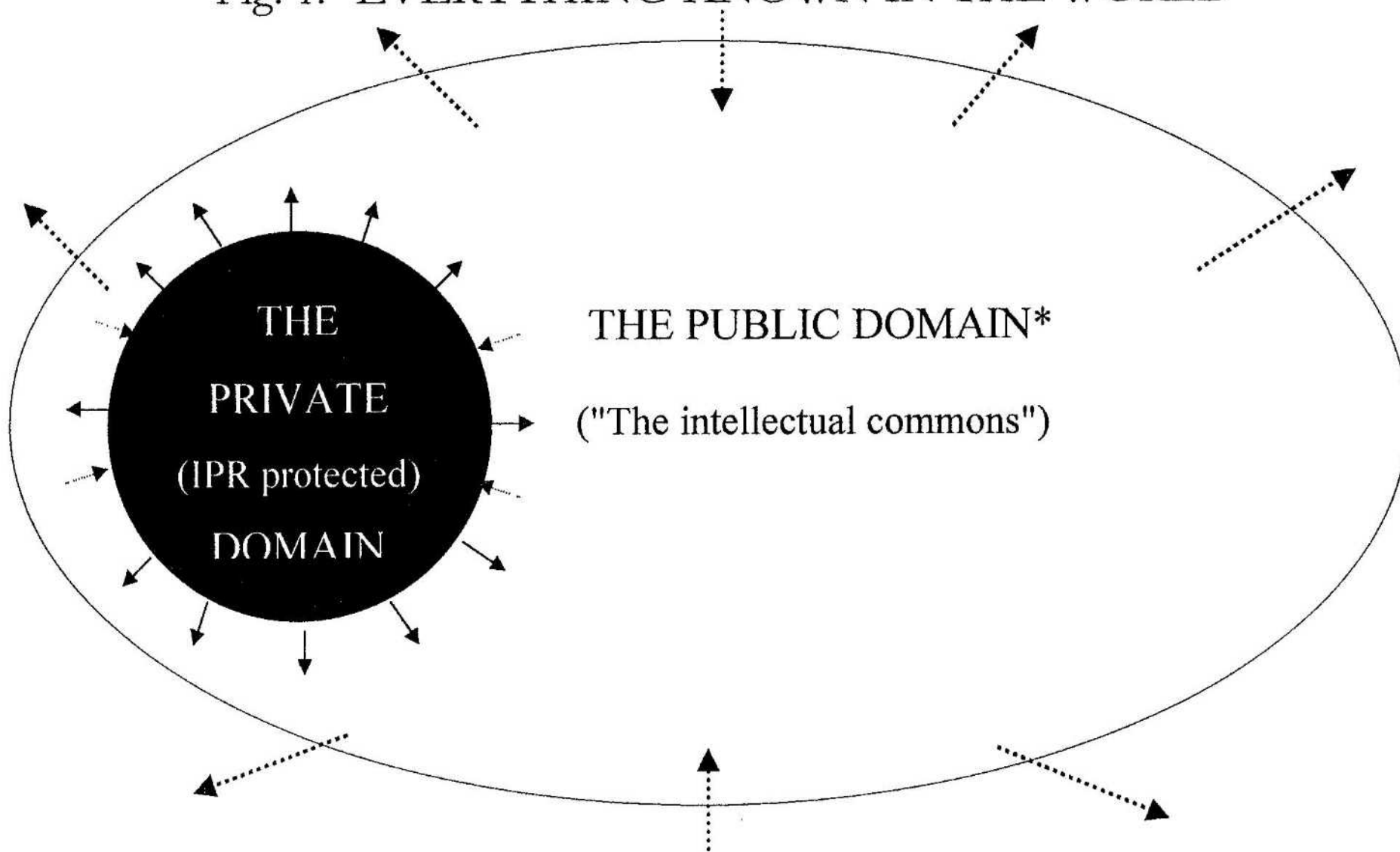
Three responses to Stenson and Gray’s position can be made from a pro-indigenous rights perspective. But before providing these, we must – conceptually speaking – take much of the so-called public domain TEK back to where it belongs, in the private domain of native peoples and traditional communities. **Figure 1** shows how Western law treats knowledge existing in the world either as private knowledge that is protected by IPRs, or public domain knowledge constituting an intellectual commons. Supporters of a strong IPR system argue that a legal system which temporarily excludes knowledge from the public domain will result in a long-term increase in the size of the public domain. This is due, it is said, to the fact that IPR

²² Having made this point, it should still be noted that two of the most controversial neem patents – US patents 4,556,562 (“Stable anti-pest neem seed extract”) and 5,124,349 (“Storage stable azadirachtin formulation”) – both describe fairly basic chemical processes that could conceivably render the invention “obvious” to one who is skilled in the art (see Kadidal op cit).

²³ Stenson, A. and Gray, T. “Cultural Communities and Intellectual Property Rights in Plant Genetic Resources”. In: Hayward, T. and O’Neill, J. (eds.) *Justice, Property and the Environment: Social and Legal Perspectives* (Ashgate Publishing, Aldershot and Brookfield), pp.178-193, 1997.

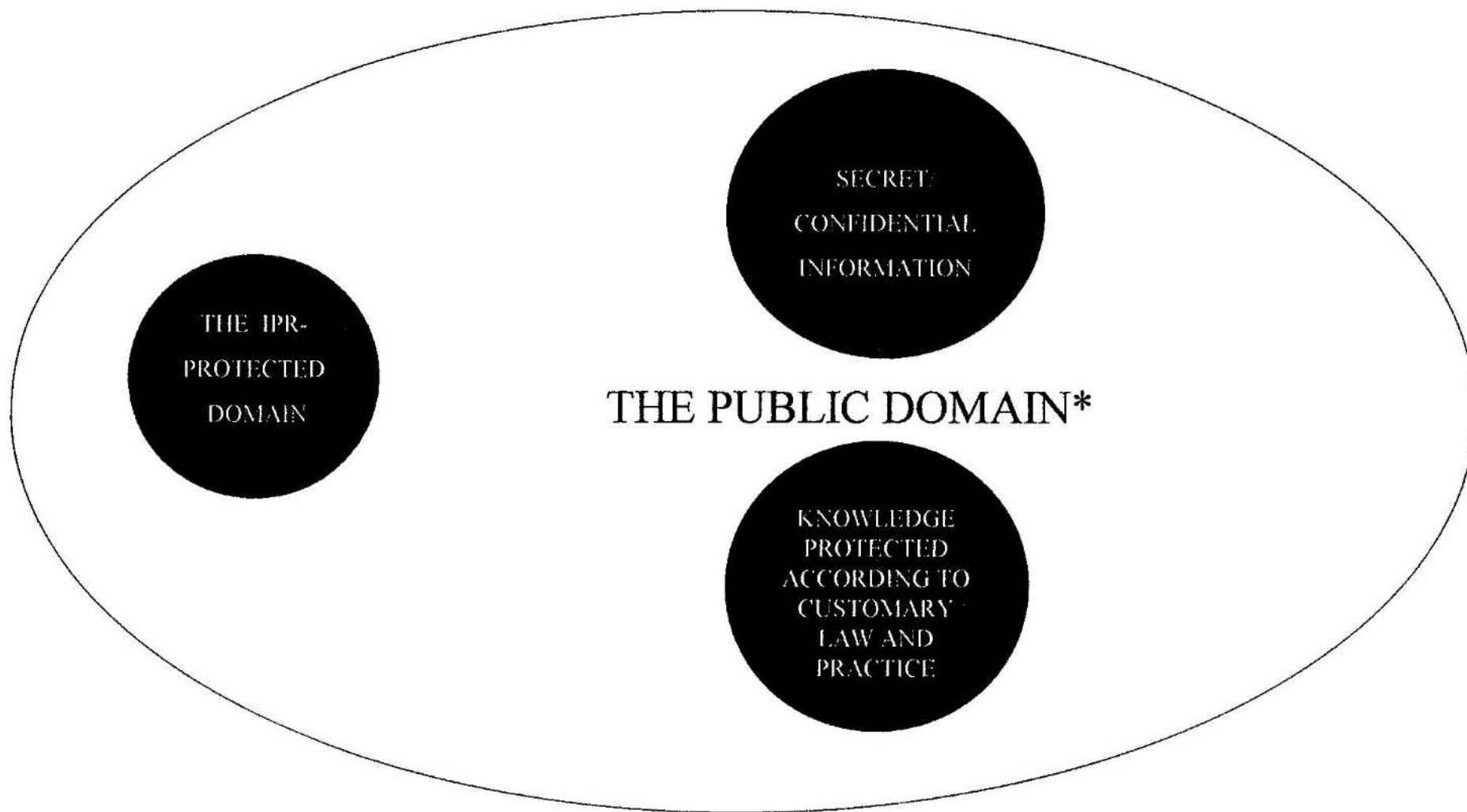
monopolies establish legal incentives to create and innovate. Without these incentives less creation and innovation will happen. Ironically, many critics of the IPR system, while disagreeing about the positive effects of IPRs, appear to hold to this IPR-protected/public domain dichotomy of global knowledge. Instead, I argue that there are other private domains, and that it is the failure of the law to respect these that is the real problem with the IPR regime (see **Figure 2**).

Fig. 1: EVERYTHING KNOWN IN THE WORLD



<p>→</p> <p>PATENTS - 20 YRS. COPYRIGHTS - LIFE PLUS 50-70 YRS.</p>	<p>▶</p> <p>EXTENDED COPYRIGHT TERMS SOME TRADEMARKS? PUBLICITY RIGHTS? DATABASE RIGHTS?</p>	<p>* ALL KNOWLEDGE THAT EXISTS <u>EXCEPT</u> THAT TO WHICH ACCESS AND/OR USE IS RESTRICTED BY SECRECY, UNEXPIRED IPRS OR CUSTOMARY PRACTICE</p>
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Fig 2: THE PRIVATE/PUBLIC DOMAINS IN THE *REAL* WORLD



* ALL KNOWLEDGE THAT EXISTS EXCEPT THAT TO WHICH ACCESS AND/OR USE IS RESTRICTED BY SECRECY, UNEXPIRED IPRs OR CUSTOMARY PRACTICE

1. ***Not all TEK is in the public domain.*** The first response, then, is that while Stenson and Gray's opinion may have merit in the case of widely-distributed and long-documented traditional knowledge, it does not apply to more localised knowledge held by small numbers of people or an individual. These people have rights to this knowledge that are recognised in an international treaty with over 170 state parties (i.e. the CBD).
2. ***Unconsented placement of knowledge into the public domain does not in itself extinguish the legitimate entitlements of the holders and may in fact violate them.***
Second, the question of *how* traditional knowledge usually falls into the public domain cannot be overlooked. When we consider that the basic human rights of indigenous peoples have been abused for centuries, and that they continue to be politically, economically and socially marginalised, it would be naïve to suppose that it has ever been normal practice for their knowledge to be placed in the public domain and disseminated, with their prior informed consent *and* with respect for their customary laws and regulations concerning access, use and distribution of knowledge. Unless they have agreed to share such knowledge and are fully aware of the legal implications of doing so, documenting and/or disseminating their knowledge is surely morally wrong.
3. ***TEK holders should be compensated for the wider benefits of doing so.*** Third, with respect to collective traditional knowledge that has been in the public domain for so long that no legitimate rights claimants exist, it is still possible to argue that indigenous peoples and traditional communities should be compensated as an incentive for maintaining their biodiversity-friendly knowledge and resource management systems. This need not be justified on moral grounds at all, since the industrial users of plant genetic resources would benefit as would the biosphere and humankind.

Following a more critical perspective, it is tempting to draw an analogy between the taking of indigenous peoples' knowledge without permission and patenting inventions based upon this knowledge, and seizing their territories and displacing them from their homelands. In each case, it seems that territories, ecosystems, plant varieties (whether domesticated or not) and traditional knowledge, are treated as if they are *res nullius* (the property of nobody) before their "discovery" by explorers, scientists, governments, corporations, and conservation

organisations.²⁴ During the Colonial period, sparsely populated “wildernesses” were regarded as being to all legal intents and purposes vacant prior to colonisation. Settler societies, such as in Australia, built up legal systems based upon the *terra nullius* (the land of nobody) doctrine. According to such a view, open access is the rule for land, traditional knowledge and resources, whereas enclosure is the rule as soon as these are proved to have economic value.

The analogy is powerful, but can be faulted on the grounds that whereas lands and territories are finite, new knowledge is constantly being generated and is, at least in theory, inexhaustible. Moreover, although it is often said that for indigenous peoples knowledge, resources and territories are tightly linked in both cultural and spiritual terms, it seems doubtful that use of another person’s (or community’s) knowledge harms that person or community in a way that colonising their land would so obviously do. Nevertheless, it does seem to reflect indigenous peoples’ views – based as they are upon bitter historical experience – more accurately than can be achieved by appeals to the conventional arguments favouring intellectual property rights for holders of useful knowledge. The outrage felt by many indigenous peoples in South America about the US plant patent on a sacred plant, ayahuasca, is legitimate, and makes clear that resorting to the arguments of Western thinkers who justify IPRs, like Hegel and Locke, is not always fruitful or even relevant.²⁵ Also, it accurately reflects the sentiments of indigenous peoples who see Western law as an imposition which seems to cancel out their own custom based regulations. After all, if indigenous peoples in WTO member states are required to accept the existence of patents that they are economically prevented from availing themselves of, why shouldn’t their own knowledge-related regimes be respected by others. It is perhaps this point, that one type of IPR system is being universalised and prioritised to the exclusion of all others, that causes the most legitimate disquiet among those who are unable to see how they can benefit from this system.

One last but very important point to make is that farmers in most developing countries (and in some industrialised countries as well) still tend either to save their own seeds or acquire them from other farmers. In countries where neither the public or private sectors play a dominant role in seed production or distribution, such as in many African countries, seed

²⁴ Dutfield, G. (ed.) “Rights, Resources and Responses. In: Posey, D.A. (General Editor) *Cultural and Spiritual Values of Biodiversity*. United Nations Environment Programme, Nairobi. (Chapter 11), forthcoming.

²⁵ It is in fact very difficult to avoid ethnocentricity in discussing the application of IPRs to non-Western systems of knowledge. According to Thurow “[t]he idea that people should be paid to be creative is a point of view that stems from the Judeo-Christian and Muslim belief in a God who created humankind in his own image. It has no analogue in Hindu, Buddhist, or Confucian societies.” Thurow, L. “Needed: A New System of Intellectual Property Rights. *Harvard Business Review*, Sept.-Oct., pp. 95-103, 1998.

saving and sharing will probably continue to be prevalent means of seed acquisition for several years to come. To attempt to eradicate these practices through expansive IPRs would very likely cause serious economic and social impacts for farming communities. It should be noted in this context that according to the IPR systems of the industrialised countries, the private property rights afforded by patents and plant variety rights to a varying extent restrict or even eliminate the right to continue such customary practices of seed acquisition and exchange, and the trend is very much towards complete elimination.

4. CONCLUSIONS

In conclusion, I would argue that if the purpose of an IPR system is to protect the rights of knowledge holders *for the public good*, it should be possible for all those who create useful knowledge with economic value to secure its protection. To the extent that present-day IPR systems cannot protect traditional knowledge whose dissemination is beneficial to the wider community²⁶ and that has *industrial application*, these systems are failing to operate optimally in terms of their public function. It is fully understandable that the disproportionate legal treatment of commercially useful knowledge held by companies and similarly useful knowledge held by indigenous peoples, seems unjust to the latter. When large industrial concerns in new technological fields find the IPR system cannot protect their innovations, it seems that new forms of IPRs are created in response. Traditional knowledge holders, on the other hand, do not have the political influence to change the system.²⁷ Also, they are rarely successful in ensuring that their own custom-based intellectual property rights systems are observed by others. Nevertheless, holders of traditional knowledge have rights over this knowledge which governments and potential users of it are required to respect. It is up to each

²⁶ As acknowledged in the CBD, at least that knowledge which is relevant to biodiversity and sustainable use of biological resources.

²⁷ According to Drahos: “[w]hile new forms of intellectual property in the form of protection for semiconductors or plant varieties have readily been minted for transnational industrial elites both nationally and internationally, the recognition of indigenous intellectual property forms has proceeded slowly or not at all. This selective approach to solving freeriding problems comes into sharp focus when one compares the evolution of protection for the semiconductor chip and protection of folklore. Prior to 1984 manufacturers of computer chips in the US had complained that existing intellectual property regimes often failed to protect their products. Their chips often failed to clear the patent hurdles of novelty and inventiveness... In 1984 the *Semiconductor Chip Protection Act* was passed... In contrast, the issue of protection for indigenous knowledge has largely remained just that, an issue”. Drahos, P. “Indigenous Knowledge and the Duties of Intellectual Property Owners”. *Intellectual Property Journal*, 11, August, pp. 179-201, 1997.

government to decide whether this should be done through their intellectual property laws or by other means such as support for local capacity building or some form of communal rights system.

It is difficult to imagine how an intellectual property rights system can be designed that could adequately protect traditional knowledge, innovations and practices knowledge, especially when so much has limited if any commercial application. Trademarks and geographical indications may be appropriate forms of protection for some products based on traditional knowledge even if they cannot protect the knowledge *per se*. But it is important to be culturally flexible. Policy makers schooled in Western legal systems are apt to suppose that the only IPRs that exist are the ones referred to in TRIPS and the WIPO-administered conventions. Unfortunately, many activists say nothing to disabuse them of this misconception. In fact, as I have shown, traditional societies often have very complex custom-based intellectual property systems. Just as members of these societies can benefit from learning about the western IPR tradition, it behoves lawyers and policy makers also to learn about how traditional communities generate, use, manage and control their own knowledge.

It is very important finally to point out that respect, preservation and maintenance of traditional knowledge not be justified *solely* by its instrumental value. In other words, traditional knowledge should not be respected, preserved and maintained merely *because* it is relevant to biodiversity conservation and sustainability; even less because some of it has industrial application. A great deal of traditional knowledge has no commercial potential whatsoever, but this does not make it any less worthy of respect or protection. The disappearance of traditional knowledge may be a tragedy for the world, but above all, it is a tragedy for those peoples and communities of the world that depend upon the integrity of their knowledge systems for their cultural and even physical survival.

APPENDIX 1.

HOW CAN IPRs PROTECT TRADITIONAL KNOWLEDGE?

Some Recent Proposals:

1. Changing IPR law: Certificates of origin have been proposed by a Peruvian environmental law NGO in order to make patent law more compatible with provisions in the CBD on national sovereignty, prior informed consent, and the rights of indigenous peoples and local communities. Administrative requirements for filing patent applications based on use of genetic resources and/or traditional knowledge should require inclusion of: (i) a sworn statement as to the genetic resources and associated knowledge, innovations and practices of indigenous peoples and local communities utilised, directly or indirectly, in the research and development of the subject matter of the IPR application; and (ii) evidence of prior informed consent of the country of origin and/or indigenous or local community, as appropriate.

International standardisation of these conditions would be achieved through an international certification system. Accordingly, countries providing resources and/or traditional knowledge would issue certificates indicating that all obligations to the source country and the relevant indigenous people or local community had been fulfilled such as prior informed consent, equitable benefit sharing, and perhaps other conditions imposing limitations on the use of the genetic material or knowledge. Patent applications would then need to include these certificates without which they would automatically be rejected. The system would not affect indigenous communities' right to veto access to and use of their knowledge or resources.

2. Using IPRs as they are: Transforming traditional knowledge into trade secrets is the title of an InterAmerican Development Bank-supported project based in Ecuador, the aim of which is to enable indigenous peoples to benefit from bio-prospecting through effective IPR protection of their knowledge (Vogel 1997). Knowledge from communities wishing to participate in the project will be catalogued and deposited in a restricted access database. Each community will have its own file in the database. Checks will be made to see whether each entry is not already in the public domain and whether other communities have the same knowledge. If communities with the same knowledge were to compete rather than collaborate,

there would be a price war that would benefit only the corporate end-users. To overcome this danger, the project envisages the creation of a cartel comprising those communities bearing the same trade secret. The trade secret can then be negotiated in a Material Transfer Agreement with the benefits shared between the government and the cartel members.

3. Local Innovations Databases. The Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) in India, has for several years been developing databases of traditional knowledge and innovations in close collaboration with local community members. Anil Gupta, SRISTI's Director, advocates the establishment of a global registration system of local innovations. Such a system would enable individual and collective innovators to receive acknowledgment and financial rewards for commercial applications of their knowledge, innovations and practices, make it possible to build links between small investors, entrepreneurs and innovators for mutual financial benefits, and in some cases enable individuals or communities to seek IPR protection in such forms as inventors certificates and petty patents. Gupta also proposes that all national patent offices should be able to access local innovation databases when carrying out prior art searches and examinations in order that patent applications which appropriate knowledge contained in these databases may be properly tested for novelty and inventive step.²⁸

But it seems to me that serious consideration must be given to the question of who should own the databases and of how far access to them should be restricted. It seems logical that access restrictions lessen the possibility of information within them being misappropriated. On the other hand, keeping database information out of the public domain could in some situations make it harder to challenge misappropriation than if such knowledge were made publicly available. For example, a company might acquire knowledge about a medicinal plant from an indigenous group and then patent this knowledge. Depending on how 'prior art' and 'the public domain' are interpreted in the legal jurisdiction where the patent is held, challenging the patent could be less effective because the knowledge had only been recorded in a private database and not made available to the public through publication. It is essential that organisations co-ordinating traditional knowledge register initiatives explain to local communities the full implications of sharing their knowledge with all outsiders including themselves.

²⁸ Gupta, A. (Anil) "Knowledge Network Among Grassroots Innovators: Emerging Applications of

