Biological Resources and Benefit Sharing: the Intersection Between Traditional Knowledge and Intellectual Property

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I. Introduction

BIOLOGICAL RESOURCES and their exploitation are at the centre of global attention.[1] More specifically, concerns over the exploitation of genetic resources have precipitated with the entrée of the *Convention on Biological Diversity, 1992* (CBD). This Convention has brought together the concepts of benefit sharing, traditional knowledge and intellectual property.

After defining biological and genetic resources and considering international obligations for benefit sharing, this paper explores the intersection between two important issues: traditional knowledge and intellectual property. The concept of intellectual property has a long legal history with clearly defined rules that have gained international acceptability. The numerous international conventions dealing with the various forms of intellectual property have culminated in world recognition of the important economic contribution such property makes. This has been achieved through the Agreement on Trade Related Aspects of Intellectual Property as adopted by the World Trade Agreement.

The concept of traditional knowledge, on the other hand, has been at the centre of much international debate with various indigenous peoples creating declarations and statements not only on general indigenous rights but specifically on biodiversity rights. The CBD recognises the importance of indigenous knowledge, innovations and practices in the processes of conservation, sustainable development and benefit sharing. The

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1. Consider various international reports and documents, including the *World Conservation Strategy* (1980), the *ASEAN Convention* (1985), the Brundtland Commission's *Our Common Future* (1987), *Caring for the Earth* (1991) and the *Global Biodiversity Strategy* (1992), as well as the collaborative efforts among scientists in the Asian region attempting to deal with this very issue.

investigations of the World Intellectual Property Organisation (WIPO) have reported the level of national recognition of such knowledge throughout the world resulting in the most recent report considering legal protection of traditional knowledge.[2]

Before exploring the intersection of traditional knowledge and intellectual property, this paper first identifies the parameters of the inquiry: the definition of the resources in question and the significance of benefit sharing.

II. Defining resources

While there are many varying definitions for biological and genetic resources depending on the perspective taken, this paper will be limited to those definitions agreed in the CBD. Article 2 of the CBD provides these definitions as follows:

> 'Biological resources' are defined to include
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> 'genetic resources, organisms, parts of organisms, populations and any other biotic component of an ecosystem with actual or potential use or value for humanity.'
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> 'Genetic resources' are defined to include
>
> 'genetic material of actual or potential value'
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> 'Genetic material', in turn, is defined to include
>
> 'any material of plant, animal, microbial or other origin containing functional units of heredity.'

In Australia, the Commonwealth State Working Group on Access to Australia's Resources carefully restricted the definition of 'biological resources' to 'materials, including genetic materials, of plant, animal, microbial or other non-human origin, with actual or potential use or value to humanity'.[3] This is in recognition that biological resources derived from humans form a separate dimension from non-human biological resources and the intent of the CBD is to ultimately engage in the conservation and use of ecosystems around the world. However, it should be noted that the CBD definition has formally been adopted in Australian legislation in keeping with Australia's international obligations under the CBD.[4]

Interestingly, though, the definition of 'genetic resources' can have a more expansive meaning if we are to accept the definition of *The National Strategy for the Conservation of Australia's Biological Diversity* (1996) (*'The National*

2. WIPO/GRTKF/1C/5/12.
3. Commonwealth-State Working Group on Access to Australia's Biological Resources, *Managing Access to Australia's biological resources: developing a nationally consistent approach: a discussion paper* 12 (The Group, Canberra, 1996).
4. S. 528, *Environmental Protection and Biodiversity Conservation Act, 1999 ('EPBC Act')*.

Strategy').[5] This document defined 'genetic resources' to include 'the genes and gene pools of native species...of plant, animal and microbial varieties produced by breeding and genetic manipulation from those genes or gene pools'.[6] It is an interesting definition recognising the contribution of scientists, plant and animal breeders, and perhaps indigenous peoples, in the process of expanding the genes and gene pools of native species. Yet again, Australian legislation has ignored the views of its policy committees and adopted a definition which combines the CBD definitions of 'genetic resources' and 'genetic material'.[7]

Why bother considering Australian developments? Australia brings together the issues plaguing the relationship between the 'North' and the 'South'. By this I am referring to the common parlance describing the tension between the predominantly northern hemisphere, industrialised nations and the predominantly southern hemisphere, financially poorer but biologically diverse nations. Australia is a biologically mega-diverse nation that finds itself in the 'South' but is simultaneously a developed nation. It is in this context that this paper refers to Australian examples of policy development in relation to access to and benefit sharing from the use of biological resources and associated traditional knowledge.

III. The significance of benefit sharing

The idea of benefit sharing from the utilization of biological resources arises in the context of the third objective of the CBD, found in Article 1:

> 'the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding'.

However, this objective must be read in conjunction with those provisions of the CBD that enable the Contracting Parties, nations, to take control over the same genetic resources. The CBD provides an opportunity for Contracting Parties to assert control over these resources by recognising the sovereign rights of States over their natural resources (Article 3) and the authority of those States to determine access to genetic resources using national legislation. Article 15 paragraph 1 specifically states such recognition:

> 'Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources

5. *The National Strategy for the Conservation of Australia's Biological Diversity*, (Department of Environment, Sport and Territories, Canberra, 1996), ('The National Strategy').
6. *Id.*, The National Strategy, Chapter 2, Objective 2.8 'Access to genetic resources'.
7. S. 528, *EPBC Act*.

rests with the national governments and is subject to national legislation'.

In particular, Article 15 paragraph 7 requires that each Contracting Party "take legislative, administrative or policy measures, as appropriate" for the fair and equitable sharing of benefits "arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources". This paragraph requires co-operation between nations on a variety of fronts but given that the party seeking the resources is likely to be a private organisation, the responsibility of establishing the measures lies with the Contracting Party providing the genetic resources. Accordingly, in order to develop meaningful measures, consideration must be given to who the stakeholders are.

IV. Taking into account all rights

The third objective of the CBD specifically requires that all rights over the genetic resources be taken into account when determining the fair and equitable sharing of benefits arising from the use of those resources. The question of 'all rights' requires the identification of the stakeholders. Such stakeholders might be the sovereign nations themselves, landowners and indigenous peoples, bioprospectors, pharmaceutical or biotechnology companies or holders of intellectual property over such resources.

It is the work of bioprospectors that often commence the process of developing technologies from biological or genetic resources. These people collect samples of biological material identifying potentially valuable compounds or attributes for scientific, conservation or commercial purposes[8]. Bioprospecting is said to be "the systematic search of new sources of chemical compounds, genes, proteins, microorganisms and other products that have potential economic value present in our biotic resources".[9] Clearly, the idea of benefit sharing espoused in the CBD is relevant when considering this economic value and the commercial purposes of bioprospecting. Further, as traditional knowledge often assists the bioprospecting process it is no wonder the issue of benefit sharing becomes important.

If the development of Australian policy is considered in this regard, there is a clear recognition of the contribution and rights of indigenous peoples over such genetic resources, particularly if traditional knowledge has been used. *The National Strategy* referred to above notes, in Action item 1.8.2, the need to protect the use of traditional biological knowledge through collaborative agreements and a royalty payment system where there are

8. See, *supra* note 3, at 11 fn.3.
9. INBio, 'prospecting: Biodiversity Prospecting' at <http://www.inbio.ac.cr/en/pdb/Prosp.html> (1 July 2003).

commercial developments using that tradition knowledge.

In the discussion paper[10] of the Commonwealth State Working Group on Access to Australia's Resources ('the CSWG Discussion Paper'), a nationally consistent approach to access was advocated and a multi-purpose contract system proposed. This contract system would require a bioprospector to enter into an access and benefit sharing agreement with the owner of the biological resource. The CSWG Discussion Paper recognised that such an owner could be a community of Indigenous peoples where the resource is located on land or in waters owned by the relevant Indigenous peoples.

Some further observations were made in the CSWG Discussion Paper in relation to the interests of Indigenous peoples, one being access to traditional knowledge. However, the terms of reference of the CSWG did not go as far as addressing the issue of traditional knowledge and intellectual property rights but did attempt to provide alternatives for intellectual property protection for traditional knowledge.[11]

Federal legislation soon came into force to deal with the broader issues of the CBD: the *Environment Protection and Biodiversity Conservation* Act, 1999 ('the EPBC Act'). This legislation enabled the development of regulations for the control of access to biological resources. The EPBC Act allowed these regulations to provide for the equitable sharing of benefits arising from the use of biological resources in Commonwealth areas.[12] This resulted in an inquiry to determine the nature of those regulations.[13] In the report of the inquiry, three groups of stakeholders were identified: environmental interests, Indigenous interests, industry interests and research interests. The regulatory scheme proposed in the report of the inquiry dealt with the mechanisms for granting access to biological resources and the development of a benefit sharing contract. To this end, the proposed scheme was to:

- promote a cooperative approach to the protection and management of the environment involving governments, the community, land holders and Indigenous peoples;
- recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and

10. *Supra* note 3
11. *Id.*, at 27-28.
12. S. 301(2)(a), *EPBC Act*.
13. *Access to Biological Resources in Commonwealth Areas*, Commonwealth Public Inquiry, John Voumard, Inquiry Chair, report delivered on July 2000 (Commonwealth of Australia, Environment Australia, Natural Heritage Division, Canberra, July 2000) ('The Voumard Report').
14. *Id.*, at 145, The Voumard Report.

- promote the use of Indigenous people's knowledge of biodiversity with the involvement of, and in cooperation with, the owners of that knowledge.[14]

The draft regulations that followed on 7 September 2001 were designed to recognise "the special knowledge held by Indigenous people about biological resources".[15] These draft regulations went so far as to include consideration of traditional knowledge in the assessment process of ensuing benefit sharing agreements. Such agreements would be required to 'provide for reasonable benefit-sharing arrangements, including protection for, recognition of and valuing of any indigenous knowledge given by an access provider'.[16] Interestingly, these draft regulations were issued despite criticism of the workability of the scheme proposed in the report of the inquiry upon which draft regulations are modelled. The Standing Committee on Primary Industries and Regional Services, in their 2001 report,[17] noted the criticism of the Department of Agriculture, Fisheries and Forestry which was that the scheme was too onerous.[18] However, the alternative suggested fell short of complying with international obligations.[19]

Australia is still waiting for the implementation of some form of regulations to the access provision of the EPBC Act. Meanwhile, the Queensland government has developed a new scheme derived from its *Queensland Biodiscovery Policy Discussion Paper (the Biodiscovery Discussion Paper)*[20] and issued an exposure draft of the *Biodiscovery Bill, 2003* with public submissions having closed on 1 August 2003. This proposed legislation does not include consideration of traditional knowledge in the provisions concerning benefit sharing. The Biodiscovery Discussion Paper does note that reference is to be made to the *Queensland Code of Ethical Practice for Biotechnology, 2001* to guide benefit sharing arrangements with traditional knowledge holders.[21] As for the protection of traditional knowledge, the Biodiscovery Discussion Paper points out that it is the responsibility of the Commonwealth to introduce a regime that recognises such knowledge as a form of intellectual property. This brings us to the intersection between traditional knowledge and intellectual property.

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15. See, reg. 8A.01, Part 8A, Draft Environment Protection and Biodiversity Conservation Amendment Regulations (2001) ('Draft EPBC Regulations').
16. See, reg. 8A.08, Part 8A, Draft EPBC Regulations.
17. Standing Committee on Primary Industries and Regional Services, House of Representatives, Bioprospecting: Discoveries changing the future: Inquiry into development of high technology industries in regional Australia based on bioprospecting, August 2001 <http://www.aph.gov.au/house/committee/primind/bioinq/report/contents.htm> (7 September 2003).
18. *Id.*, at 38.
19. *Id., at* 39-40.
20. Queensland Biodiscovery Policy Discussion Paper, 2002.
21. *Id.*, clause 3.15.

V. What is traditional knowledge?

In April 2001, WIPO published its report on fact-finding missions on intellectual property and traditional knowledge (1998-1999): *Intellectual Property Needs and Expectations of Traditional Knowledge Holders.*[22] In that report WIPO's use of the term 'traditional knowledge' referred to 'tradition-based literary, artistic or scientific works; performances; inventions; scientific discoveries; designs; marks, names and symbols; undisclosed information; and all other tradition-based innovations and creations resulting from intellectual activity in the industrial, scientific, literary or artistic fields'.[23] The emphasis is clearly influenced by intellectual property concepts, but the report goes on to clarify the distinguishing feature, namely, that these elements are 'tradition-based'. Here WIPO refers to 'knowledge systems, creations, innovations and cultural expressions which: have generally been transmitted from generation to generation; are generally regarded as pertaining to a particular people or its territory; and are constantly evolving in response to a changing environment'.[24] Among the various categories of traditional knowledge listed in the report, WIPO includes 'agricultural knowledge; scientific knowledge; technical knowledge; medicinal knowledge, including related medicines and remedies; biodiversity related knowledge'.[25]

WIPO does supply separate definitions for 'indigenous knowledge' suggesting, on the one hand, that such knowledge is 'traditional knowledge' of indigenous peoples, thereby making 'indigenous knowledge' a subset of 'traditional knowledge'.[26] In this sense, 'indigenous knowledge' is described as 'knowledge held and used by communities, peoples and nations that are "indigenous"'.[27] On the other hand, 'traditional knowledge' and 'indigenous knowledge' could be interchangeable if we consider the term 'indigenous' to mean 'belonging to, or specific to, a particular place'.[28]

From an Australian perspective there are many commentators on what constitutes Indigenous (or traditional) knowledge. Janke prefers the term 'Indigenous cultural and intellectual property' and acknowledges three principles relevant to identifying the nature of such information:

- Communal ownership and attribution;
- Ongoing positive obligations and rights to use and deal with cultural knowledge; and

22. *Intellectual Property Needs and Expectations of Traditional Knowledge Holders*, WIPO Report on fact-finding missions on intellectual property and traditional knowledge (1998-1999), Geneva, April 2001 WIPO (WIPO 2001 Report).
23. *Id.*, at 25.
24. *Ibid.*
25. *Ibid.*
26. *Id.*, at 23.
27. *Ibid.*
28. *Id.*, at 24.

- The sharing of Indigenous cultural knowledge through specific consent and decision-making procedures of the relevant group.[29]

Davis proposes 4 characteristic features of Indigenous knowledge that seem to expand upon the principles acknowledged by Janke:

- collective rights and interests held by Indigenous peoples in their knowledge;
- close interdependence between knowledge, land, and other aspects of culture in Indigenous societies;
- oral transmission of knowledge in accordance with well understood cultural principles, and
- rules regarding secrecy and sacredness that govern the management of knowledge.[30]

For the purposes of this paper, special consideration is given to an example of traditional or Indigenous knowledge, namely, medicinal knowledge, which may contribute to the development of pharmaceutical patents, often with no benefit flowing back to the holders of the medicinal knowledge.

VI. Medicinal knowledge

Often knowledge of the healing properties of different plants is restricted to particular members within an Indigenous community. These Indigenous healers are

> 'a group of persons recognised by the community in which they live as being competent to provide health by using vegetable, animal and mineral substances and other methods based on the social, cultural and religious backgrounds as well as the knowledge, attitudes and beliefs that are prevalent in the community regarding physical, mental and social well-being and the causation of disease and disability.'[31]

In 1995, Brown believed it 'likely that up to 80% of the world's population' relied on traditional medicines and remedies for primary health and that this was not just due to poverty of the people.[32] Rather, such

29. Janke, T., *Biodiversity, Patents and Indigenous Peoples* 2 (March 1999), at <http://www.wacc.org.uk/publications/md/md1999-2/janke_article.html> (7 July 2003).
30. Davis, M., "Biological Diversity and Indigenous Knowledge", Research Paper 17 *Science, Technology, Environment and Resources Group*, 1997-98 <http://www.aph.gov.au/library/pubs/rp/1997-98/98rp17.htm> (7 July 2003).
31. *The Promotion and Development of Traditional Medicine*, Technical Report Series 622, World Health Organisation 41 (1978).
32. Brown, K., *Medicinal plants, indigenous medicine and conservation of biodiversity in Ghana*, Chapter 9 in Swanson, T.M., (ed.), Intellectual Property Rights and Biodiversity Conservation an interdisciplinary analysis of the values of medicinal plants, 201 (Cambridge University Press, Cambridge 1995).

treatments were more culturally acceptable.[33]

While such traditional knowledge may be considered by the Indigenous community as common heritage, conflict arises when such information is commodified through patents by scientists and researchers, pharmaceutical companies and the like. Janke points out that:

> 'A major concern of Indigenous people is that their cultural knowledge of plants, animals and the environment is being used by scientists, medical researchers, nutritionists and pharmaceutical companies for commercial gain, often without their informed consent and without any benefits flowing back to them.'[34]

The commercialisation of Indigenous or traditional knowledge is often through the process of gaining intellectual property protection for inventions derived from such knowledge, more specifically patents. The concern is that without the use of such knowledge of local communities, the bioprospectors and ultimately biotechnological and pharmaceutical companies would not have discovered the correct leads for patentable bioactive materials. How is such traditional knowledge to be protected? Do pharmaceutical companies have to obtain consent for the use of that knowledge in deriving a commercially viable product with the aid of biopatents? Should there be some form of benefit sharing with the community providing the traditional knowledge? And if so, how much or in what form? Or is this all just biopiracy?

VII. Biopatents or biopiracy?

Discoveries and naturally occurring genetic material are not patentable *per se* as they are not inventions. Article 27 of TRIPS acknowledges the patentability of:

> Any inventions, whether products or processes, in all fields of technology, provided they are new, involve an inventive step and are capable of industrial application.

There are 2 perspectives here. Can traditional knowledge about biological resources be protected under patent law? In other words, does traditional knowledge satisfy the international requirements of novelty, inventiveness and industrial applicability? Or does traditional knowledge prevent patentability on the basis that the information forms part of the prior art base from which the criteria of novelty is judged?

If the traditional knowledge is secret and complies with the rules of confidentiality then it may not form part of the prior art base and thereby novelty is maintained. If the knowledge also forms a significant

33. *Ibid.*
34. Janke, *supra* note29, at 3.

component(s) of the invention developed from the biological resource then the providers of that knowledge may have a claim as joint owners of the ensuing patent. On the other hand, if the traditional knowledge is not secret but a common practice, then it will form part of the prior art base against which to purported biological invention is tested. Then it becomes a question of whether such knowledge discloses the invention or whether the invention is more than the traditional knowledge.

Despite this, Vandana Shiva has the following view:

> Biopiracy refers to the use of intellectual property systems to legitimise the exclusive ownership and control over biological resources and biological products and processes that have been used over centuries in non-industrialized cultures. Patent claims over biodiversity and indigenous knowledge that are based on the innovation, creativity and genius of the people of the Third World are acts of 'biopiracy'.[35]

Here Shiva is analysing the situation from a proprietary perspective arguing that the 'North' has created an artificial right, the patent monopoly, resulting in the privatisation of natural resources found predominantly in the 'South' in much the same way as Europe engaged in the enclosure of the commons in the seventeenth century.[36] But the first statement in the quotation above is flawed. If the products and processes have been used for centuries then, under patent law, there would be a lack of novelty and consequently no patent would issue. Something more is required than the mere disclosure of traditional knowledge. And if this 'something more' satisfies the requirements of patentability, the scope of the patent protection needs to be limited to that 'something more', and that is an issue of drafting proper claims.

As for the second of Shiva's statements, again clarification is needed. Perhaps John Locke's theory of property may be of assistance here. In his Second treatise of Civil Government, Locke states the premise that a man's body is his own property. Consequently:

> the labour of his body and the work of his hands we may say are properly his. Whatsoever, then, he removes out of the state that nature hath provided and left it in, he hath mixed his own labour with and joined to it something that is his own, and thereby makes it his property.[37]

Certainly, this is an argument in favour of proprietary rights of Indigenous peoples over their traditional knowledge. But it doesn't

35. Shiva, V., *Protect or Plunder, Understanding Intellectual Property Rights*, 49 (Zed Books Ltd, London, 2001).
36. *Id.*, Shiva at 44.
37. Locke, J., Second treatise of Civil Government, at 27

necessarily exclude the rights of subsequent researchers. If the traditional knowledge only goes so far as to identify a plant for a particular purpose, it is not the same as identifying the active chemical in the plant, isolating it and synthesising it. The researcher, by identifying the active chemical and synthesising it, has removed the plant from nature and through the labour of the research, made the active chemical his/her own. However, this may not have taken place but for the traditional knowledge used to identify the relevant plant for investigation. How then, can the holders of such traditional knowledge be compensated?

VIII. Does the CBD provide a way forward?

Article 8(j) of the CBD encourages Contracting parties, nations, 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 their 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.

However, the implementation of Article 8(j) is stated to be subject to national legislation. As for customary uses of biological resources in line with traditional practice, Article 10(c) of the CBD encourages such uses and the protection of such uses. In addition, the CBD recognises the influence of patents and other intellectual property rights and requires 'that such rights are supportive of and do not run counter to' the objectives of the CBD.[38]

If the holders of the traditional knowledge have joint ownership of the patents developed from the biological resources pertaining to the traditional knowledge, the issue is clear. The holders will be able to participate in the exploitation of the patents without question. However, if there is no joint ownership of the patents what are the possibilities?

The potential for *sui generis* legislation enabling benefit sharing have been explored in the context of Australian developments described above. As for *sui generis* legislation allowing for independent protection of traditional knowledge, Posey and Dutfield have proposed 'traditional resource rights',[39] while WIPO has considered various models with each being hybrids of recognised intellectual property systems.[40] However, given that the aim is to

38. Art. 16(5), CBD.
39. Posey, D.A., and Dutfield, G., "Beyond Intelletual Property, Toward Traditional Resource Rights for Indigenous Peoples and Local Communities" 95 *IDRC* (1996).
40. WIPO/GRTKF/1C/5/12.

ensure benefit sharing, it would seem that the more efficient way to compensate the holders of traditional knowledge is to require that prior informed consent was obtained and that appropriate benefit-sharing contracts be entered into. That appears to be the intent of the draft regulations to the *Environment Protection and Biodiversity Conservation Act, 1999* considered above.

This conclusion is in keeping with results provided in the Environmental Policy Studies Workshop of the Columbia University School of International and Public Affairs in 1999. In their Working Paper, the Workshop points to the use of access agreements or contracts as a means of ensuring benefit sharing principles.[41] Although in most instances backed up by legislation or other forms of regulation, for example, licenses to bioprospect, specific agreements have been necessary to establish the way in which the benefits will be shared including intellectual property rights and technology transfer and commercialisation.

Straus points out the necessity for "a complex network of contractual arrangements between a variety of institutions from provider and the use countries".[42] However, for equitable contractual arrangements to be achieved, there needs to be equal bargaining power, equal legal representation, and equal means of enforceability. Perhaps government participation in the negotiation of such arrangements might be helpful.

IX. Conclusions

This paper shows that there is scope for protection of traditional knowledge through recognised intellectual property systems. This is particularly so where the knowledge becomes an integral part of the bioprospecting and invention development process. Where this is not that case, protection may need to be *sui generis* in nature. WIPO is in the midst of considering which model of protection would be appropriate.

When we consider the importance given to traditional knowledge through the CBD, what becomes clear is the need to ensure an equitable sharing of the benefits arising from the utilisation of such knowledge. The Australian developments described in this paper provide an inconclusive result at present. However, it is surprising that ten years after the entry into force of the CBD, and after much deliberations and government activity, Australia is no closer to providing a definitive result for the protection of its Indigenous peoples' traditional knowledge.

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41. Columbia University School of International and Public Affairs, Environmental Policy Studies Working Paper #4, *Access to Genetic Resources: An Evaluation of the Development and Implementation of Recent Regulation and Access Agreement*, prepared for the Biodiversity Action Network, 1999.
42. *Id.*, at 116.